DES 08-39

VOLUME II

PUBLIC DRAFT

Habitat Conservation Plan

DECEMBER 2008

SOUTHEASTERN LINCOLN COUNTY

HABITAT CONSERVATION PLAN

DES 08-39

Southeastern Lincoln County Habitat Conservation Plan

December 2008

Prepared for:

Board of Lincoln County Commissioners
P.O. Box 90
Pioche, NV 89403

Prepared by:

ENTRIX

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

Table of Contents

Section 1: Introduction 1-1

1.1 Overview 1-1

1.1.1 Purpose and Need for Proposed Action 1-1

1.2 Regulatory Compliance Framework 1-7

1.2.1 Federal Endangered Species Act of 1973, as Amended 1-7

1.2.2 National Environmental Policy Act 1-9

1.2.3 National Historic Preservation Act 1-9

1.2.4 Federal Land Policy and Management Act 1-9

1.2.5 Migratory Bird Treaty Act 1-10

1.2.6 Clean Water Act 1-10

1.2.7 Recreation and Public Purposes Act 1-10

1.2.8 Lincoln County Land Act 1-11

1.2.9 Lincoln County Conservation, Recreation, and Development Act of 2004 1-12

1.2.10 USFWS 2003 Biological Opinion for the Toquop Energy Project 1-13

1.2.11 Southern Nevada Public Land Management Act (SNPLMA) 1-13

1.2.12 Nevada Revised Statutes (NRS) 1-14

1.2.13 Nevada Administrative Code (NAC) 1-14

1.3 Overview of the Proposed SLCHCP 1-15

1.3.1 Permit Duration 1-15

1.3.2 Incidental Take Permits 1-15

1.3.3 Participants of the SLCHCP 1-15

1.3.4 Covered Area 1-16

1.3.5 Species to be Covered by the Permits 1-16

1.3.6 Covered Activities 1-16

1.4 Conservation Measures 1-16

1.4.1 Desert Tortoise Conservation Commitments 1-17

1.4.2 Southwestern Willow Flycatcher Conservation Commitments 1-18

1.5 Expected Outcomes 1-18

1.6 Implementation of the SLCHCP 1-18

1.7 Planning Process and Scoping 1-19

1.8 Literature Cited 1-19

Section 2: Covered Area 2-1

2.1 Environmental Setting 2-1

2.1.1 Climate 2-1

2.1.2 Surface Water and Groundwater Resources 2-1
2.1.3 Surface Waters 2-1
2.1.4 Groundwater Resources 2-2
2.1.5 Geology and Soils 2-2
2.1.6 Biological Community 2-3
2.2 Existing Resource Uses 2-5
2.2.1 Land Use and Resource Management 2-5
2.2.2 Agricultural Resources 2-6
2.2.3 Recreational Resources 2-6
2.2.4 Cultural and Paleontological Resources 2-6
2.3 Literature Cited 2-9

Section 3: Covered Species 3-1
3.1 Covered Species Selection Process 3-1
3.2 Desert Tortoise 3-1
3.2.1 Protection Warranted 3-1
3.2.2 General Description 3-2
3.2.3 Ecology 3-2
3.2.4 Life History 3-2
3.2.5 Threats 3-3
3.2.6 Conservation 3-6
3.2.7 Recovery Units 3-6
3.2.8 Critical Habitat 3-8
3.3 Southwestern Willow Flycatcher 3-25
3.3.1 Protection Warranted 3-25
3.3.2 General Description 3-25
3.3.3 Ecology 3-26
3.3.4 Life History 3-27
3.3.5 Threats 3-27
3.3.6 Conservation 3-28
3.3.7 Critical Habitat 3-30
3.4 Literature Cited 3-53

Section 4: Covered Activities 4-1
4.1 Planned Land Development and Maintenance Activities 4-1
4.1.1 Lincoln County Land Act Lands 4-2
4.1.2 Alamo Industrial Park/Community Expansion Area 4-2
4.1.3 Meadow Valley Industrial Park 4-2
4.1.4 Additional BLM Disposal Lands Identified in the Draft Ely Resource Management Plan 4-11
4.2 Utility and Infrastructure Development and Maintenance Activities 4-11

4.3 Flood Control Activities 4-12
4.4 Roadway Construction and Maintenance Activities 4-15
4.4.1 Lincoln County 4-15
4.5 Union Pacific Railroad Activities 4-20
4.6 Other Privately-Owned Lands Subject to Land Conversion Activities 4-21
4.7 Literature Cited 4-21

Section 5: Potential Effects and Anticipated Take 5-1
5.1 Introduction 5-1
5.1.1 Type of Effect 5-1
5.2 Methods for Estimating Covered Species Habitat 5-2
5.2.1 Methods for Estimating Desert Tortoise Habitat 5-2
5.2.2 Methods for Estimating Southwestern Willow Flycatcher Habitat 5-2
5.3 Potential Effects by Activity to the Covered Species 5-4
5.3.1 Planned Land Development and Maintenance Activities 5-4
5.3.2 Utility and Infrastructure Development and Maintenance Activities 5-10
5.3.3 Flood Control Activities 5-11
5.3.4 Roadway Construction and Maintenance Activities 5-12
5.3.5 UPRR Construction and Maintenance Activities 5-13
5.3.6 Other Privately-Owned Lands Subject to Land Conversion Activities 5-37
5.4 Literature Cited 5-43

Section 6: Conservation Measures 6-1
6.1 Biological Goals and Objectives 6-1
6.1.1 Desert Tortoise 6-1
6.1.2 Southwestern Willow Flycatcher 6-2
6.2 Conservation Measures Components 6-2
6.3 Planned Land Development and Maintenance Activities 6-3
6.3.1 Avoidance and Minimization Measures 6-3
6.3.2 Mitigation Measures 6-8
6.4 Utility and Infrastructure Development and Maintenance Activities 6-16
6.4.1 Avoidance, Minimization and/or Mitigation Measures 6-16
6.5 Flood Control Activities 6-16
6.5.1 Avoidance, Minimization and/or Mitigation Measures 6-16
6.6 Roadway Construction and Maintenance Activities 6-17
6.6.1 Avoidance and Minimization Measures 6-17
6.7 Union Pacific Railroad Activities 6-18
6.7.1 Avoidance and Minimization Measures 6-18
6.7.2 Mitigation Measures 6-20
6.8 Other Privately-Owned Lands Subject to Land Conversion Activities 6-22
6.8.1 Avoidance, Minimization and Mitigation Measures 6-22
6.9 Literature Cited 6-23

Section 7: Expected Outcomes 7-1
7.1 Expected Outcomes for Desert Tortoise 7-1
7.1.1 Planned Land Development and Maintenance Activities 7-1
7.1.2 Utility and Infrastructure Development and Maintenance Activities 7-8
7.1.3 Flood Control Activities 7-8
7.1.4 Roadway Construction and Maintenance Activities 7-8
7.1.5 Union Pacific Railroad Activities 7-8
7.1.6 Other Privately-Owned Lands Subject to Land Conversion Activities 7-9
7.2 Expected Outcomes for Southwestern willow Flycatcher 7-9
7.2.1 Planned Land Development and Maintenance Activities 7-9
7.2.2 Utility and Infrastructure Development and Maintenance Activities 7-9
7.2.3 Flood Control Activities 7-10
7.2.4 Roadway Construction and Maintenance Activities 7-10
7.2.5 Union Pacific Railroad Activities 7-10
7.2.6 Other Privately-Owned Lands Subject to Land Conversion Activities 7-10
7.3 Adaptive Management 7-10
7.3.1 Structure of the Adaptive Management Program 7-11
7.4 Monitoring 7-12
7.4.1 Compliance Monitoring 7-13
7.4.2 Mitigation Measures Effectiveness Monitoring 7-13
7.4.3 Monitoring Overview 7-14
7.5 Feedback for Adaptive management 7-14
7.6 Literature Cited 7-14

Section 8: Plan Implementation 8-1
8.1 SLCHCP Administration 8-1
8.1.1 Implementation and Monitoring Committee 8-2
8.1.2 Role of the Plan Facilitator 8-3
8.1.3 Technical Advisor(s) 8-4
8.1.4 Plan Participants 8-4
8.2 Reporting 8-9
8.2.1 Annual Report 8-9
8.2.2 Reporting/Budget Schedule 8-10
8.3 Changed and Unforeseen Circumstances 8-10
8.3.1 Changed Circumstances 8-11
8.3.2 Unforeseen Circumstances 8-11
8.4 Revisions and Amendments 8-12
8.4.1 Revisions 8-12
8.4.2 Minor Amendments 8-13
8.4.3 Major Amendments 8-14

8.5 Suspension, Revocation and Termination....8-14
8.6 Renewal of the Section 10 Permit....8-15
8.7 Permit Transfer....8-15
8.8 Implementation Agreement....8-15
8.9 Participation Agreement....8-15
8.10 Literature Cited....8-15

Section 9: Funding....9-1
9.1 Funding Sources....9-1
9.1.1 Long-Term Revenue Sources....9-1
9.1.2 Projected Funding for Implementation of SLCHCP....9-5
9.1.3 Supplemental Funding Sources....9-6
9.2 Literature Cited....9-6

Section 10: Alternatives to Take....10-1
10.1 Alternative 1 No Action or No Authorization of Take Alternative....10-1
10.2 Alternative 2 Proposed Action – Southeastern LIncoln County Habitat Conservation Plan....10-1
10.3 Alternative 3 Lincoln County Alternative – Additional Federal Lands for Disposition Alternative....10-2

T A B L E S

Table 2-1: Groundwater Basins in the Covered Area 2-2
Table 3-1: Acres of Tortoise Habitat in the Covered Area (Mapping below 4,200' Contours) 3-15
Table 3-2: Desert Tortoise Sign and Estimated Numbers in the Alamo Industrial Park and Community Expansion Area 3-23
Table 4-1: Acreage of Lands within the Covered Area where Covered Activities occur and the Acreage of Lands to be Affected by the Covered Activities 4-1
Table 5-1: Summary of Potential Effects of all Covered Activities on the Covered Species and the Estimated Acreage of Affect 5-4
Table 6-1: List of Plants Suitable for Desert Tortoise Rehabilitation Projects in Southern Nevada 6-14
Table 7-1: Expected Outcomes from Implementation of the SLCHCP on Desert Tortoise 7-2
Table 7-2: Expected Outcomes from Implementation of the SLCHCP on Southwestern Willow Flycatcher 7-6
Table 8-1: A Proposed Reporting Schedule 8-10
Table 8-2: Potential Changed Circumstances and Remedial Measures 8-12
Table 9-1: Estimate of Funds Generated from Desert Tortoise Mitigation Fees of $550 per Disturbed Acre for LCLA Lands 9-3
Table 9-2: Estimate of Funds Generated from Desert Tortoise Mitigation Fees for Lands other than the LCLA Lands 9-3
Table 9-3: Estimate of Contributions to Southwestern Willow Flycatcher Habitat Disturbance Fund 9-4
Table 9-4: Estimated Taxes Generated by the LCLA Development Area GID 9-5
Table 9-5: Summary of Total Estimated Funds from Fees and Taxes over the 30-Year Permit Term 9-5
Table 9-6: Summary of Expenditures to Administer the SLCHCP and Implement the Conservation Measures for the Covered Species 9-6

F I G U R E S

Figure 1-1 Land Ownership 1-3
Figure 1-2 Covered Area 1-5
Figure 3-1 Desert Tortoise ACECs, Critical Habitat Units (CH) and Recovery Units 3-11
Figure 3-2 Desert Tortoise Habitat, Sightings and Densities within and Adjacent to the Covered Area 3-17
Figure 3-3 Desert Tortoise Habitat within and Adjacent to the Covered Area 3-19
Figure 3-4 2005 Burned Desert Tortoise Habitat within ACECs and Critical Habitat Units 3-21
Figure 3-5 Southwestern Willow Flycatcher Sightings within and Adjacent to the Covered Area 3-35
Figure 3-6 Post-Flood Potential and Suitable Southwestern Willow Flycatcher Habitat within the Covered Area (Maps 1 through 8) 3-37
Figure 3-6 Map 2 of 8 3-39
Figure 3-6 Map 3 of 8 3-41
Figure 3-6 Map 4 of 8 3-43
Figure 3-6 Map 5 of 8 3-45
Figure 3-6 Map 6 of 8 3-47

Figure 3-6 Map 7 of 8 3-49
Figure 3-6 Map 8 of 8 3-51
Figure 4-1 Proposed Covered Area 4-3
Figure 4-2 LCLA Lands Parcel 4-5
Figure 4-3 Alamo Industrial park/Community Expansion Area 4-7
Figure 4-4 Meadow Valley Industrial Park 4-9
Figure 4-5 BLM Disposal Lands Proposed for Development within the Covered Area 4-13
Figure 4-6 Caliente's Proposed Flood Control Activities 4-17
Figure 5-1 Proposed Land Development on Desert Tortoise Habitat 5-5
Figure 5-2 Lincoln County Roads and UPRR ROWs on Desert Tortoise Habitat 5-15
Figure 5-3 BRRC Analysis of Existing Data on Effects of Roads on Presence of Tortoise Sign 5-17
Figure 5-4 Lincoln County ROWs and UPRR ROW on Potential and Suitable SWWF Habitat (Maps 1 through 8) 5-19
Figure 5-4 Map 2 of 8 5-21
Figure 5-4 Map 3 of 8 5-23
Figure 5-4 Map 4 of 8 5-25
Figure 5-4 Map 5 of 8 5-27
Figure 5-4 Map 6 of 8 5-29
Figure 5-4 Map 7 of 8 5-31
Figure 5-4 Map 8 of 8 5-33
Figure 5-5 UPRR ROW on Desert Tortoise Habitat 5-35
Figure 5-6 Other Privately-Owned Lands along Meadow Valley Wash on Desert Tortoise Habitat within the Covered Area 5-39
Figure 5-7 Other Privately-Owned Lands along Meadow Valley Wash on Southwestern Willow Flycatcher Habitat within the Covered Area 5-41
Figure 6-1 Desert Tortoise Mitigation Fee Zones 6-9

ACRONYMS

ACEC(s)	Areas of Critical Environmental Concern(s)
AMP	Adaptive Management Program
ASWGID	Alamo Sewer and Water General Improvement District
Basin	Colorado River Hydrographic Basin
BLCC	Board of Lincoln County Commissioners
BLM	Bureau of Land Management
BMPs	Best Management Practices
BO	Biological Opinion
CC&Rs	covenants, conditions, and restrictions
CFR	Code of Federal Regulations
cfs	cubic feet per second
CHU(s)	Critical habitat unit(s)
CMFP	Caliente Management Framework Plan
County	Lincoln County
CWA	Clean Water Act
DA	Development Agreement
DCNR	Department of Conservation and Natural Resources
DMOA	Desert Military Operation Area
DOD	Department of Defense
DPS(s)	distinct population segment(s)
DTCC	Desert Tortoise Conservation Center
DTRO	Desert Tortoise Recovery Office
DTRPAC	Desert Tortoise Recovery Plan Advisory Committee
DWMA(s)	Desert Wildlife Management Area(s)
EIS	Environmental Impact Statement
ELISA	Enzyme Linked Immunosorbent Assay
EPA	Environmental Protection Agency
EQIP	Environmental Quality Incentives Program
ESA	Endangered Species Act
FEMA	Federal Emergency Management Agency
FLPMA	Federal Land Policy and Management Act of 1976
GAO	General Accounting Office
GID	General Improvement District
GIS	Geographical Information System
HCP	habitat conservation plan
IA	Implementing Agreement

IMC	Implementation and Monitoring Committee
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
MBTA	Migratory Bird Treaty Act
MDM	Mt. Diablo Meridian
MFP	Management Framework Plan Amendment
MOU	Memorandum of Understanding
MSHCP	Multi-species Habitat Conservation Plan
mtDNA	mitochondrial DNA
NAC	Nevada Administrative Code
NAGPRA	Native American Graves Protection and Repatriation Act
NDF	Nevada Division of Forestry
NDOT	Nevada Department of Transportation
NDOW	Nevada Department of Wildlife
NEPA	National Environmental Policy Act
NLRC	Nevada Land and Resource Company
NPS	National Park Service
NRCS	Natural Resources Conservation Service
NRHP	National Register of Historic Places
NWR	National Wildlife Refuge
OHV	off-road highway vehicle
PA	Programmatic Agreement
PEP	high “potassium excretion potential”
PSPs	permanent study plots
R&PPA	Recreation and Public Purposes Act
RMP	Resource Management Plan
ROW(s)	rights-of-way(s)
SHPO	State Historic Preservation Office
SLCHCP	Southeastern Lincoln County Habitat Conservation Plan
SNPLMA	Southern Nevada Public Land Management Act of 1998
SWIP	Southwestern Intertie Project
SWPPP	Storm Water Pollution Prevention Plan
TSC	Technical Steering Committee
UPRR	Union Pacific Railroad
URTD	upper respiratory tract disease
USACE	US Army Corps of Engineers

USFS	United States Forest Service
USFWS	US Fish and Wildlife Service
WHIP	Wildlife Habitat Incentives Program
WMA	Wildlife Management Area
WOUS	Waters of the United States

Section 1: Introduction

1.1 OVERVIEW

This Southeastern Lincoln County Habitat Conservation Plan (SLCHCP) has been developed as part of the application package for three incidental take permits (ITPs) 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 are being requested that would authorize the take of federally-listed species for Lincoln County, City of Caliente, and UPRR Covered Activities. 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 desert tortoise (*Gopherus agassizii*) and southwestern willow flycatcher (*Empidonax trailii extimus*), referred to in this document as the Covered Species on non-Federal lands within the Covered Area (refer to Figure 1-2) 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 to urban use or grazing to irrigated and/or cultivated agricultural land). The proposed length of the permit would be 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.

1.1.1 Purpose and Need for Proposed Action

1.1.1.1 Purpose

The purpose of the Southeastern Lincoln County Habitat Conservation Plan (SLCHCP) is to provide a mechanism to allow orderly growth and development in the southeastern portion of Lincoln County while providing conservation for the Covered Species to ensure that the incidental take authorized by the permits do not jeopardize the continued existence of the Covered Species or adversely modify designated critical habitat.

The habitat conservation strategies contained within the SLCHCP build on the management and conservation plans that currently exist and are being implemented by State, Federal, and local land managers in the region. As such, this document draws upon approaches and contents found in the Clark County, Nevada Multi-Species Habitat Conservation Plan (RECON 2000); Washington County, Utah Habitat Conservation Plan (Washington County HCP Steering Committee and SWCA, Inc. 1995); Bureau of Land Management's (BLM's) Approved Caliente Management Framework Plan Amendment (MFP) (BLM 2000) ; the US Fish and Wildlife Service (USFWS) Desert Tortoise (Mojave Population) Recovery Plan (USFWS 1994) ; the Site Conservation Plan for the Mormon Mesa Desert Wildlife Management Area (DWMA) (The Nature Conservancy 2002) ; the Southwestern Willow Flycatcher Final Recovery Plan (USFWS 2002); and 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).

1.1.1.2 Need

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 US Forest Service (Humboldt-Toiyabe National Forest) manages approximately 10,000 acres in the northwest portion 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 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 Federal Endangered Species Act (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: http://www.fedstats.gov/qf/states/32/32017.html).

As such, the BLCC approved Resolution 2000–2006 to initiate the development of a multi-species habitat conservation plan (MSHCP), now referred to as the SLCHCP, in April 2000 (refer to Volume III: Appendix A). The resolution was approved for the Covered Area illustrated in Figure 1-2 in order to facilitate development and economic prosperity in southeastern Lincoln County consistent with preservation of sensitive species of flora and fauna.

Lands within the Covered Area that have foreseeable future development activities with the potential to affect Covered Species (i.e., desert tortoise and southwestern willow flycatcher) 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 disposal parcel and lands in the vicinity of the town of Alamo)
- Lincoln County roads and rights-of-way
- Union Pacific Railroad (UPRR) land and rights-of-way
- City of Caliente property
- Conversion of agriculture and livestock lands to developable land
- Conversion of grazing land to irrigated and/or cultivated agricultural land

Figure 1-1 Land Ownership

Figure 1-1 BACK

Figure 1-2 Covered Area

Figure 1-2 BACK

1.2 REGULATORY COMPLIANCE FRAMEWORK

1.2.1 Federal Endangered Species Act of 1973, as Amended

The Federal 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. However, the Secretary of Commerce, acting through National Marine Fisheries Service (NMFS), is the listing authority for marine mammals and most anadromous fish species. 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 by NMFS administrative rule 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).

1.2.1.1 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 (Section 10 permits). 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.'

The *Habitat Conservation Planning Handbook* (HCP Handbook) (USFWS and NMFS 1996) indicates 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 or National Marine Fisheries Service (NMFS) (collectively referred to as the Services) may require as necessary or appropriate for purposes of the plan (USFWS and NMFS 1996).

On March 9, 1999, the USFWS and NMFS published a Notice of Availability for a "Draft Addendum to the Final Handbook for Habitat Conservation Planning and Incidental Take Permitting Process" (64 FR 11485-11490), which provides additional guidance for HCPs and Section 10 permits. The draft addendum emphasizes five points for the preparation of HCPs, including the need for:

- Adequate monitoring based on measurable biological goals;
- Incorporation of adaptive management to allow for changes in mitigation strategies;
- Development of biological goals (based on habitat or species);
- Appropriate terms for the duration of HCPs; and
- Increased public participation.

In summary, an HCP is a plan authorized under Section 10 of the ESA (16 U.S.C. 1539) to conserve the habitat of species listed as threatened and endangered under the ESA or 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 strategy.

According to the HCP Handbook, completion of the HCP process requires:

> *"(1) an HCP; (2) a completed application; (3) an Implementing Agreement (optional, depending on Regional Director discretion); (4) the NEPA analysis, either an EA or EIS; (5) publication in the Federal Register of a Notice of Receipt of a Permit Application and Notice(s) of Availability of the NEPA analysis; (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. Note: For NMFS, the NOAA General Counsel's Office (either in the Region or Headquarters) reviews all documents relating to all HCPs" (NMFS and USFWS 1996).*

1.2.1.2 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 SLCHCP) is likely to jeopardize the continued existence of the Covered Species or destroy or adversely modify designated critical habitat. In addition to assessing direct effects of the Proposed Action on the Covered Species, Section 7 consultation on the issuance of a Section 10 permit requires that the following be addressed in the HCP process:

- Indirect effects of the Proposed Action;
- Potential for jeopardy to listed plants; and
- Effects on critical habitat.

Although non-Federal entities obtain an incidental take permit under Section 10 of the ESA, intra-service Section 7 consultation on the Federal action of issuing the Section 10 permit is still required, which results in the issuance of an incidental take statement on the Federal action. In the intra-service consultation, USFWS or NMFS evaluates the potential effects relative to baseline conditions to determine whether the Proposed Action is likely to jeopardize the continued existence of the species under consultation. USFWS or NMFS then prepares a biological opinion (BO). The BO contains an assessment of the effects of issuance of the Section 10

permit under the HCP on listed species and their habitat. If Federal agencies other than the USFWS or NMFS are involved in the HCP process, a single biological opinion issued by USFWS or NMFS would include an incidental take statement that authorizes any incidental take by the Federal agency and a Section 10 permit that authorizes any incidental take by the Section 10 permittee. The BO would include take limits, reasonable and prudent measures, and other terms and conditions.

In accordance with the SLCHCP, certain activities will be conducted within Waters of the United States (WOUS) and will require a Clean Water Act Section 404 permit from the US Army Corps of Engineers (USACE), depending on the nature and extent of the project. Section 404 permits are subject to separate consultation under Section 7 of the ESA and are not proposed for coverage under Lincoln County's Section 10 permit. The effects on the listed species from activities requiring a Section 404 permit would be minimized through consultation under Section 7 of the ESA. However, it is the intent of the SLCHCP to provide a mechanism to streamline the Section 7 consultation process for Covered Activities in this SLCHCP with a Federal nexus. This would be accomplished by considering the effects analyses and Conservation Measures included in the SLCHCP that would assist in minimizing effects to listed species that are covered under the plan and permit.

1.2.2 National Environmental Policy Act

The issuance of a Section 10 permit by USFWS is considered a Federal action requiring compliance with the National Environmental Policy Act (NEPA). The purpose of NEPA is two-fold: to ensure that Federal agencies examine the environmental impacts of their actions (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.

1.2.3 National Historic Preservation Act

All Federal agencies are required to examine the cultural impacts of their actions (e.g., issuance of a Section 10 permit). Consultation is required with the State Historic Preservation Officer (SHPO) and any federally recognized tribes culturally associated with the area prior to any management actions within the area. Most of the land on which Covered Activities would 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. To complete compliance, however, the applicants may be required to contract for cultural resource surveys and possibly undertake mitigation on other non-Federal lands.

1.2.4 Federal Land Policy and Management Act

The Federal Land Policy and Management Act (FLPMA) was enacted in 1976, and directs the Secretary of the Interior to develop, maintain, and revise plans for the use of public land. The FLPMA requires the BLM to execute its management powers under a land use planning process that is based on multiple use and sustained yield principles. Section 102(a)(8) states:

> *"The Congress declares that it is the policy of the United States that the public lands be managed in a manner that will protect the quality of scientific, scenic, historical, ecological, environmental, air and atmospheric, water resource, and archeological values; that, where appropriate, will preserve and protect certain public lands in their natural condition; that will provide food and habitat for fish and wildlife and domestic animals; and that will provide for outdoor recreation and human occupancy and use."*

Since much of the mitigation of effects from Covered Activities on the desert tortoise and southwestern willow flycatcher may occur on Federal land administered by BLM, the implementation of the conservation program must be consistent with BLM's current land use plan. BLM, acting as a participant in the SLCHCP, will assist with the implementation of the SLCHCP on BLM-administered land, as long as the conservation actions are not in conflict with resource management as directed by their land use plan.

1.2.5 Migratory Bird Treaty Act

The Migratory Bird Treaty Act (MBTA) (16 USC. 701-711) was enacted in 1918 between the United States and Great Britain (representing Canada as well), Mexico in 1936, Japan in 1972 and the area previously known as the Union of Soviet Socialists Republic in 1976. The definition of migratory birds was expanded to include 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 Act established provisions regulating take, possession, and transport and import of migratory birds, including nests and eggs. The MBTA prohibits the take of migratory birds (i.e., the southwestern willow flycatcher); however, the MBTA does not include provisions for incidental take of migratory birds. To relieve the Permittees from liability under the MBTA for HCP covered species, the Section 10 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.

Lincoln County is also requesting that the Section 10 permit constitute a "Special Purpose Permit" under 50 CFR 21.27 for the take of those Covered Species (southwestern willow flycatcher) subject to incidental take which are listed as threatened or endangered under the ESA and which are also protected by the MBTA.

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.

1.2.6 Clean Water Act

Congress passed the Clean Water Act (CWA) in 1977 to provide for the restoration and maintenance of the chemical, physical, and biological integrity of streams, lakes, and coastal waters of the United States. Authority for the CWA lies with the Environmental Protection Agency (EPA), and, to a lesser extent, the USACE. The CWA implements a variety of programs including Federal effluent limitations and state water quality standards, permits for the discharge of pollutants and dredged and fill materials into navigable waters, and enforcement measures. 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 USACE or if the discharge is exempted from regulation.

Certain Covered Activities may require obtaining permits under the CWA prior to initiation of the activity. Refer to Section 1.2.1.2 for a description of the relationship between the SLCHCP and additional Federal authorization.

1.2.7 Recreation and Public Purposes Act

Recognizing the strong public need for a nationwide system of parks and other recreational and public purposes areas, the U.S. Congress, in 1954, enacted the Recreation and Public Purposes Act (R&PPA) (68 Statute 173; 43 United States Code 869 et. seq.) as a complete revision of the Recreation Act of 1926 (44 Stat. 741). This law is administered by the BLM.

The R&PPA authorizes the sale or lease of public lands for recreational or public purposes to State and local governments and to qualified nonprofit organizations. The R&PPA applies to all public lands, except lands within national forests, national parks and monuments, national wildlife refuges, Indian lands, and acquired lands. Examples of typical uses under the R&PPA are historic monument sites, campgrounds, schools, fire houses, law enforcement facilities, municipal facilities, landfills, hospitals, parks, and fairgrounds.

Counties, cities, or other political subdivisions of State and nonprofit organizations may purchase up to 640 acres a year for recreation purposes, and an additional 640 acres for other public purposes. These lands must be within the political boundaries of the agency or within the area of jurisdiction of the organization.

Lincoln County intends to use the R&PPA to restore and protect southwestern willow flycatcher habitat within the Covered Area as outlined in this SLCHCP.

1.2.8 Lincoln County Land Act

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, 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 Lincoln County Conservation, Recreation, and Development Act (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 and 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)[1] between the developer(s) and Lincoln County (refer to Volume III: Appendix B). 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 Each DA will vary in specific content but may contain common elements in which the County will not vary.

1.2.8.1 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 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.

1.2.9 Lincoln County Conservation, Recreation, and Development Act of 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 13,500 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; and
- 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-way 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 this 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 Southern Nevada Water Authority 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.

1.2.10 USFWS 2003 Biological Opinion for the Toquop Energy Project

The 2003 Biological Opinion and Request for Concurrence on Effect Determination for Listed Species Associated with the 2003 Environmental Impact Statement for the Proposed Toquop Energy Project (located on a 640-acre parcel, “Section 36 disposal parcel” identified for disposal by BLM) identifies specific conservation measures for this proposed project. These conservation measures include preparation of an HCP or inclusion in the SLCHCP and payment of Section 7 remuneration fees.

1.2.11 Southern Nevada Public Land Management Act (SNPLMA)

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), the Southern Nevada Water Authority (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 and other areas administered by the BLM in Clark County, and the Spring Mountains National Recreation Area.
- Developing a multi-species habitat conservation plan in Clark County.
- Funding the development of parks, trails, and natural areas in Lincoln, Clark 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 County, 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 may provide additional opportunities to aid in implementation of the SLCHCP.

1.2.12 Nevada Revised Statutes (NRS)

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 in 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 NRS were amended in 1991 to expand the State's requirement to classify wildlife (NRS 501.110). Wild birds and fish must be classified as game, protected, or unprotected, and reptiles must be classified as protected or unprotected. Protected wildlife may be further classified as sensitive, threatened, or endangered. 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).

The Nevada Legislature has added implementation of an HCP to the allowable functions of a general improvement district. NRS 318.1177 states:

"In the case of a district enacted wholly or in part for the establishment of an area or zone for the preservation of one or more species or subspecies of wildlife that has been declared endangered or threatened pursuant to the Federal ESA of 1973, 16 USC. 1531 et seq., the board shall have the power to: (1) Establish, control, manage and operate, or provide money for the establishment, control and management and operation of the area or zone."

NDOW is the entity vested with statutory authority through NRS to protect and manage resident wildlife in the State. 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). 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.

The Nevada Division of Forestry (NDF), a division of the Department of Conservation and Natural Resources (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 that are listed as critically endangered are threecorner milkvetch (*Astragalus geyeri* var. *triquetrus*) and sticky 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.

1.2.13 Nevada Administrative Code (NAC)

The desert tortoise is State listed as protected and further classified as threatened (NAC 503.080). Specific regulations providing protection for all wildlife species classified as protected are set forth in NAC 503.090 and 503.093.

The southwestern willow flycatcher is currently protected under NAC 503.050, which declares that there is no open season and a person shall not capture or kill this wildlife or possess any part of it. There are no State habitat designations that govern land use practices or are analogous to Federal critical habitat. Under NAC 503.050, all species of non-game birds that are protected by provisions of Federal law are also classified by the State as protected.

1.3 OVERVIEW OF THE PROPOSED SLCHCP

1.3.1 Permit Duration

The permit duration of the proposed SLCHCP will be for thirty (30) years. This duration was selected because it matches the anticipated time frame to achieve full build-out of the LCLA lands and other non-Federal land within the Covered Area. A shorter permit term would not satisfy the need for permit coverage within the Covered Area through build-out of the LCLA lands and other non-Federal land.

1.3.2 Incidental Take Permits

The Applicants seek to acquire three 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 within southeastern Lincoln County (described further in Section 4: Covered Activities of this document). Lincoln County, through the Board of Lincoln County Commissioners (BLCC), City of Caliente, and Union Pacific Railroad (UPRR) are applying for separate permits.

Conservation Measures that avoid, minimize, and/or mitigate for potential take of the listed species by the permit applicants' activities (i.e., Lincoln County, City of Caliente, and UPRR) have been identified and developed on a regional basis. Funding, implementation, monitoring and adaptive management actions will also be coordinated and administered on a regional basis. In this manner, a collaborative approach that provides protection to the maximum extent practicable for federally-listed species has been developed.

The need for the action is based on the potential that activities proposed by Lincoln County, City of Caliente, and UPRR on lands under their jurisdiction could result in the take of Covered Species (desert tortoise and southwestern willow flycatcher), thus the need for an incidental take permit. Approval of the SLCHCP and the issuance of the Section 10 permits from the USFWS will facilitate the diversification and expansion of the Lincoln County economy and the development and use of existing and future non-Federal land within the County.

1.3.3 Participants of the SLCHCP

The entities that have requested to be included in the Section 10 permits issued for the SLCHCP are Lincoln County, City of Caliente, and UPRR. These parties will sign an Implementing Agreement (described further in Section 8.8 of this document). The Implementing Agreement will be signed prior to receiving Section 10 permits from the USFWS. The Board of Lincoln County Commissioners will receive and be responsible for maintaining the permits for Lincoln County and the City of Caliente, while UPRR will be responsible for maintaining its own permit.

The Permittees signing the Implementing Agreement will be covered under the Section 10 permits. These are:

- Lincoln County,
- City of Caliente, and
- Union Pacific Railroad.

Other parties or cooperators to sign the Implementing Agreement include:

- U.S. Fish and Wildlife Service,
- Bureau of Land Management, and
- Lincoln County Conservation District (LCCD).

In addition, private landowners along the Meadow Valley Wash and Clover Creek that have desert tortoise or southwestern willow flycatcher habitat on their land may voluntarily participate in the implementation of the SLCHCP by "opting in" and signing a Participation Agreement issued by Lincoln County (refer to Volume III: Appendix C). The Office of the County Manager will provide copies of the Participation Agreement and additional, pertinent information upon request. The length of participation by individuals who opt-in to the SLCHCP will vary during the 30-year permit duration, depending on when the individual signs the

Participation Agreement. For instance, an individual who opts-in at the end of year five will sign a Participation Agreement for 25 years. Private landowners that sign Participation Agreements would receive protection from take violations under the permit issued to Lincoln County. In return, the private landowners would assist in implementing the conservation measures described herein on their land.

1.3.4 Covered Area

The area encompassed by the SLCHCP includes 1,780,140 acres within the southeastern portion of Lincoln County, Nevada (Figure 1-2). 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 most of the Conservation Measures are contemplated to occur. The non-Federal lands on which incidental take is anticipated to occur include lands listed on page 1-2 of this document, as well as non-Federal lands adjacent to Clover Creek, Meadow Valley Wash and adjacent washes.

1.3.5 Species to be Covered by the Permits

The Southeastern Lincoln County HCP proposes to cover two federally-listed species. These species include:

DESERT TORTOISE (*GOPHERUS AGASSIZII*)

Listed as Threatened (55 Federal Register 12178, April 2, 1990)

Desert Tortoise (Mojave Population) Recovery Plan approved by USFWS on June 28, 1994

SOUTHWESTERN WILLOW FLYCATCHER (*EMPIDONAX TRAILII EXTIMUS*)

Listed as Endangered (60 Federal Register 10694, February 27, 1995)

Southwestern Willow Flycatcher (*Empidonax traillii extimus*) Recovery Plan approved by USFWS on August 2002.

Other species potentially affected by the activities addressed in this plan that will not be covered under the SLCHCP include the woundfin (*Plagopterus argentissimus*), Virgin River chub (*Gila seminuda*), Yuma clapper rail (*Rallus longirostris yumanensis*), White River springfish (*Crenichthys baileyi baileyi*), Hiko White River springfish (*Crenichthys baileyi grandis*), Pahranagat roundtail chub (*Gila robusta jordani*), and the bald eagle (*Halieaeetus leucocephalus*). “Take” for these species will be authorized either under future Federal Section 7 or Section 10 actions and not under the SLCHCP. However, project-related effects will be addressed in the accompanying NEPA document. Also, best management practices (BMPs) will be implemented by the Permittees to ensure that effects of Covered Activities to these species are minimized.

1.3.6 Covered Activities

The SLCHCP addresses activities to allow orderly growth and development in the southeastern portion of Lincoln County (i.e., commercial/residential development, utility and infrastructure, flood control, County road maintenance activities, Union Pacific Railroad activities, and the conversion of an existing land use to another land use (e.g. agriculture or livestock to urban use or grazing to cultivated and/or irrigated agricultural lands). Groundwater development associated with future development in Lincoln County is not included as a Covered Activity within this SLCHCP. As may be required, separate ESA consultation will occur for any new water developments associated with future development in Lincoln County.

Detailed information on the Covered Activities for the SLCHCP is provided in Section 4 of this document.

1.4 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. Detailed information on the Conservation

Measures for the SLCHCP is provided in Section 6 of this document, and specific biological goals and objectives for conservation of the Covered Species are described in Section 6.1 of this document.

1.4.1 Desert Tortoise Conservation Commitments

Incidental take coverage is sought for the desert tortoise (Mojave population) under the SLCHCP. However, diverse opinions exist regarding the status of the desert tortoise, and most scientists and resource managers concerned about desert tortoises agree that they appear to be declining essentially everywhere across the range of the species. Tortoises are being lost on protected lands and on lands that have been dedicated specifically for the conservation of the species.

The desert tortoise persists in most of its historical, several-state distribution, where it remains a federally threatened species and is a target of substantial conservation planning. While typical recovery actions include dedicating areas with desert tortoise habitat attributes as open space, this may not in itself be a sufficient and effective conservation strategy for this species. Compounding threats, such as disease, can result in continued population declines on protected areas (Boarman and Berry 1995). When multiple threats affect a population, removing one threat will not result in benefits to the population if other limiting factors remain (Boarman and Sazaki 2006).

Recognizing there are multiple threats to the recovery of desert tortoise, the SLCHCP provides a mechanism to provide funding for a full range of Conservation Measures targeting desert tortoise, co-occurring animals and plants, and the landscape areas that support them. The SLCHCP provides a mechanism to make funds available that could initiate and sustain a tortoise Head Start program, which would include on-site translocation efforts that intend to supplement natural tortoise reproduction and recruitment on conserved and adjacent public lands. Other Conservation Measures would include research of the ecological implications of fire and habitat restoration of burned desert tortoise areas and public outreach and education.

Overall, making funds available for these Conservation Measures will contribute directly to better understanding of threats to the desert tortoise and will address the most critical species needs that are identified in the Desert Tortoise Recovery Plan Advisory Committee (DTRPAC) report (Tracy et al. 2004). Funding these measures is intended to contribute directly to tortoise recovery by targeting local populations, as well as populations across the expansive, surrounding Mormon Mesa Recovery Unit, and contributing at a greater scale, including to agency-led, range-wide tortoise planning efforts.

1.4.1.1 Avoidance and Minimization Measures

Avoidance and minimization measures to protect desert tortoise individuals and habitat within the Covered Area include the following:

- Desert Tortoise Clearance Surveys, Process and Transport
- Construction and Maintenance Best Management Practices
- General Site Measures
- Ground Disturbance Activities
- Trash Management
- Worker Education
- LCLA Road, Fencing and Trail Plan
- Predator Monitoring Control
- Temporary Fencing and Permanent Desert Tortoise Barriers
- LCLA Development Agreements

1.4.1.2 Mitigation Measures

Mitigation measures to protect desert tortoise individuals and habitat within the Covered Area include the following:

- Collection of Mitigation Fees
- Head Start and Translocation Programs
- Desert Tortoise Research Efforts
- Habitat Restoration
- Public Education and Outreach

1.4.2 Southwestern Willow Flycatcher Conservation Commitments

1.4.2.1 Avoidance and Minimization Measures

Avoidance and minimization measures to protect riparian habitat along the Meadow Valley Wash for the southwestern willow flycatcher within the Covered Area include the following:

- Pre-Disturbance Surveys and/or Maintenance and Construction Timing
- Roadway Design and Construction
- Worker Education

1.4.2.2 Mitigation Measures

Mitigation measures to protect riparian habitat along the Meadow Valley Wash for the southwestern willow flycatcher within the Covered Area include the following:

- Contribution of funds to cover costs of flycatcher habitat restoration
- 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

1.5 EXPECTED OUTCOMES

The potential outcomes of implementing the Covered Activities and Conservation Measures for each of the Covered Species are described in Section 7: Expected Outcomes of this document. Conclusions are drawn for each individual species considered, based on comparing the Potential Effects outlined in Section 5 with the Conservation Measures identified in Section 6. Where avoidance and minimization measures could not reduce effects to low or undetectable levels, mitigation measures have been used to offset the effects to the Covered Species.

1.6 IMPLEMENTATION OF THE SLCHCP

The Board of Lincoln County Commissioners (BLCC) will be responsible for the administration and implementation of the SLCHCP under the conditions of the Section 10 permits. The other Permittees will be responsible for implementation of the SLCHCP obligations specific to them. The BLCC will utilize one committee, the Implementation and Monitoring Committee (IMC) to facilitate implementation of the SLCHCP. A Plan Facilitator will be identified to administer the SLCHCP implementation process. Technical Advisor(s) will be available as needed to provide specific technical guidance related to technical issues associated with implementation of the SLCHCP. Funding for implementation of the SLCHCP is expected to come from mitigation fees and the LCLA GID ad valorem tax, and supplemental funding sources as needed.

Implementation of the SLCHCP; the structure, roles and responsibilities of the plan facilitator, IMC, and Permittees involved; and proper funding of the SLCHCP is further summarized in Section 8: Plan Implementation and Section 9: Funding, respectively.

1.7 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 (refer to Volume III: Appendix A). 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 for this 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 US Fish and Wildlife Service (USFWS), the Nevada Department of Wildlife (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 list of TSC members is provided in Volume III: Appendix D.

A Notice of Intent to prepare an Environmental Impact Statement (EIS) was filed in the Federal Register on July 5, 2001, and public workshops were held in late June 2002 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. All meetings were open to the public and input from the workshops and the TSC meetings were integral to the initial formulation of the concepts addressed in this plan. Throughout the development of the draft plan, written and oral public comments were received and addressed in the draft as appropriate. In July 2006, a series of public workshops were conducted in the towns of Caliente, Alamo, and Mesquite to update the public on the status of the SLCHCP.

1.8 LITERATURE CITED

Boarman, W.I., and K.H. Berry. 1995. Common Ravens in the Southwestern United States, 1968-92. In Our living resources: A report to the nation on the distribution, abundance, and health of U.S. plants, animals, and ecosystems (E. T. Laroe, ed.) Pp.73-75. U.S. Department of the Interior--National Biological Service, Washington D.C.

Boarman, W.I., Sazaki, M., 2006. A highway's road-effect zone for desert tortoises (*Gopherus agassizii*). Journal of Arid Environment 65, 94–101.

Bureau of Land Management (BLM). 2000. Approved Caliente Management Framework Plan Amendment and Record of Decisions for the Management of Desert Tortoise Habitat. Ely Field Office, Ely, Nevada. September 2000.

Center for Business and Economic Research, University of Nevada, Las Vegas. 2006. Clark County Population Index. Available on the Internet at: http://www.cber.unlv.edu. Accessed on October 3, 2006.

Lincoln County. 2006. Lincoln County Master Plan. Lincoln County, Nevada.

Nature Conservancy, The. 2002. Site Conservation Plan for the Mormon Mesa Desert Wildlife Management Area. Report prepared by The Nature Conservancy for the USFWS.

Nature Conservancy, The. 2003. Antelope and North Spring Valleys, Steptoe Valley & Uplands, Newark Valley Extended Watershed and Meadow Valley Wash & Uplands Conservation Area Assessment Executive Summary.

Nevada State Demographer's Office. 2006. Available on the Internet at: http://www.fedstats.gov/qf/states/32/32017.html.

Regional Environmental Consultants (RECON). 2000. Final Clark County Multiple Species Conservation Plan and Environmental Impact Statement for Issuance of a Permit to Allow Incidental Take of 79 Species in Clark County, Nevada. Prepared for Clark County Dept. of Comprehensive Planning and USFWS. September 2000.

Tracy, C.R., R. Averill-Murray, W.I. Boarman, D. Delehanty, J. Heaton, E. McCoy, D. Morafka, K. Nussear, B. Hagerty, P. Medica. 2004. Desert Tortoise Recovery Plan Assessment. Reno, NV, Biological Resources Research Center (BRRC), University of Nevada.

U.S. Fish and Wildlife Service (USFWS) and National Marine Fisheries Service (NMFS). 1996. Endangered Species Habitat Conservation Planning Handbook. November 1996.

U.S. Fish and Wildlife Service (USFWS). 1994. Desert Tortoise (Mojave Population) Recovery Plan. Prepared for Regions 1, 2 and 6 of the USFWS, Portland, OR.

U.S. Fish and Wildlife Service (USFWS). 2002. Southwestern Willow Flycatcher Recovery Plan (Final). USFWS Division of Ecological Services, Albuquerque, New Mexico.

Washington County Habitat Conservation Plan Steering Committee and SWCA, Inc., Environmental Consultants. 1995. Habitat Conservation Plan, Washington County, Utah. Submitted by the Washington County Commission, Utah to the U.S. Fish and Wildlife Service.

Section 2: Covered Area

2.1 ENVIRONMENTAL SETTING

The Covered Area is located in the southeastern portion of Lincoln County, Nevada (Figure 1-2). 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). In addition to privately-owned lands, non-Federal land in the Covered Area is under the jurisdiction of Lincoln County, City of Caliente, and Union Pacific Railroad (UPRR). The Covered Area also includes disposal lands proposed to be sold by the BLM including the proposed Alamo Industrial Park and Community Expansion area (855 acres) in Sections 4, 5, 8 and 9 of Township 7 South, Range 61 East MDM and the proposed BLM disposal lands around Alamo (approximately 3,461 acres) and a 640-acre parcel in Section 36, Township 11 South, Range 69 East ("Section 36 disposal parcel"). The Covered Area specifically excludes State Park land, those lands owned or leased by Coyote Springs Investment, LLC, the landfill owned and operated by the City of Mesquite within the LCLA land area and certain other privately-owned lands, all totaling approximately 49,070 within southeastern Lincoln County (refer to Figure 1-1).

The Covered Area is typical of Basin and Range topography, 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 along an east/west course. 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 LCLA lands, which lie east of the Mormon Mountains.

2.1.1 Climate

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.

2.1.2 Surface Water and Groundwater Resources

2.1.3 Surface Waters

All watersheds in Lincoln County are entirely within the Colorado River Hydrographic Basin. Few perennial streams or rivers exist in the county; Meadow Valley Wash and Clover Creek are the only perennial streams in the Covered Area. These streams, plus ephemeral washes such as the Pahranagat Wash, ultimately drain into the Muddy River.

The Pahranagat (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 Lincoln 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. 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).

2.1.4 Groundwater Resources

Groundwater occurs in carbonate, alluvial, and volcanic geologies in Lincoln County. Predominantly, groundwater development has occurred in the basin fill aquifer. However, extensive groundwater development is planned for the carbonate aquifer in southeastern Nevada. Section 131 of the Lincoln County Conservation, Recreation, and Development Act of 2004 required a study to investigate groundwater quantity, quality, and flow characteristics in the deep carbonate and alluvial aquifers of White Pine County, Nevada, and any groundwater basins that are located in White Pine County, Nevada, or Lincoln County, Nevada, and adjacent areas in Utah. A draft of this study was issued on June 2007 (USGS 2007, http://pubs.usgs.gov/of/2007/1156/).

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 2-1.

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 (refer to Section 4.2.5.1 in the SLCHCP EIS for a discussion of permitted groundwater rights).

Table 2-1: Groundwater Basins in the Covered Area

Basin #	Basin Name	Est. Perennial Yield (Acre-Feet)	Permitted Water Rights (Acre-Feet/Year)	Designated Groundwater Basin (Area or Sub-Area)**
181	Dry Lake Valley*	2,500	56.56	No
182	Delamar Valley	3,000	7.24	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, 2007; Nevada State Engineer Ruling 5612, February 2007.

*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 (NDWR No Date)

2.1.5 Geology and Soils

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 the Covered Area. Extensional forces developed within the Basin and Range province 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. Volcanic activity increased

with extensional forces and accompanying thinning of the continental thrust. Valley fill within the region contains the erosional remnants of the mountain blocks.

Soils within the Covered Area are mostly stony or gravelly loam of varying degrees, and mostly alluvium derived from mixed rocks. 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.

The LCLA lands, in the extreme southeastern corner of the Covered Area, consist of two different soil associations, Mormon Mesa-Tonopah-Arada and Typic Torriothents-Badland. The Mormon Mesa-Tonopah-Arada soils are gravelly to gravelly fine sandy loam, well to excessively drained residuum and colluvium from lacustrine sediments and alluvium from mixed rocks. The Typic Torriothents-Badland soils are gravelly sandy loam, well-drained residuum and colluvium from lacustrine sediments, found on fan piedmonts and backslope pediments.

2.1.6 Biological Community

2.1.6.1 Vegetation

All of the vegetation communities within the Covered Area are located within the Mojave Desert biome. The vegetation classes occurring within the Covered Area are described below.

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 640-acre parcel “Section 36 disposal 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 (*Ceratoides 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 is 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*), honey mesquite (*Prosopis glandulosa*), screwbean mesquite (*Prosopis pubescens*), and desert willow (*Chilopsis linearis*). Non-native tamarisk or salt-cedar (*Tamarix ramossisima*) has been introduced into this vegetation class.

AGRICULTURE

A portion of land within the Covered Area (approximately 7,103.55 acres) (Bio-West 2005a, b) 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.

2.1.6.2 Fish and Wildlife

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, under ground 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 birds and mammals. Eight big game and 47 small game wildlife water developments are located in the western portion of the SLCHCP Covered Area (BLM 2007a). 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 vegetation and plant species diversity. Riparian communities, as found along portions of the washes, 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*) and Merriam's kangaroo rat (*Dipodomys merriamii*). Big game species such as desert bighorn sheep (*Ovis Canadensis nelsoni*) and mule deer (*Odocoileus hemionus*) may be found within the Covered Area.

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 2005). Of particular importance for bird diversity within the Covered Area are the small patches of mesquite, desert willow, or salt cedar that occur in scattered locations along the Meadow Valley Wash 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 nonnative house sparrow (*Passer domesticus*), and the federally-endangered southwestern willow flycatcher (*Empidonax traillii extimus*).

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*), 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*) and sidewinder (*Crotalus cerastes*). Amphibians present in the Covered Area include the red-spotted toad (*Bufo punctatus*) and Arizona toad (*B. microscaphus*).

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 desert 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.

2.2 EXISTING RESOURCE USES

2.2.1 Land Use and Resource Management

Lincoln County is located in southeastern Nevada north of the Las Vegas and south of Ely. The County is adjacent to Utah and Arizona on the east, Nye County to the west, White Pine County to the north, and Clark County to the south. Lincoln County is the third largest county in Nevada with a land area of 10,650 square miles (6,816,000 acres). As stated previously in Section 1.1.1.2, the Federal Government manages approximately 98 percent of the total land within Lincoln County.

Fewer than 4,800 citizens occupy the 10,650 square miles contained within Lincoln County. Much of the total County population of 4,738 people is concentrated in the towns of Caliente and Alamo (source: http://www.fedstats.gov/qf/states/32/32017/html). Land use within the Alamo town boundary is comprised primarily of residential, commercial, industrial, agricultural, and vacant and public/community land uses. The

primary land use adjacent to the town is agriculture. The Alamo area is also located within the Desert Military Operation Area (DMOA) administered by the US Air Force. Land use and development in Alamo are governed by the Alamo Land Use Plan and the Lincoln County planning ordinances, which include the county zoning ordinance and building codes.

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 (Figure 1-2).

Lincoln County's transportation system consists of major highways (i.e., US Highway 93, State Route 375, etc.), collector streets, local streets and mountain/rural roads. US Highway 93 is a north-south arterial that connects Interstate 15 in Clark County with Ely, Wells, and Idaho to the north and is known as the Great Basin Highway. US Highway 93 also serves Alamo, Ash Springs, Crystal Springs, Caliente, Panaca, and Pioche. State Route (SR) 375, also known as the Extraterrestrial Highway, lies approximately 12 miles north of Alamo at Crystal Springs and connects Highway 93 with Highway 6 and Highway 95 at Tonopah.

2.2.2 Agricultural Resources

Farming and ranching were traditionally major parts of rural Nevada's economic base. However, over the past several decades, that role has been largely supplanted by tourism, mining, and government. Within the Covered Area, farming and livestock grazing activities occur primarily along the Meadow Valley Wash and Clover Creek areas. 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).

The most current agriculture data release is from the 2002 agriculture census. The total farm acreage in Lincoln County as of 2002 was estimated at about 46,500 acres, down from 48,497 acres from 1997, a difference of 16 percent. Raising livestock, mainly cattle, is the principal source of cash income for most farming operations in southern Lincoln County (BLM 2005). All livestock grazing allotments within the BLM Ely District are classified as perennial allotments. Livestock grazing allotments within the southern portion of Lincoln County are within the Mojave Desert ecological system. Livestock grazing is administered on 143 allotments by the Ely Field Office and on 83 allotments by the Caliente Field Station (BLM 2005).

2.2.3 Recreational Resources

The large percentage of BLM, USFS, and USFWS-administered lands within Lincoln County, along with the existence of five state parks, provides tremendous recreational opportunities (Figure 1-1). The primary recreation activities in southeastern Lincoln County include hunting, camping, sightseeing, fishing, photography, and off-road vehicle use. The BLM maintains a developed recreation site at Ash Springs, approximately eight miles northwest of the town of Alamo. The towns of Caliente and Alamo provide additional recreational opportunities, such as tennis courts, lighted ball fields, libraries, museums, and rodeo arenas. Lincoln County also has some excellent water recreation resource areas such as Beaver Dam, Echo Valley Reservoir, Echo Canyon Reservoir, and Pahranagat lakes.

2.2.4 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). Additional background information on this region can be found in BLM's Final Proposed Ely Resource Management Plan (BLM 2007a) and the State Historic Preservation Office's Archaeological Element (Lyneis 1982).

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 LCLA Phase I Implementation from May 14 to 27, 2001 by Albion Environmental, Inc. (Albion) on an estimated 7,200 acres of the LCLA lands. This total includes approximately 5,570 acres subjected to pedestrian survey, approximately 750 acres considered too steep or dangerous to survey, and approximately 880 acres to be disposed during years 2 through 6 of the LCLA of 2000 (Albion 2001).

As a result of the pedestrian inventory, twelve (12) archeological sites and 65 isolates were identified and recorded on the LCLA lands surveyed. The archeological sites included one complex lithic scatter, three simple lithic scatters, an isolated rock hearth feature, a cluster of three hearth features, and six toolstone-quarrying loci. The isolates predominantly relate to prehistoric activities and most are lithic quarrying occurrences, containing a few flakes, cores, or tested cobbles. Approximately, one-third of all the prehistoric isolates relates to tool repair efforts or events involving discard or loss. Two isolates are definitely historic (a 1934 benchmark and two sanitary cans, an iron wheel), but a few cairns of limestone cobbles encountered during the survey could be related to historic surveying or grazing practices (Albion 2001). As a result of the cultural resources inventory and surface collection at 7 of the 12 archeological sites, the date recovery efforts completed at the sites negates any effects of the build-out of the LCLA lands on historic properties.

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 the draft EIS for the SLCHCP). 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.

BLM DISPOSAL LANDS

640-ACRE SECTION 36 DISPOSAL PARCEL

In conjunction with studies being prepared for a proposed coal-fired power plant, cultural resource inventories were conducted to identify archaeological and historical resources for the Section 36 640-acre disposal parcel. A Class I existing information inventory provided the locations of previously recorded sites on the parcel, 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 (BLM 2007b).

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 on the parcel subject to disposal by BLM (BLM 2007b).

In summary, 19 cultural resources are situated on the parcel subject for disposal by BLM. Seven prehistoric rock alignments are recommended as eligible for nomination to the National Register of Historic Places, while 12 sites are recommended as ineligible (BLM 2007b).

ALAMO INDUSTRIAL PARK AND COMMUNITY EXPANSION LAND SALE AREA

A Class III cultural resource survey was conducted of the subject 855 acres 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 Nevada Department of Transportation (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. Testing and, if warranted, data recovery of these two sites will occur prior to sale of these lands by BLM.

OTHER PRIVATELY-OWNED LANDS ALONG THE MEADOW VALLEY WASH 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 or railway maintenance. Any cultural or paleontological analysis of effects has already been addressed for sites which already have been disturbed (BLM 2007a).

2.3 LITERATURE CITED

Albion Environmental, Inc. (Albion). 2001. Archeological Inventory of the Lincoln County Land Act Lands. Summary Report, Year 1 Lands (letter report to the BLM Ely Field office). June 7, 2001.

Bio-West, Inc. 2005a. Meadow Valley Wash Final Baseline Ecological Assessment. March 2005. Prepared for Lincoln County, Nevada. 105 p. plus appendices.

Bio-West, Inc. 2005b. Meadow Valley Wash Post-flood Vegetation Assessment. September 2005. Prepared for the Bureau of Land Management, Ely Field Office.

Bureau of Land Management (BLM). 2005. Draft Resource Management Plan / Environmental Impact Statement for the Ely District. Ely Field Office. Ely, Nevada. July 2005.

Bureau of Land Management (BLM). 2007a. Ely Proposed Resource Management Plan/Final Environmental Impact Statement. Ely Field Office, Nevada. November 2007.

Bureau of Land Management (BLM). 2007b. Draft Environmental Impact Statement (EIS) for the Toquop Energy Project in Lincoln County, Nevada. Ely Field Office, Nevada. October 2007.

Fowler, C.S. 1986. Subsistence. In Great Basin. W. d'Azevedo, ed. Pp. 64-97. Handbook of North American Indians, Vol. 11. Washington, DC: Smithsonian Institution.

Great Basin Bird Observatory (GBBO). 2005. Landbirds of Nevada and the Habitats They Need: A Resource Manager's Guide to Conservation Priority Species. Great Basin Bird Observatory Technical Report No. 05-01. Great Basin Bird Observatory, Reno, Nevada.

Lyneis, M.M. 1982. an archaeological element for the Nevada Historic Preservation Plan. Carson City. Nevada Division of Historic Preservation and Archaeology.

Madsen, D.B., and D. Rhode. 1994. Across the West: Population Movement and the Expansion of the Numa. Salt Lake City: University of Utah Press.

Provencher, L., J. Nachlinger, T. Forbis, and W.M. Morril. 2003. Antelope and North Spring Valleys, Steptoe Valley and Uplands, Newark Valley Extended Watershed, and Meadow Valley Wash and Uplands conservation area assessment executive summary. Revised final draft. The Nature Conservancy of Nevada. Quick_Stats/index.asp. Accessed on February 14, 2007.

United States Geological Survey (USGS). 1999. GIS layer of springs in Nevada.

United States Geological Survey (USGS). 2005. BARCASS fact sheet. Available on the Internet at: http://nevada.usgs.gov/barcass/USGSfactsheet2005-3035.pdf. Accessed on April 27, 2007.

United States Geological Survey (USGS). 2007. Available on the Internet at: http://pubs.usgs.gov/of/2007/1156/. Accessed in 2007.

Willeg, J.A., and C.M. Aikens, eds. 1988. Early Human Occupation in Far Western North America: The Clovi-Archaic Interface. Nevada State Museum Anthropological Papers 21. Carson City.

This Page Intentionally Left Blank

Section 3: Covered Species

3.1 COVERED SPECIES SELECTION PROCESS

In 2001, the USFWS circulated a report amongst the members of the SLCHCP TSC which listed approximately 86 species of concern in Lincoln County.

In consultation with the USFWS, Lincoln County decided that only federally threatened and/or endangered species known to occur within southeastern Lincoln County (i.e., desert tortoise and southwestern willow flycatcher) would be covered under the SLCHCP. As discussed in the USFWS Region 1 Guidelines for Determining Covered Species Lists (1995), Covered Species are defined as:

- Those for which sufficient information is known and for which adequate existing management prescriptions exist or can be easily defined and implemented sufficient to support an application for a Section 10 permit(s).
- Those species about which a great deal of information may not be available but which are definitively known to share habitat with other Covered Species whose management prescriptions meet the requirements in the above stipulation. For those species, it is believed that the management prescriptions (existing or easily defined) for other Covered Species would benefit sufficiently to support application for a Section 10 permit(s).
- Those species whose listing appears imminent, unless Conservation Measures are instituted which would be likely to assure survival and recovery of such species in the wild.

3.2 DESERT TORTOISE

Scientific Name: *Gopherus agassizii*

3.2.1 Protection Warranted

3.2.1.1 Endangered Species Act

- August 4, 1989: Populations north and west of the lower Colorado River in Arizona and Utah (excluding the Beaver Dam slope population) listed as endangered under an emergency rule, without critical habitat (54 FR 32326–32331).
- April 2, 1990: Entire Mojave population west of the lower Colorado River in California and Nevada, and north of the lower Colorado River in Arizona and Utah, including the Beaver Dam slope, listed as threatened (55 FR 12178–12191).
- February 8, 1994: Critical habitat designated (59 FR 5820–5866).
- June 28, 1994: Final Recovery Plan approved (USFWS 1994).

3.2.1.2 Nevada Administrative Code

- Classified as threatened under NAC 503.080 (Reptiles: Classification).

3.2.1.3 Other Protections

- Nevada State Imperiled (S2S3).

3.2.2 General Description

The desert tortoise is a large, herbivorous reptile found in portions of California, Arizona, Nevada, and Utah. It also occurs in Sonora and Sinaloa, Mexico. The Mojave population of desert tortoise includes those animals living north and west of the Colorado River in the Mojave Desert of California, Nevada, Arizona, southwestern Utah, and in the Sonoran Desert in California. Desert tortoises reach 8 to 15 inches in carapace length. Adults have a domed carapace and relatively flat, unhinged plastron. Shell color is brownish, with yellow to tan scute centers. The forelimbs are flattened and adapted for digging and burrowing. Optimal habitat has been characterized as creosote bush scrub (*Larrea tridentata*) in which precipitation ranges from 2 to 8 inches, where a diversity of perennial plants is relatively high, and production of ephemerals is high (Luckenbach 1982). Soils must be friable enough for digging of burrows, but firm enough so that burrows do not collapse. Desert tortoises occur from below sea level to an elevation of 7,300 feet, but the most favorable habitat occurs at elevations of approximately 1,000 to 3,000 feet (Luckenbach 1982).

3.2.3 Ecology

Desert tortoises are most commonly found within the desert scrub vegetation type, primarily in creosote bush scrub. In addition, they occur in succulent scrub, cheesebush scrub, blackbrush scrub, hopsage scrub, shadscale scrub, microphyll woodland, Mojave saltbush-allscale scrub, and scrub-steppe vegetation types of the desert and semidesert grassland complex (USFWS 1994). Within these vegetation types, desert tortoises potentially can survive and reproduce where their basic habitat requirements are met. These requirements include a sufficient amount and quality of forage species; shelter sites for protection from predators and environmental extremes; suitable substrates for burrowing, nesting, and over wintering; various plants for shelter; and adequate area for movement, dispersal, and gene flow. Throughout most of the Mojave Region, desert tortoises occur most commonly on gently sloping terrain with soils ranging from sandy-gravel and with scattered shrubs, and where there is abundant inter-shrub space for growth of herbaceous plants. Throughout their range; however, desert tortoises can be found in steeper, rockier areas.

The size of desert tortoise home ranges varies with respect to location and year. Females have long-term home ranges that are approximately half that of the average male, which range from 25 to 200 acres (Berry 1986). Over its lifetime, each 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, the ability of desert tortoises to drink while surface water is available following rains may be crucial for desert tortoise survival. During droughts, desert tortoises forage over larger areas, increasing the likelihood of encounters with sources of injury or mortality including humans and other predators.

Desert tortoises are most active during the spring and early summer, when annual plants are most common. Additional activity occurs during warmer fall months and occasionally after summer rainstorms. Desert tortoises spend the remainder of the year in burrows, escaping the extreme conditions of the desert. In Nevada and Arizona, desert tortoises are considered to be active from approximately March 15 through October 15. Further information on the range, biology, habitat and ecology of the desert tortoise can be found in Berry and Burge (1984), Bury et al. (1994), Germano et al. (1994), Luckenbach (1982), and USFWS (1994).

3.2.4 Life History

3.2.4.1 Reproduction

Desert tortoises possess a combination of life history and reproductive characteristics that affect the ability of populations to survive external threats. Desert tortoises grow slowly, require 15 to 20 years to reach sexual maturity, and have low reproductive rates during a long period of reproductive potential (Turner et al. 1984, Tracy et al. 2004). Desert tortoises emerge to feed and mate in late winter or early spring. They typically remain active throughout the spring, and sometimes emerge again after summer storms (Luckenbach 1982). At Yucca Mountain, Nye County Nevada (Northeastern Mojave Recovery Unit), Mueller et al. (1998) estimated

that the mean age of first reproduction was 19 to 20 years; clutch size (1 to 10 eggs) and annual fecundity (0 to 16 eggs) were related to female size but annual clutch frequency (0 to 2) was not. Further, Mueller suggested that body condition during July to October may determine the number of eggs a desert tortoise can produce the following spring. The number of eggs that a female desert tortoise can produce in a season is dependent on a variety of factors including environment, habitat, availability of forage and drinking water, and physiological condition (Henen 1997, McLuckie and Fridell 2002).

3.2.4.2 Diet

Desert tortoises eat a wide variety of herbaceous vegetation, particularly grasses and the flowers of annual plants (Luckenbach 1982). Tortoises are well adapted to living in a highly variable and often harsh environment. In adverse conditions, they retreat to burrows or caves, at which time they reduce their metabolism and loss of water, and consume very little food. Adult desert tortoises lose water at such a slow rate that they can survive for more than a year without access to free water of any kind. Desert tortoises apparently tolerate large imbalances in their water and energy budgets (Nagy et al. 1998). This ability enables them to survive lean years and exploit resources that are only periodically available. During years of average or better than average precipitation and forage production, desert tortoises can balance their water budgets and have a positive energy balance, providing opportunity for growth and reproduction (Nagy et al. 1998). All the mechanisms by which desert tortoises maintain their energy and water balance in the face of stochastic availability of resources are still not clear, but desert tortoises seem to be flexible in their mechanisms of energy and water gain and in their expenditures of these resources.

3.2.4.3 Genetics and Morphology

Based on mitochondrial DNA (mtDNA) restriction-fragment polymorphisms, Lamb et al. (1989) described three major genetic units. One unit is found in the Colorado and Mojave deserts and a second in the Sonoran Desert from west-central Arizona to central Sonora. The third major unit is found in southern Sonora and Sinaloa, south of the Yaqui River.

Morphological variation coincides reasonably well with the mtDNA genotypes found north of Mexico. There are three distinct shell phenotypes in the United States: 1) the California phenotype from California and southwestern Nevada; 2) the Sonoran Desert phenotype from Arizona south and east of the Colorado River, and 3) the Beaver Dam Slope phenotype from extreme southwestern Utah and Arizona north of the Grand Canyon. The California and Sonoran Desert phenotypes correspond to the Mojave region and Sonoran Desert mtDNA genotypes, respectively. Thus, based on genetic and morphological criteria, desert tortoise are divided into at least two well-differentiated entities, one in the Sonoran Desert in Arizona and one in the Mojave region. A third may exist in Sonora and Sinaloa, Mexico.

3.2.5 Threats

Threats to the desert tortoise include factors such as loss of habitat from construction projects such as roads, housing and energy developments, and conversion of native habitat to agriculture. Grazing and off-highway vehicle activities not only degrade tortoise habitat but may collapse burrows, killing any tortoises present. Also, threatening the desert tortoise's continuing existence are illegal collection by humans for pets or consumption, predation on juvenile desert tortoises by common ravens and kit foxes, and collisions with vehicles on paved and unpaved roads. A brief summary of threats in the context of the five listing factors used to assess species for listing as threatened or endangered under ESA are described below.

3.2.5.1 The Present or Threatened Destruction, Modification, or Curtailment of Its Habitat or Range

3.2.5.1.1 Land Use Change

Habitat is deteriorating and has been lost in many parts of the tortoise's range due to an accelerating rate of human uses of the desert. Loss of habitat from a variety of human land uses has occurred throughout the Mojave Desert and is particularly acute all over the western Mojave, the Las Vegas area, and the St. George

area in Utah. Urbanization in the western Mojave has grown significantly in recent years, especially near the communities of Lancaster, Palmdale, Victorville, Ridgecrest, and Barstow. Other permanent human land uses that have an adverse impact on tortoises and their habitat include agricultural land conversion, construction of roads, some military activities, energy and mineral development, waste disposal areas and other land use. Grazing and off-highway vehicle (OHV) activity have further degraded habitat.

3.2.5.1.2 Invasive Plants

Nonnative plant species such as red brome (*Bromus rubens*), filaree (*Erodium cicutarium*), and split grass (*Schismus arabicus*) have been introduced as result of grazing and 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). 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). Indeed, over 500,000 acres of desert lands burned in the Mojave Desert in the 1980s. Changes in plant communities caused by alien plants and recurrent fire may negatively affect desert tortoise by altering habitat structure and species composition of their food plants (Brooks and Esque 2002).

Proportional increases in non-native plant species may also contribute to the incidence of tortoise disease. Desert tortoises have been found to prefer native vegetation over aliens (Jennings 1993). Alien 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).

3.2.5.2 Over-utilization for Commercial, Recreational, Scientific, or Educational Purposes

Desert tortoises have long been a popular pet in the southwest. It is not known to what extent collecting has reduced wild populations, but it has continued to be a concern across all states in the region. Vandalism, including shooting and crushing of tortoises under vehicles, has also been documented.

3.2.5.3 Disease or Predation

Disease is a natural phenomenon in wild populations of animals, and can contribute to population declines by increasing mortality and reducing reproduction. However the effects of disease may be enhanced by natural and/or anthropogenic changes in habitat. Changing ecological condition as a result of natural events or human-caused activities may stress individuals and result in a more severe clinical expression of Upper Respiratory Tract Disease (URTD). Additionally, URTD appears to be a complex, multi-factorial disease interacting with other stressors to affect desert tortoises (Tracy et al. 2004). For example, the disease occurs mostly in relatively dense desert tortoise populations, as mycoplasmal infections are dependent upon higher densities of the host (Tracy et al. 2004). Malnutrition has also been associated with several disease outbreaks in both humans and turtles. What is currently known with certainty about disease in the desert tortoise relates entirely to individual desert tortoises and not populations; however, virtually nothing is known about the demographic consequences of disease (Tracy et al. 2004).

Predation of young tortoises by ravens is a local and potentially growing threat to the species. In recent years, raven predation on juvenile desert tortoises has been documented in several locations and tortoises in certain smaller size classes could not be found. Recruitment of young tortoises into the adult population probably has been significantly reduced in these localities. For example, at the Desert Tortoise Natural Area, a protected area of 21,320 acres in the western Mojave Desert in California, tortoise eggs are still being laid and hatched, as shown by the presence of very small tortoises. However, raven predation seems to have severely curtailed the abundance of young tortoises (BLM et al. 1989, as cited in USFWS 1994).

3.2.5.4 Inadequate Regulatory Mechanisms

STATE PROTECTION

All four states that the Mojave tortoise inhabits have laws that provide varying levels of protection for individual desert tortoises.

NEVADA

State of Nevada laws afford limited protection to the desert tortoise. Section 501.110.1(d) of the NRS sets forth that reptiles must be classified as either protected or unprotected. NRS section 501.1102 states that protected wildlife may be further classified as sensitive, threatened, or endangered. Section 503.080.1(a) of the NAC classifies desert tortoise as protected and rare outside the urban areas of Clark County (Las Vegas). NRS Section 503.597 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.

CALIFORNIA

The California Fish and Game Commission adopted a regulation change on June 22, 1989, to amend the California Code of Regulations, § 670.5(b)(4) of title 14, to add the desert tortoise as a state threatened species. Under the Fish and Game Code, article 3, Section 2080 prohibits the import or export of endangered or threatened species. This section also indicates that no person shall take, possess, purchase, or sell within the state, any listed species, or any part or product thereof, except as otherwise provided in state law or regulation. California law does allow the lawful possession of tortoises that are hatched in captivity or that were previously captives. Owners of such tortoises are required to obtain a license from the California Department of Fish and Game for these animals.

The California Fish and Game Code, article 4, Section 2090 requires that each state agency shall consult with the California Department of Fish and Game to ensure that any action authorized, funded, or carried out by that state lead agency is not likely to jeopardize the continued existence of any state-listed species. This legislation authorizes the California Department of Fish and Game to regulate the modification of tortoise habitat that could occur through the actions of another state agency. California implemented this requirement in June 1989 and is the only state with such authority.

ARIZONA

Removal of desert tortoises from the wild is prohibited under Arizona Game and Fish Department (AGFD) regulations, and has been prohibited since 1989. The sale of tortoises and the export of tortoises from the state also are prohibited. Prior to that, anyone with an Arizona hunting license could take and possess one tortoise for each person in that household. No provisions have been made to permit or otherwise identify those tortoises that were in possession prior to January 1, 1989. Thus, enforcement of the state ban on take may not be possible unless the actual taking of a tortoise from the wild is observed. There is no state authority in Arizona to regulate the modification of desert tortoise habitat.

UTAH

All Utah wildlife species are classified as prohibited, controlled, or noncontrolled. The desert tortoise is considered a “prohibited reptile” under Utah Rule R608—3 Collection, Importation, Transportation, and Subsequent Possession of Zoological Animals. Prohibited species are zoological animals that are prohibited from collection, importation, transportation, possession, sale, transfer, or release because they pose unacceptable disease, ecological, environmental, or human health or safety risks. No state regulations exist to stop loss of tortoise habitat through land development or other actions that result in habitat degradation or loss.

ADDITIONAL REGULATORY MECHANISMS

The desert tortoise has been considered a sensitive species by numerous government agencies, including perhaps most importantly the BLM, for several years. However, sensitive species do not receive full consideration and mitigation when the authorities of other Federal laws, such as the Taylor Grazing Act and

the 1872 Mining Law, are being implemented. However, under the auspices of the ESA, Federal agencies must consult with the USFWS regarding all actions that may adversely affect the tortoise. The numerous activities occurring on the vast landholdings of the BLM, Department of Defense, and U.S. National Park Service (NPS) within the tortoise's range require extensive consultation between the USFWS and these Federal agencies.

During the period of emergency listing and subsequent listing as threatened, the impacts of Federal actions have been subject to the rigorous evaluation that results from the ESA Section 7 consultation process. The consultations completed to date have insured that actions authorized, funded, or carried out by Federal agencies have not been likely to jeopardize the continued existence of the Mojave desert tortoise.

3.2.5.5 Other Natural or Manmade Factors affecting the Species Continued Existence

An ancillary effect of continued declines in a species' numbers and loss of habitat is the fragmentation of remaining populations. Long-term survival of these isolated pockets will be aggravated by normal random fluctuations in the population or the environment and catastrophic events that could lead to extirpation. Of particular concern with the tortoise is the continued drought that has affected most of its Mojave range over the past several years. The resulting physiological stress caused by poor nutrition can be accentuated by other perturbations in the environment, such as the increased presence of predators, fire, OHVs, and competition for existing forage. The synergistic effects of these disturbances could result in the complete inability of both individual animals and isolated groups to return to and maintain population levels that are viable on a long-term basis.

3.2.6 Conservation

On August 4, 1989, the USFWS published an emergency rule listing the Mojave population of the desert tortoise as endangered (54 FR 42270). On April 2, 1990, the USFWS determined the Mojave population of the desert tortoise to be threatened (55 FR 12178). Reasons for the determination included significant population declines, loss of habitat from construction projects such as roads, housing and energy developments, and conversion of native habitat to agriculture. Grazing and OHV activity have degraded additional habitat. Also cited as threatening the desert tortoise's continuing existence was the illegal collection by humans for pets or consumption, URTD, predation on juvenile desert tortoises by common ravens and kit foxes, fire, and collisions with vehicles on paved and unpaved roads.

On June 28, 1994, the USFWS approved the final Desert Tortoise (Mojave Population) Recovery Plan (USFWS 1994). The Desert Tortoise Recovery Plan divides the range of the desert tortoise into 6 recovery units and recommends establishment of 14 Desert Wildlife Management Areas (DWMAs) throughout the recovery units. Within each DWMA, the Recovery Plan recommends implementation of reserve-level protection of desert tortoise populations and habitat, while maintaining and protecting other sensitive species and ecosystem functions. The design of DWMAs should follow accepted concepts of reserve design. As part of the actions needed to accomplish recovery, the Desert Tortoise Recovery Plan recommends that land management within all DWMAs should restrict human activities that negatively impact desert tortoises (USFWS 1994). The DWMAs have been designated by the BLM through development or modification of their land use plans in Arizona, Nevada, Utah, and parts of California.

In Nevada, BLM's Las Vegas, Ely, and Battle Mountain field offices manage desert tortoise habitat; 941,800 acres of desert tortoise habitat were designated as ACECs by the Las Vegas and Ely field offices. The regulation of activities within critical habitat through ESA Section 7 consultation is based on recommendations in the Desert Tortoise Recovery Plan (USFWS 1994).

3.2.7 Recovery Units

There are six recovery units designated for desert tortoise: Northern Colorado, Eastern Colorado, Upper Virgin River, Northeastern Mojave, Eastern Mojave, and Western Mohave. Only the Northeastern and Eastern Mojave Recovery Units are located in Nevada.

3.2.7.1 Northeastern Mojave Recovery Unit

The Northeastern Mojave Recovery Unit occurs primarily in Nevada, but it also extends into California along the Ivanpah Valley and into extreme southwestern Utah and northwestern Arizona. Vegetation within this unit is characterized by creosote bush scrub, big galleta-scrub steppe, desert needlegrass scrub-steppe, and blackbrush scrub (in higher elevations). Topography is varied, with flats, valleys, alluvial fans, washes, and rocky slopes. Much of the northern portion of the Northeastern Mojave Recovery Unit is characterized as basin and range, with elevations from 2,500 to 12,000 feet. Desert tortoises typically eat summer and winter annuals, cacti, and perennial grasses. Desert tortoises in this recovery unit, the northern portion of which represents the northernmost distribution of the species, are typically found in low densities (about 10 to 20 adults per square mile).

A kernel analysis was conducted in 2003-2004 for the desert tortoise (Tracy et al. 2004) as part of the assessment of the 1994 Desert Tortoise Recovery Plan. The analyses revealed several areas in which the kernel estimations for live desert tortoises and carcasses did not overlap. The pattern of non-overlapping kernels that is of greatest concern is those in which there were large areas where the kernels encompassed carcasses but not live animals. These regions represent areas within DWMAs where there were likely recent die-offs or declines in desert tortoise populations. The kernel analysis indicated large areas in the Piute-Eldorado Valley, where there were carcasses but no live desert tortoises. For this entire area in 2001, 165 km (103 miles) of transects were walked, and a total of 6 live and 15 dead desert tortoises observed, resulting in a live encounter rate of 0.06 desert tortoises per mile of transect for this area. This encounter rate was among the lowest that year for any of the areas sampled in the range of the Mojave desert tortoise (Tracy et al. 2004).

Kernel analysis for the Coyote Spring DWMA showed areas where the distributions of carcasses and living desert tortoises do not overlap; however, densities of adult desert tortoises for the region do not show a statistical trend over time. Thus, while there may be a local die-off occurring in the northern portion of this DWMA, this does not appear to influence the overall trend in the region as interpreted by study plot data. Because permanent study plots for this region were discontinued after 1996, if there have been recent declines in numbers they are not reflected in the analysis. Nevertheless, large regions of non-overlapping carcass and live desert tortoise kernels in the regions were not identified adjacent to the Coyote Spring DWMA. The probability of finding either a live desert tortoise or a carcass was relatively very low for Beaver Dam Slope and Gold-Butte Pakoon, and moderately low for Mormon Mesa/Coyote Spring.

3.2.7.2 Eastern Mojave Recovery Unit

The Eastern Mojave Recovery Unit is situated primarily in California, but also extends into Nevada in the Amargosa, Pahrump, and Piute valleys. In the Eastern Mojave Recovery Unit, desert tortoises are often active in late summer and early autumn, in addition to spring, because this region receives both winter and summer rains and supports two distinct annual floras on which they can feed. Desert tortoises in the Eastern Mojave Recovery Unit occupy a variety of vegetation types and feed on summer and winter annuals, cacti, perennial grasses, and herbaceous perennials. They den singly in caliche caves, bajadas, and washes. This recovery unit is isolated from the Western Mojave Recovery Unit by the Baker Sink, a low-elevation, extremely hot and arid strip that extends from Death Valley to Bristol Dry Lake. The Baker Sink area is generally not considered suitable for desert tortoises. Desert tortoise densities in the Eastern Mojave Recovery Unit can vary dramatically, ranging from 5 to as much as 350 adults per square mile (USFWS 1994).

Ivanpah and Piute–Eldorado valleys contained study plots that were analyzed in the Eastern Mojave Recovery Unit analysis. While there was no overall statistical trend in adult density over time, the 2000 survey at Goffs and the 2002 survey at Shadow Valley indicate low densities of adult desert tortoises relative to earlier years. Unfortunately, there are no data in the latter years for all five study plots within this recovery unit; therefore, while there is no statistical trend in adult densities, one cannot conclude that desert tortoises have not experienced recent declines in this area. The probability of finding a carcass on a distance sampling transect was considerably higher for Ivanpah, Chemehuevi, Fenner, and Piute-Eldorado, which make up the Eastern Mojave Recovery Unit.

3.2.7.3 Revised Recovery Unit Delineation

The prescriptions for recovery in the 1994 Desert Tortoise Recovery Plan were for individual populations and assumed that preserving large blocks of habitat and managing threats in that habitat would be principally all that would be necessary to recover the species. However, that original paradigm, and associated prescriptions, may be wrong. Existing data have revealed population crashes that have occurred asynchronously across the range. There are reports that some populations, which have crashed previously, have subsequently increased in population density. Additionally, all known dense populations of desert tortoises have crashed. This suggests that density-dependent mortality occurs in desert tortoise populations, and that population dynamics may be asynchronous.

These characteristics indicate that desert tortoises may exist in a classic metapopulation structure (Hanski and Gilpin 1997, Levins and Culver 1971), and this should portend profoundly different prescriptions for recovery. In particular, if desert tortoises have historically existed in metapopulations, then connections among habitat patches are a necessary part of conservation prescriptions. Additionally, habitat which is suitable for desert tortoises but currently unoccupied should be regarded as equally necessary for recovery. Long-term persistence cannot be determined from desert tortoise density or desert tortoise numbers alone, but assessment must include the complexities of metapopulation dynamics and the habitat characteristics that promote metapopulation dynamics including habitat connectivity through inefficient corridors (i.e., partial connectivity), asynchrony of subpopulation dynamics, and several separate habitat patches. Some of the characteristics of proper metapopulation function may already have been obviated by proliferation of highways and habitat fragmentation due to satellite urbanization. Thus, management may require artificially facilitating metapopulation processes such as movement among patches.

The genetic distinctness of desert tortoise populations and their pathogens should be assessed to guide all manipulative management actions (e.g. head start program, translocation, habitat restoration, and corridor management). The Desert Tortoise Recovery Plan Assessment Committee (DTRPAC) proposed a revision to the previous delineation of recovery units, or distinct population segments (DPSs), based on new scientific information. The recommended delineations reflect the prevailing concepts of subpopulation "discreteness," and "significance," and incorporate morphological, behavioral, genetic, and environmental information. The DTRPAC's recommendation reduces the number of DPSs from six to five by leaving the original Upper Virgin River and Western Mojave units intact and recombining the four central units into three reconfigured units: Lower Virgin River Desert, Northeastern Mojave Desert (including Amargosa Valley, Ivanpah Valley, and Shadow Valley), and Eastern Mojave and Colorado Desert. These recommended DPSs are based largely on the best resolving biochemical/genetic data of Lamb et al. (1989), Lamb and Lydehard (1994), and Britten et al. (1997). Because these delineations are general and not definitive at this time, more data and analyses are required which may result in additional modification. Although, DPSs have been proposed by the DTRPAC, no DPSs have been officially designated by the USFWS.

The 1994 Desert Tortoise Recovery Plan conceived desert tortoises to be distributed in large populations that required large areas and large densities to recover. However, existing data are consistent with the possibility that desert tortoises have evolved to exist in metapopulations. Metapopulation theory conceives that desert tortoises are distributed in metapopulation patches connected with corridors that allow inefficient and asynchronous movements of individuals among the patches. This paradigm conceives that some habitat patches within the range of desert tortoise will have low population numbers or no desert tortoises at all, and others will have higher population numbers. Movement among the patches is necessary for persistence of the "system." If desert tortoises evolved to exist in metapopulations, then long-term persistence requires addressing habitat fragmentation caused by highways and satellite urbanization. Ensuring the integrity and function of natural corridors among habitat patches might require active management of desert tortoise densities in habitat patches and associated corridors.

3.2.8 Critical Habitat

On February 8, 1994, the USFWS designated approximately 6.45 million acres of critical habitat for the Mojave population of desert tortoise in portions of California (4.75 million acres), Nevada (1.22 million acres), Arizona (339 thousand acres), and Utah (129 thousand acres) (59 FR 5820-5846, also see corrections in 59 FR 9032-9036), which became effective on March 10, 1994. Desert tortoise critical habitat was designated by the

USFWS to identify the key biological and physical needs of the desert tortoise and key areas for recovery, and focuses conservation actions on those areas. Desert tortoise critical habitat is composed of specific geographic areas that contain the primary constituent elements of critical habitat, consisting of the biological and physical attributes essential to the species' conservation within those areas, such as space, food, water, nutrition, cover, shelter, reproductive sites, and special habitats. The specific primary constituent elements of desert tortoise critical habitat are:

- Sufficient space to support viable populations within each of the six recovery units, and to provide for movement, dispersal, and gene flow;
- Sufficient quality and quantity of forage species and the proper soil conditions to provide for the growth of these species;
- Suitable substrates for burrowing, nesting, and overwintering; burrows, caliche caves, and other shelter sites; and
- Sufficient vegetation for shelter from temperature extremes and predators and habitat protected from disturbance and human-caused mortality.

Critical habitat units (CHUs) were based on recommendations for DWMAs outlined in the Desert Tortoise Recovery Plan (Mojave Population) (Figure 3-1) (USFWS 1994). Because the critical habitat boundaries were drawn to optimize reserve design, the CHU may contain both "suitable" and "unsuitable" habitat. Suitable habitat can be generally defined as areas that provide the primary constituent elements.

Although recovery planning for desert tortoise will focus on DWMAs and ACECs, Section II.A.6. of the Desert Tortoise Recovery Plan (USFWS 1994) and Section 2(b) of the ESA provide for protection and conservation of ecosystems on which federally-listed threatened and endangered species depend, which includes both recovery and non-recovery areas. The Mojave Desert ecosystem, of which the desert tortoise and its habitat are an integral part, consists of a dynamic complex of plant, animal, fungal, and microorganism communities and their associated non-living environment interacting as an ecological unit. Actions that adversely affect components of the Mojave Desert ecosystem may directly or indirectly affect the desert tortoise. The Desert Tortoise Recovery Plan further states that desert tortoises and habitat outside recovery areas may be important in the recovery of the tortoise. Healthy, isolated tortoise populations outside recovery areas may have a better chance of surviving catastrophic effects such as disease, than large, contiguous populations (USFWS 1994).

The Desert Tortoise Recovery Plan recommended DWMAs and subsequently, the USFWS designated CHUs based on these proposed DWMAs (USFWS 1994). When designated, desert tortoise critical habitat contained all the primary constituent elements of desert tortoise critical habitat. The following seven principles of conservation biology serve as the standards by which the USFWS determines whether or not the CHUs are functioning properly:

Reserves should be well-distributed across the species' range. The entire range of the Mojave desert tortoise occurs within six recovery units identified in the Desert Tortoise Recovery Plan and at least one DWMA and CHU occurs within each recovery unit. The reserves remain well-distributed across the range of the desert tortoise.

Reserves should contain large blocks of habitat with large populations of target species. The desert tortoise requires large, contiguous areas of habitat to meet its life requisites. Each DWMA and its associated CHUs were designated to conserve contiguous blocks of habitat that exceed 500,000 acres, with the exception of the Upper Virgin River Recovery Unit. The Upper Virgin River Recovery Unit does not meet the minimum size requirement identified in the Desert Tortoise Recovery Plan; however, the USFWS anticipates that reserve-level management will adequately conserve the desert tortoise within this recovery unit. Designation of CHUs were based largely on transect data and included areas with the largest populations of desert tortoises.

Blocks of habitat should be close together. This principle was met when CHUs were designated and remains valid.

Reserves should contain contiguous rather than fragmented habitat. This principle was met when CHUs were designated, and generally continues to be met. Desert tortoise-proof fencing has been constructed along major

roads and highways that traverse critical habitat including Interstate 15 in Nevada and California (Ivanpah Valley DWMA/CHU), U.S. Highway 95 in Nevada (Piute-Eldorado DWMA/CHU), and Highway 58 in California (Fremont-Kramer DWMA/CHU). Major roads and highways alone constitute a barrier to tortoise movements without fencing; however, fencing minimizes take of tortoises, and culverts or underpasses allow for limited tortoise movement across the road or highway.

Habitat patches should contain minimal edge-to-area ratios. This principle was met when CHUs were designated and generally continue to be valid. Notable exceptions include the northern Gold Butte-Pakoon CHU, and the southern termini of the Mormon Mesa, Ivanpah Valley, and Chuckwalla CHUs which have large edge-to-area ratios and further compromised by highways that traverse these relatively narrow areas within the CHUs.

Blocks should be interconnected by corridors or linkages connecting protected, preferred habitat for the target species. Most CHUs are contiguous with another CHU with the exception of Ord-Rodman, Ivanpah Valley, Gold Butte-Pakoon, and Upper Virgin River CHUs. Interstate 15 and the Virgin River separate the Gold Butte-Pakoon CHU from other CHUs in the Northeastern Mojave Recovery Unit. Similarly, Interstate 40 separates the Piute-Eldorado and Chemehuevi CHUs, and Ord Rodman and Superior-Cronese CHUs.

Blocks of habitat should be roadless or otherwise inaccessible to humans. Achieving this principle is the most problematic. A 2001 inventory of roads in the Western Mojave Desert suggests that road density increased from the mid-1980s. Further evaluation should be conducted, especially with the advent of effective mapping capabilities (Tracy et al. 2004). Roads provide means for human access to tortoise habitat, thereby increasing human-tortoise encounters and disturbance of constituent elements.

3.2.8.1 Species Status

3.2.8.1.1 Rangewide

In 1998, the Desert Tortoise Management Oversight Group identified line distance sampling as the appropriate method to determine rangewide desert tortoise population densities and trends. Monitoring of populations using this method is underway across the range of the desert tortoise. Successful rangewide monitoring will enable managers to evaluate the overall effectiveness of recovery actions and population responses to these actions, thus guiding recovery of the Mojave desert tortoise. Rangewide desert tortoise population monitoring began in 2001 and is conducted annually.

The survey results from the data collected as part of the rangewide desert tortoise population monitoring indicate that desert tortoise populations have declined both in numbers of desert tortoises found during surveys and in densities of live desert tortoises at most sites, since the plots were first established 20 to 30 years ago (Berry et al. 2002). Declines of 50 to 96 percent have occurred regardless of initial desert tortoise densities. Increases in the occurrence of shell-skeletal remains have been found to correspond with declines in numbers and densities of live desert tortoises with the exception of certain plots where poaching has been documented (Berry 2003).

Figure 3-1 Desert Tortoise ACECs, Critical Habitat Units (CH) and Recovery Units

Figure 3-1 BACK

Results of desert tortoise surveys at three survey plots in Arizona indicate that all three sites have experienced significant die-offs. Six live desert tortoises were located in a 2001 survey of the Beaver Dam Slope Exclosure Plot (Walker and Woodman 2002). Three had definitive signs of URTD, and two of those also had lesions indicative of cutaneous dyskeratosis. Previous surveys of this plot detected 31 live desert tortoises in 1996, 20 live desert tortoises in 1989, and 19 live desert tortoises in 1980. The 2001 survey report indicated the likelihood that there is no longer a reproductively viable population of desert tortoises on this study plot. Thirty-seven (37) live desert tortoises were located in a 2002 survey of the Littlefield Plot (Young et al. 2002). None had definitive signs of URTD. Twenty-three (23) desert tortoises had lesions indicative of cutaneous dyskeratosis. Previous surveys of this plot detected 80 live desert tortoises in 1998 and 46 live desert tortoises in 1993. The survey report indicated that the site might be in the middle of a die-off due to the high number of carcasses found since the site was last surveyed in 1998. Nine (9) live desert tortoises were located during the mark phase of a 2003 survey of the Virgin Slope Plot (Goodlett and Woodman 2003). The surveyors determined that the confidence intervals of the population estimate would be excessively wide and not lead to an accurate population estimate, so the recapture phase was not conducted. One desert tortoise had definitive signs of URTD. Seven (7) desert tortoises had lesions indicative of cutaneous dyskeratosis. Previous surveys of this plot detected 41 live desert tortoises in 1997 and 15 live desert tortoises in 1992. The survey report indicated that the site might be at the end of a die-off that began around 1996-1997.

The Western Mojave has experienced marked population declines as indicated in the Recovery Plan and continues today. Spatial analyses of the Western Mojave show areas with increased probabilities of encountering dead rather than live animals, areas where kernel estimates for carcasses exist in the absence of live animals, and extensive regions where there are clusters of carcasses where there are no clusters of live animals. Collectively, these analyses point generally toward the same areas within the Western Mojave, namely the northern portion of the Fremont-Kramer DWMA and the northwestern part of the Superior–Cronese DWMA. Together these independent analyses, based on different combinations of data, all suggest the same conclusion for the Western Mojave. Data are not currently available with sufficient detail for most of the range of the desert tortoise with the exception of the Western Mojave (Tracy et al. 2004).

Declines in desert tortoise abundance appear to correspond with increased incidence of disease in desert tortoise populations. The Goffs permanent study plot in Ivanpah Valley, California, suffered 92 to 96 percent decreases in desert tortoise density between 1994 and 2000. The high prevalence of disease in Goffs tortoises likely contributed to this decline (Christopher et al. 2003). Upper respiratory tract disease has not yet been detected at permanent study plots in the Sonoran Desert of California, but is prevalent at study plots across the rest of the species' range and has been shown to be a contributing factor in population declines in the Western Mojave Desert (Brown et al. 1999, Christopher et al. 2003). High mortality rates at permanent study plots in the Northeastern and Eastern Mojave and Sonoran deserts appear to be associated with incidence of shell diseases in tortoises (Jacobson et al. 1994). Low levels of shell diseases were detected in many populations when the plots were first established, but were found to increase during the 1980s and 1990s (Jacobson et al. 1994, Christopher et al. 2003). A herpes virus has recently been discovered in desert tortoises, but little is known about its effects on desert tortoise populations at this time (Berry et al. 2002).

The kernel analysis of the Eastern Colorado Recovery Unit shows that the distributions of the living desert tortoises and carcasses overlap for most of the region. The Chuckwalla Bench study plot occurs outside the study area, which creates a problem in evaluating what may be occurring in that area of the recovery unit. However, the few transects walked in that portion of the DWMA yielded no observations of live or dead desert tortoises. This illustrates the Service's concern for drawing conclusions from areas represented by too few study plots and leaves them with guarded concern for this region. The percentage of transects with live animals was relatively high for most DWMAs within the Eastern Colorado Recovery Unit. In addition, the ratio of carcasses to live animals was low within this recovery unit relative to others.

3.2.8.2 Northeastern Mojave Recovery Unit/Lincoln County

Maintaining tortoise populations within the individual recovery units will ensure that evolutionary processes will not be overly constrained in the future (USFWS 1994). The Covered Area is located within the Northeastern Mojave Recovery Unit (USFWS 1994). Topography within the Northeastern Mojave Recovery Unit is varied, with flats, valleys, alluvial fans, washes, and rocky slopes; much of the northern portion of the unit is characterized as basin and range. Creosote bush scrub, big galleta-scrub steppe, desert needlegrass

scrub-steppe, and blackbrush scrub (in higher elevations of tortoise habitat) characterizes the vegetation of tortoise habitat within the recovery unit. The northern portion of the Northeastern Mojave Recovery Unit is where the tortoise reaches its northernmost extent in the distribution of the species, and where tortoises are typically found in low densities (about 10 to 20 adults per square mile).

The Northeastern Mojave Recovery Unit includes four critical habitat units, of which two are located partially within Lincoln County: the Mormon Mesa CHU, and the Beaver Dam Slope CHU (Figure 3-1). The Mormon Mesa CHU is located in both Lincoln and Clark counties, and in total encompasses 427,900 acres (USFWS 1994b). The portion of the Mormon Mesa CHU located in Lincoln County is 133,911 acres (31% of the Mormon Mesa CHU). The Beaver Dam Slope CHU is located in Nevada, Utah, and Arizona, and in total encompasses 204,629 acres. The portion of the Beaver Dam Slope CHU located in Lincoln County is 87,400 acres (43% of the Beaver Dam Slope CHU) (USFWS 1994).

A total of 250,564 acres of critical habitat have been designated within Lincoln County. The BLM's approved Caliente Management Framework Plan Amendment and Record of Decision for the Management of Desert Tortoise Habitat (BLM 2000) 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 Desert Tortoise Recovery Plan. Within Lincoln County, the BLM has designated three ACECs, which are managed by the BLM primarily for the recovery of the desert tortoise (BLM 2000): Kane Springs, Mormon Mesa, and Beaver Dam Slope ACECs. The Kane Springs ACEC encompasses a total of 65,900 acres in Lincoln County (BLM 2000). The Mormon Mesa ACEC includes 109,800 acres in Lincoln County (BLM 2000). The Beaver Dam Slope ACEC includes 36,900 acres in Lincoln County (BLM 2000). Overall, a total of 212,600 acres of tortoise habitat within Lincoln County are designated as ACECs (Figure 3-1). Management guidelines set forth in the Caliente Management Framework Plan Amendment no longer allow livestock grazing within ACECs, although prior to the approval of the Caliente Management Framework Plan Amendment in 2000, grazing was allowed in four of the nine allotments located partially or completely within ACECs. Within ACECs, OHVs are allowed only on roads and vehicle trails specifically designated for OHV use, but only for casual use; competitive OHV use is not allowed. Management guidelines are for zero wild horses and burros, and no disposal of public lands within ACECs. Additional guidelines for the management of rights-of-ways (for utility/transportation corridors, communication sites, and materials sites), fire outbreaks, and transportation/public access are also outlined in the Caliente Management Framework Plan Amendment.

Outside of ACECs, habitat for the desert tortoise is also considered in BLM management decisions, with the goal of maintaining or improving existing habitat conditions to stabilize tortoise populations at existing trend levels, improve habitat, and be consistent with recovery efforts by other agencies. Livestock grazing is allowed on BLM lands outside of ACECs as long as forage utilization does not exceed given levels for various times of the year. OHV use, both casual and competitive, is limited to existing roads and trails outside of ACECs. A maximum of 16,926 acres of desert tortoise habitat outside of ACECs may be disposed of through appropriate laws; however, no disposal of public lands designated as critical habitat is allowed, with one exception. Legislatively leased lands could be adjusted with legislatively conveyed lands because BLM would obtain critical habitat for critical habitat (i.e., there would be no net loss of critical habitat). Guidelines for management of rights-of-way and fire management outside of ACECs are also outlined in the Framework Plan Amendment.

Overall, little development has occurred in tortoise habitat within Lincoln County; however, a few houses and ranch buildings are scattered in various areas, primarily along Meadow Valley Wash and in other areas that are privately owned. A landfill is located near the center of the LCLA parcel and a paved road leads from the landfill to the city of Mesquite. Numerous secondary and unimproved roads are present within tortoise habitat in Lincoln County. Most of the secondary roads have graded-surfaces suitable for travel at moderate speeds. Portions of some of these roads are paved. Rainbow Pass Road is a graded road running north-south through the Mormon Mesa ACEC. Another graded road runs north-south through the Mormon Mesa ACEC and along Meadow Valley Wash parallel to the Union Pacific Railroad providing private access within the railroad right-of-way. A graded road runs from the LCLA parcel toward the Section 36 disposal parcel; this road was previously addressed in the BO issued by the USFWS in 1993. State Route 317 passes northeast-southwest through the Kane Springs ACEC, and portions of this roadway are paved. Other graded roads bisect tortoise habitat throughout the Covered Area. It should be noted that because Lincoln County is mostly undeveloped,

the roads currently get relatively little use compared to nearby high-traffic-volume highways (e.g., Interstate 15).

Between June 22 and July 10, 2005, large fires consumed 750,000 acres in southern Nevada (i.e., Clark and Lincoln counties) including extensive areas of Mojave Desert scrub (Brooks and Matchett 2006). Lightning strikes caused most of the fires, which were most likely fueled by high levels of non-native grasses resulting from the above-average precipitation during the past three years. Burn patterns were highly variable with most acres burned under a low fire severity; however, the fires still resulted in the loss of surface vegetation over large portions of the landscape. In Lincoln County, these fires burned approximately 357,093 acres (291,554 acres were within the SLCHCP Covered Area refer to Table 3-1) of tortoise habitat, which included 10,088 acres of tortoise habitat in ACECs. Within the Kane Springs ACEC, 3,471 acres burned; approximately 23 percent of the entire Beaver Dam Slope ACEC in Utah and Nevada burned (Brooks and Matchett 2006) of which 1,977 acres were in Lincoln County (5 percent of the ACEC within Lincoln County); and 4,640 acres (4 percent) of the Mormon Mesa ACEC burned (all burned acres being within Lincoln County) (BLM GIS data) (Figure 3-4). Between 1980 and 2001, 12.6 percent of the Northeastern Mojave Recovery Unit burned (Brooks and Matchett 2006); during the record fires of 2005, 12.5 percent of the recovery unit burned (Matchett 2006). In Lincoln County, a total of 34,904 acres of critical habitat was consumed including 25,772 acres (29 percent) of the Beaver Dam Slope Critical Habitat Unit and 9,132 acres (7 percent) of the Mormon Mesa Critical Habitat Unit. Overall, 355,894 acres of tortoise habitat on BLM lands and 1,199 acres of private lands in Lincoln County were consumed during the 2005 fires. These fires also extended into Utah, where the Utah Division of Wildlife Resources (Brooks and Matchett 2006) estimated that 37.5 percent of adult tortoises in a burn area within the Red Cliffs Reserve might have died as a direct result of fire. However, for those tortoises surviving these fire, the fires have caused the loss of food plants, cover sites under shrubs, available water (due to increased run-off and evaporation in the absence of vegetation), and facilitated the spread of non-native plants. No post-fire tortoise survey data are available for Lincoln County. Without rehabilitation, burned areas may take years, decades, or longer before pre-fire densities of tortoises can be supported.

Table 3-1: Acres of Tortoise Habitat in the Covered Area (Mapping below 4,200' Contours)

Land Ownership	Total	Burned in 2005
Federal	728,747	290,440
Private (includes identified disposal lands)	40,681	1,114
Total	769,428	291,554

3.2.8.2.1 Covered Area

The Mojave population of the desert tortoise occurs north and west of the Colorado River. There are approximately 769,428 acres of desert tortoise habitat (Federal and non-Federal) in the Covered Area, which comprises about 3 percent of the total estimated 21 million acres of habitat occupied by the Mojave population. The Covered Area is at the northern periphery of their range and population density is moderate to low (0 to 20 individuals/square mile) in this area (refer to Figure 3-2 for desert tortoise sightings within the Covered Area). The population is almost entirely confined to Mojave Desert scrub vegetation type, primarily creosote bush scrub and Mojave mixed scrub consisting of succulent scrub, cheesebush scrub, blackbrush scrub, hospage scrub, shadescale scrub, microphyll woodland, Mojave saltbush-allscale scrub, and scrub-steppe vegetation types of the desert and semidesert grassland complex at elevations below 4,200 feet (pers. comm. Krueger, Jeri November 8, 2006). Within the Covered Area, desert tortoise habitat is described as flats and bajadas characterized by shrubs and abundant interspace for growth of the herbaceous plants, perennial grasses, and forbs tortoises feed on. Soils range from sandy to sandy gravel, but tortoises most commonly inhabit areas with well-drained sandy loam soils.

Within the Covered Area, approximately 769,428 acres of desert tortoise habitat (Federal and non-Federal) has been identified based on habitat modeling and elevation distribution limits below 4,200 feet or lower based on existing vegetation distribution data, existing desert tortoise location data, and professional judgment by USFWS desert tortoise biologists (personal communication with USFWS, January 2007) (Figure 3-3)

(Table 3-1). Vegetation in this area is typical Mojave Desert scrub, including creosote bush (*Larrea tridentata*) and white bursage (*Ambrosia dumosa*). Joshua trees (*Yucca brevifolia*), agaves (*Agave* spp.), and blackbrush (*Coleogyne ramosissima*) are present at the higher elevations. Many small washes and a few larger washes (e.g., Meadow Valley Wash, Kane Springs Wash, Toquop Wash) run through the Covered Area. Meadow Valley Wash is the largest, and supports perennial flows within the Covered Area. Vegetation along these washes includes cottonwoods (*Populus* spp.), willows (*Salix* spp.), honey mesquite (*Prosopis glandulosa* var. *torreyana*), salt cedar (*Tamarix* spp.), sticky snakeweed (*Gutierrezia microcephala*), black-stem rabbitbrush (*Chrysothamnus paniculatus*), indigo bush (*Psorothamnus fremontii*), cheesebush (*Hymenoclea salsola*), and catclaw acacia (*Acacia greggii*) (Bio-West 2005a).

Of the 769,428 acres of desert tortoise habitat occurring within the Covered Area, 728,747 acres are administered by BLM and 40,681 acres are on private lands or on lands currently administered by BLM but identified for disposal. The existing or proposed private lands in desert tortoise suitable habitat include: 1) Alamo Industrial Park and Community Expansion Area (855 acres); 2) the 3,461 acres of BLM land proposed for disposal around Alamo and the 640-acre Section 36 disposal parcel; 3) the LCLA lands (13,520 acres); 4) 399 acres of County roads and rights-of-way; 5) 1,542 acres of UPRR's rights-of-ways and land; 6) 2,256 acres of privately-owned agriculture and grazing lands along Meadow Valley Wash; and 7) 18,008 acres of other privately-owned lands within the Covered Area not to be covered under the SLCHCP (refer to Figure 1-1). The lands along Meadow Valley Wash have primarily been managed for agricultural production (e.g., livestock and irrigated crops) for many years, and BLM is currently reviewing an environmental assessment for a proposed gypsum mine near Meadow Valley Wash.

3.2.8.3 Desert Tortoise Surveys Conducted within the Covered Area

3.2.8.3.1 LCLA Lands

Desert tortoise transect surveys conducted by BLM in the vicinity of the LCLA parcel indicate that tortoise densities in this area range from very low (less than 10 tortoises per square mile) to low (10 to 45 tortoises per square mile) (USFWS 2001). Those areas that are considered to provide some of the best tortoise habitat in the vicinity have been designated by BLM as ACECs. Tortoise densities within the Mormon Mesa ACEC have been estimated at 41 to 87 tortoises per square mile with an average adult density of 20 per square mile (USFWS 2001). Desert tortoise density estimates for the Beaver Dam Slope ACEC range from 5 to 56 per square mile, with an average adult density of 10 per square mile (USFWS 2001).

3.2.8.3.2 BLM Disposal Lands

ALAMO AREA

A desert tortoise survey was conducted on June 24 and 25, 2006, for the Alamo Industrial Park Site and Community Expansion Area. The survey consisted of a USFWS-approved triangular transect in each of the four parcels (A, B, C and D) in the proposed Alamo project area. The total length of each triangle was 1.5 miles long, with each leg measuring approximately half a mile in length and 30 feet wide. Each triangle covered approximately six acres. The four triangles surveyed encompassed approximately 24 acres of the Alamo project area. The total number of tortoise sign (i.e., active burrows: burrows in good, fair, and poor condition; rock and caliche dens; scat; live tortoises; and tortoise carcasses including bones, scutes, plastrons, and shells) was counted in each parcel. The total number of sign for the triangular transects surveyed and estimated number of desert tortoises per square mile is summarized in Table 3-2.

Figure 3-2 Desert Tortoise Habitat, Sightings and Densities within and Adjacent to the Covered Area

Figure 3-2 BACK

Figure 3-3 Desert Tortoise Habitat within and Adjacent to the Covered Area

Figure 3-3 BACK

Figure 3-4 2005 Burned Desert Tortoise Habitat within ACECs and Critical Habitat Units

Figure 3-4 BACK

Table 3-2: Desert Tortoise Sign and Estimated Numbers in the Alamo Industrial Park and Community Expansion Area

Triangle Transect	Area Surveyed (acres)	Total Sign	Total Corrected Sign	Number per Square Mile*
A	6	2	2	7
B	6	5	5	17
C	6	7	5	17
D	6	9	6	20
Total	24	23	18	N/A

Source: Enviroscientists, Inc., 2007
*Rounded to the nearest whole number

As indicated in Table 3-2, the greatest number of tortoise sign was found in Triangle D, located in the northernmost portion of the Project area. Tortoise habitat in Triangle A was disturbed by the presence of a road and a dump. Only adult tortoises were observed. A very large adult female tortoise was observed facing forward from within a snug fitting burrow on Triangle C. The burrow was approximately ten inches wide and five inches tall. The size and gender of the second tortoise on Triangle D could not be determined as only a small portion of its posterior shell was observed as it excavated inside a burrow. The burrow was approximately 20 inches wide and six inches tall.

A young tortoise with a carapace measuring three inches in length was found dead in Triangle B. The dorsal shell had puncture marks similar to those made by raven predation. Some ventral scutes were still present and a hind leg was mummified. The ventral shell was concave. The dorsal shell was slightly compressed dorsally as though damaged sometime after hatching when the shell was still soft. A second dead tortoise was a female with a carapace measuring approximately 7.75 inches in length was found in Triangle D. The dorsal and ventral scutes were missing. The shell had no identifying marks. A few hairy beetle larvae were found inside the shell, which contained some mummified remains. As shown in Table 3-2, estimated tortoise density ranged from 7-20 tortoises per square mile.

640-ACRE SECTION 36 DISPOSAL PARCEL

The Mormon Mesa critical habitat unit is located south of the Section 36 disposal parcel; however, no critical habitat is located in the area of the proposed power plant.

Transect surveys were conducted on the Section 36 disposal parcel during the summer of 2006. Results from the surveys indicate that three live tortoises and one carcass were found. Sixty-six tortoise burrows were found within the project area; however, only eight of these showed signs of recent activity (i.e., this year). Scat groupings also were found scattered throughout the project area in close proximity to burrows.

Within the Section 36 disposal parcel area, the larger washes with exposed caliche formations appeared to afford fair-to-good habitat for rock burrows/dens. The majority of the tortoise sign was found within the northern portions of the route near Meadow Valley Wash. The northern section of the Section 36 disposal parcel contained moderately dense tortoise populations (approximately 5 tortoises/100 acres), while the remaining middle and southern sections exhibited lower densities (<1 tortoise/100 acres). Triangular surveys found the same trend in density, with transects near the northern section of the parcel exhibiting more sign than the southern portions.

3.2.8.3.3 CSI Developments in Clark and Lincoln Counties

Results of surveys conducted by Coyote Springs Investment's (CSI) consultants for desert tortoise in Coyote Spring Valley and CSI lands in Clark and Lincoln counties indicate wide variability in tortoise densities across the landscape, with estimates ranging from less than 10 to more than 100 animals per square mile, with summed survey data indicating 52 to 60 tortoises per square mile, overall. However, recent tortoise removal efforts on nearly 6,000 acres of CSI lands in Clark County yielded only 90 adult desert tortoises. These efforts were on lands that appeared marginally suitable near the intersection of US Highway 93 and State Route 168, to lands increasingly suitable for occupancy north and east of that area. These findings indicate current

densities of about 10 per square mile in Clark County. In the southern and western portion of the CSI lands in Clark County, estimated tortoise densities are relatively low (as low as 2 to 3 animals per square mile), possibly reflecting increased mortality associated with State Route 168 to the south and US Highway 93 to the west.

Other tortoise surveys in the vicinity of the CSI Covered Area may provide useful information on tortoise density and status in the Coyote Spring Valley and Mormon Mesa area. Two, 1-square-mile Permanent Study Plots (PSPs) are located within the Mormon Mesa CHU: the Coyote Spring PSP in Coyote Spring Valley, Lincoln County, Nevada; and the Mormon Mesa PSP in the eastern portion of the Mormon Mesa CHU. These plots have been surveyed periodically from the mid-1980s through the mid-1990s. The original purpose of these PSPs was to generate data on tortoise demography and population trends using 60-day mark-recapture survey protocol, and also collect data on habitat (biotic and abiotic) conditions and tortoise health (EnviroPlus Consulting 1995, Tracy et al. 2004). However, because plots were not randomly located, the ability to draw inferences about tortoise density, status, and trends beyond the plots themselves is limited. Still, realizing these limitations and using appropriate caution, data from these plots were used to estimate status and trends of tortoise populations in the Northeastern Mojave Recovery Unit and the Lower Virgin River DPS (in which these study plots and the CSI project area in Clark County are located) as part of the 2004 assessment of the Desert Tortoise Recovery Plan (Tracy et al. 2004). This analysis found no significant statistical trend in adult density over the survey time period in these areas.

For the Las Vegas Resource Management Plan and Final Environmental Impact Statement, BLM estimated relative tortoise densities and numbers for proposed ACECs and adjacent areas (BLM 1998). Tortoise densities were estimated using both strip transect and PSP data. For the CSI (Aerojet) property in Coyote Spring Valley, the estimated relative density of adult desert tortoises was 25 to 75 individuals per square mile, and the estimated number of adult tortoises was 1,575 to 4,725 (median of 3,150) over the 63 square miles of Aerojet land. Relative density estimates for the Coyote Spring ACEC were generally 25 to 75 adult tortoises per square mile other than for that portion of the ACEC on USFWS land where densities were lower (10 to 45 adult tortoises per square mile).

For the Approved Caliente Management Framework Plan Amendment and Final Environmental Impact Statement for the Management of Desert Tortoise Habitat, BLM also presented relative tortoise densities for proposed ACECs within the jurisdiction of the Caliente Field Office (BLM 2000). Relative densities were 25 to 75 adult tortoises per square mile for the Kane Springs ACEC (population estimate of 2,575 to 7,723 tortoises) and 10 to 20 adult tortoises per square mile for the Mormon Mesa ACEC (population estimate of 1,716 to 3,431 tortoises). The western portion of the Mormon Mesa ACEC was classified as higher quality desert tortoise habitat with corresponding higher tortoise density estimates (25 to 75 adult tortoises per square mile) (BLM 2000). In contrast strip-transect data in the Coyote Spring Valley and adjacent ACECs indicate wide variability in tortoise densities across the landscape (Luke et al. 1981, Knight & Leavitt Assoc. [K&LA] 2000). Data from some of these areas suggest densities of close to 100 adult tortoises or more per square mile, including some sites within the CSI project site in Clark County and the northern portion of CSI's lands in Lincoln County, as well as to the north-northwest on adjacent BLM land. Data from other areas suggest densities of less than 10 adult tortoises per square mile. This variability in tortoise density is also evident from strip-transect surveys on the CSI project in Clark County. By considering this variability when calculating average tortoise density on the CSI project in Clark County, the USFWS (2005a) estimated tortoise densities of approximately 52 (K&LA) to 60 (BLM) adult tortoises per square mile. These data are not inconsistent with the conclusion that the Lincoln County portion of the CSI Development Area supports low to moderate densities of tortoises, but it contrasts with the more reliable removal data, which suggest much lower densities.

In summary, based on site conditions and previous surveys, estimated tortoise density within the Covered Area of the SLCHCP is probably between 6 to 30 adult tortoises per square mile due to the lack of spatial and temporal validation of the relationship between tortoise sign and density. In comparison, estimated tortoise density within the CSI Development Area in Lincoln County is roughly 52 to 60 adult tortoises per square mile. Thus, the likelihood of desert tortoises encountered during construction and/or maintenance activities within the SLCHCP Covered Area over the 30-year permit term would be less than the number of tortoises potentially encountered during total build out of the CSI lands in Lincoln County.

3.2.8.4 Relevant Consultation History

A USFWS BO (USFWS 2006) was prepared for the proposed CSI development in Clark County, Nevada (Corps of Engineers Permit Application No. 200125042). Included in this BO is an analysis of the effects of the proposed action on the desert tortoise, which is included within the coverage area and acreage amount of the Clark County MSHCP. The USFWS determined that the level of anticipated take is not likely to jeopardize the continued existence of desert tortoise or adversely modify its critical habitat.

The BLM disposal of the LCLA parcel and the Record of Decision issued by BLM in 2003 for disposal of the Section 36 parcel and development of the proposed Toquop Energy Project site (at that time the project comprised of construction and operation of a 1,100-megawatt natural-gas-fire electric-power-generation plant and associated facilities) have each been addressed in separate USFWS BOs (USFWS File No. 1-5-01-F-517, September 7, 2001; and 1-5-02-F-494, June 16, 2003, respectively). Both BOs concluded that the consulted actions are not likely to jeopardize the continued existence of the desert tortoise, and that neither action is likely to adversely modify or destroy designated critical habitat to the extent that the constituent elements are appreciably diminished and the habitat no longer serves its role in the survival and recovery of the species. Take of tortoises on LCLA lands was not authorized in the BO, and must be authorized under a Section 10 incidental take permit. However, the proposed action for the Toquop Energy Project has changed significantly, and the BLM is reinitiating consultation on the revised proposed action, a coal-fired power plant.

3.3 SOUTHWESTERN WILLOW FLYCATCHER

Scientific Name: *Empidonax traillii extimus*

3.3.1 Protection Warranted

3.3.1.1 Endangered Species Act

- February 27, 1995: Listed as Endangered, without critical habitat (60 FR 10694-10715).
- July 22, 1997: Critical habitat designated (62 FR 39129-39146).
- August 20, 1997: Critical habitat correction notice to clarify lateral extent of designation (62 FR 44228).
- May 11, 2001: Critical habitat set aside by 10th circuit court of appeals in New Mexico; USFWS subsequently set aside critical habitat designated in all other states (California and Arizona).
- August 30, 2002: Final Recovery Plan approved (USFWS 2002).
- 2005: Critical habitat designated in Nevada, Arizona, California, Utah, and New Mexico (70 FR 60886).

3.3.1.2 Nevada Administrative Code

- Southwestern willow flycatchers are classified as Protected and Endangered under NAC 503.050 (Protected, Endangered and Sensitive Birds).

3.3.1.3 Other Protections

- The species is listed as endangered in the states of California, New Mexico, and Arizona.

3.3.2 General Description

The southwestern willow flycatcher is a small grayish-green passerine bird (Family Tyrannidae) measuring approximately 5.75 inches. It has a grayish-green back and wings, whitish throat, light gray-olive breast, and pale yellowish belly. Two white wingbars are visible (juveniles have buffy wingbars). The eye ring is faint or

absent. The upper mandible is dark, and the lower is light yellow grading to black at the tip. The song is a sneezy fitz-bew or a fit-a-bew; the call is a repeated whitt. The southwestern willow flycatcher is one of four currently recognized willow flycatcher subspecies (Phillips 1948, Unitt 1987, Browning 1993).

3.3.3 Ecology

The historic range of southwestern willow flycatcher is similar to the current range, although reductions in quantity and quality of habitat have contributed to isolation and fragmentation of suitable habitat (USFWS 2005b). The historic breeding range of southwestern willow flycatcher includes southern California, Arizona, New Mexico, western Texas, southwestern Colorado, southern Utah, extreme southern Nevada, and extreme northwestern Mexico (Sonora and Baja) (Unitt 1987).

As of 2004, there were 220 to 265 known southwestern willow flycatcher breeding sites in California, Nevada, Arizona, Utah, New Mexico, and Colorado (a site is a location where one or more pairs of flycatchers attempt to nest) holding approximately 1,000 to 1,250 territories (data compiled by USGS and USFWS, Phoenix, Arizona). Population estimates vary based on numerous factors (e.g., incomplete survey effort, double-counting males/females, composite tabulation methodology, natural population fluctuation, and random events), and it is likely that the actual breeding population of southwestern willow flycatchers fluctuates from year to year. Known numbers of breeding pairs have increased since the bird was listed, and some habitat remains unsurveyed. Rangewide, the population is comprised of extremely small, widely-separated breeding groups including unmated individuals. The distribution of breeding groups is highly fragmented, often separated by considerable distance. The large distances between breeding groups and the small size of those populations reduces overall population stability and increases the risks of local extirpation due to stochastic events (USFWS 2002).

Southwestern willow flycatchers are known to winter from the west coast of central Mexico to northern South America.

3.3.3.1 Habitat

Southwestern willow flycatcher breeds in dense riparian habitats from sea level in California to approximately 8,500 feet in Arizona and southwestern Colorado. Historical egg/nest collections and species' descriptions throughout its range describe the southwestern willow flycatcher's widespread use of willow (*Salix* spp.) for nesting (Phillips 1948, Phillips et al. 1964, Hubbard 1987, Unitt 1987). Southwestern willow flycatchers primarily use Geyer willow (*Salix geyerana*), Goodding's willow (*Salix gooddingii*), boxelder (*Acer negundo*), saltcedar (*Tamarix* spp.), Russian olive (*Elaeagnus angustifolia*) and live oak (*Quercus agrifolia*) for nesting (USFWS 2002). Based on the diversity of plant species composition and complexity of habitat structure, four basic habitat types can be described for the southwestern willow flycatcher: monotypic willow, monotypic exotic, native broadleaf dominated, and mixed native/exotic (Sogge et al. 1997). Saltcedar is an important component of the flycatcher's nesting and foraging habitat.

Comparisons of reproductive performance and physiological conditions (Owen et al. 2005) of flycatchers breeding in native and exotic vegetation have revealed no difference (USFWS 2002). Open water, cienegas, marshy seeps, or saturated soil are typically in the vicinity of flycatcher territories and nests; flycatchers sometimes nest in areas where nesting substrates are in standing water (Sferra et al. 1995, 1997). However, hydrological conditions at a particular site can vary remarkably in the arid Southwest within a season and among years. At some locations, particularly during drier years, water or saturated soil is only present early in the breeding season (i.e., May and part of June). However, the total absence of water or visibly saturated soil has been documented at several sites where the river channel has been modified (e.g., creation of pilot channels), where modification of subsurface flows has occurred (e.g. agricultural runoff), or as a result of changes in river channel configuration after flood events (Spencer et al. 1996).

3.3.4 Life History

3.3.4.1 Reproductive Biology

Throughout its range, the southwestern willow flycatcher arrives on breeding grounds in late April and May. Nesting begins in late May and early June and young fledge from late June through mid-August (Whitfield 1996). Southwestern willow flycatchers typically lay three to four eggs per clutch (range is 1 to 5); eggs are laid at one-day intervals and are incubated by the female for approximately 12 days; and young fledge approximately 12 to 13 days after hatching (Bent 1960, McCabe 1991). Typically, one brood is raised per year, but birds have been documented raising two broods during one season and renesting after a failure (Whitfield 1996, Sogge and Tibbitts 1997). The entire breeding cycle, from egg laying to fledging, is approximately 28 days (USFWS 2002).

Southwestern willow flycatcher nests are fairly small (3.2 inches tall and 3.2 inches wide). Nests are open cup structures, and are typically placed in the fork of a branch. Nests have been found against the trunk of a shrub or tree (in monotypic saltcedar and mixed native broadleaf/saltcedar habitats) and on limbs as far away from the trunk as 10.8 feet (Spencer et al. 1996). Typical nest placement is in the fork of small-diameter (e.g., 0.4 in), vertical or nearly vertical branches (USFWS 2002). Occasionally, nests are placed in down-curving branches. Nest height varies considerably, from 2.0 to 59.1 feet, and may be related to height of nest plant, overall canopy height, and/or the height of the vegetation strata that contain small twigs and live growth (USFWS 2002). Most typically, nests are relatively low, 6.5 to 23 feet above ground (USFWS 2002).

Riparian patches used by nesting southwestern willow flycatchers vary widely in size and shape; from as small as 0.25 acre along the Rio Grande to 175 acres on the upper Gila River in New Mexico. Mean patch size is 21.2 acres and the median size is 4.4 acres. Flycatchers do not typically nest in narrow strips of riparian vegetation less than 33 feet wide, although they may use these strips if they extend out into larger patches and during migration. Flycatchers often cluster their territories into small portions of riparian sites, and large parts of these sites may be irregularly occupied or not occupied at all. Territories are often bordered by additional habitat that is not defended as breeding territory, but may be important in attracting flycatchers to the site and/or providing an environmental buffer from wind or heat, for post-nesting use and dispersal (USFWS 2002).

3.3.4.2 Diet

The southwestern willow flycatcher is an insectivore, foraging in dense shrub and tree vegetation along rivers, streams, and other wetlands. The bird typically perches on a branch and makes short direct flights, or sallies to capture flying insects. Major prey items of southwestern willow flycatcher in Arizona and Colorado consist of true flies (Diptera), ants, bees, wasps (Hymenoptera), and true bugs (Hemiptera). Other insect prey taxa include leafhoppers (Homoptera: Cicadellidae), dragonflies and damselflies (Odonata), and caterpillars (Lepidoptera larvae). Non-insect prey includes spiders (Araneae), sowbugs (Isopoda), and fragments of plant material (Drost et al. 2001).

3.3.4.3 Migration

Southwestern willow flycatcher is a neotropical migrant that breeds in the southwestern United States and migrates to Mexico, Central America, and possibly northern South America during the non-breeding season (Phillips 1948, Ridgely and Tudor 1994, Howell and Webb 1995).

3.3.5 Threats

Declines in southwestern willow flycatcher populations have been attributed to loss, modification, and fragmentation of habitat, and brood parasitism by brown-headed cowbirds (Finch et al. 2000, Whitfield 1996, Sferra et al. 1995). A brief summary of threats in the context of the five listing factors used to assess species for listing as threatened or endangered under ESA are described below.

3.3.5.1 The Present or Threatened Destruction, Modification, or Curtailment of its Habitat or Range

Habitat loss has occurred through water management, land use practices, fire, and introduction of exotic species. Water management reduces suitable riparian habitat with dams or reservoirs, diversions, and groundwater pumping. Riparian habitat is reduced or modified by these management practices by alterations in flood frequency and duration, sediment and nutrition deposition, floodplain hydration, inundation period, and seed dispersal of riparian species. Land use practices have also reduced southwestern willow flycatcher habitat. Channelization and bank stabilization has similar effects as general water management, but also increases stream velocity and raises streambeds above groundwater levels, preventing adequate water supply to the roots of riparian vegetation. Agricultural development has converted much riparian forest into farmland. Trampling by cattle causes soil compaction, increasing runoff and erosion and decreasing dispersal and regeneration of vegetation. Livestock grazing also affects the composition and density of riparian areas by the preferential removal of young, native, riparian vegetation. Recreation and urban development contribute to habitat loss through destruction of native vegetation, introduction of exotic species, increased fire risk, and soil compaction. The desiccation of riparian areas through water management and the encroachment of human develop has greatly increased risk of fire. Riparian vegetation is not fire-adapted, making fires here particularly destructive. Often, nonriparian species with faster recovery and regeneration times and adaptations to increased salinity and decreased moisture in soils dominate historic riparian areas after a burn. Lastly, exotic species are replacing native riparian vegetation along waterways. These species often form monospecific stands that differ from native multistory and multispecies composition. Aggressive, exotic species often out-compete willows and cottonwoods, vegetation commonly used by willow flycatchers (Finch et al. 2000).

3.3.5.2 Over-Utilization for Commercial, Recreational, Scientific, or Educational Purposes

This threat was not included as a basis for warranting protection under the ESA.

3.3.5.3 Disease or Predation

Willow flycatcher nests are often parasitized by brown-headed cowbirds, which lay their eggs in the host's nest. Cowbird parasitism reduces reproductive success of willow flycatchers by reducing fecundity and increasing likelihood of nest or brood abandonment. Brown-headed cowbird parasitism of southwestern willow flycatcher broods has been documented throughout its range (Whitfield 1996, Sferra et al. 1995). Numerous human-related activities influence the distribution and abundance of cowbirds in riparian habitats including grazing, recreation, and urban development (Finch et al. 2000).

3.3.5.4 Inadequate Regulatory Mechanisms

This threat was not included as a basis for warranting protection under the ESA.

3.3.5.5 Other Natural or Manmade Factors Affecting the Species Continued Existence

The total number of southwestern willow flycatchers is small, with an estimated 1,100 to 1,200 territories rangewide (USFWS 2002). These territories are distributed in a large number of very small breeding groups, and only a small number of relatively large breeding groups. These isolated breeding groups are vulnerable to local extirpation from floods, fire, severe weather, disease, and shifts in birth/death rates and sex ratios (USFWS 2002). The southwestern willow flycatcher may also be susceptible to low genetic variation within populations and low effective population size (USFWS 2002).

The southwestern willow flycatcher may also face threats during their migration and on the wintering ground each year (USFWS 2002).

3.3.6 Conservation

A number of pro-active efforts, not driven by legal requirements, are being directed at the conservation and recovery of the southwestern willow flycatcher. Several of these are discussed below, as examples of the range of beneficial programs that can be implemented.

3.3.6.1 Habitat Protection and Research

As an example, Washington County, Utah, which is home to more than half of the Virgin River's length, has ranked among the nation's ten fastest-growing counties for the last four years. This growth in human community is facilitating detrimental uses of the Virgin River and its riparian resources. For example, a current proposal calls for a 60 percent reduction of the river's winter flow in the last reach where two endangered fish maintain relatively healthy populations. According to the Natural Heritage Programs in Utah, Arizona, and Nevada, the Virgin River Basin supports 32 species which are globally rare and of pressing conservation concern. The USFWS lists six (6) of these species as endangered (including the southwestern willow flycatcher), two more are threatened, and an additional 24 are being monitored. Many of these species rely on the Virgin River's riparian habitat, which occurs on only 1 percent of the entire Basin's land base. The Grand Canyon Trust has responded by launching a two-pronged effort: first, an extensive information gathering effort to prepare for reasonable discussions regarding management decisions; and second, an effort to regularly participate in key management processes which are determining the river's future. The Grand Canyon Trust's vision is a healthy, accessible river with self-sustaining native plant and animal populations for the children of 2097 and beyond.

3.3.6.2 Monitoring and Research

Prior to approximately 1990, research regarding southwestern willow flycatchers was limited, consisting primarily of one regional and one state-based status and taxonomic review, and a handful of localized survey and breeding ecology efforts. Research was carried out by several independent researchers, in a few local areas, with little communication of data or regional data compilation. As the southwestern willow flycatcher drew increasing regulatory and management attention (starting with the proposed listing in 1991), survey, monitoring, and research efforts grew from minimal in 1992 to extensive by 1999. Since the early 1990s, statewide surveys have been initiated in Arizona, New Mexico, and Utah, generally as part of the Partners In Flight program. Standardized survey protocols were developed in 1994 and updated in 1997, and statewide survey data integration and reporting have been instituted in some states. In the mid-1990s, intensive breeding and migration ecology, demography, and habitat research was being conducted at several sites in Arizona, California, Nevada, and New Mexico. Range-wide population genetics work was also initiated at this time. Collaborative research is now being conducted throughout the flycatcher's range. Collectively, this body of inventory, monitoring, and research has provided sound quantitative data addressing key questions relative to the recovery and conservation of southwestern willow flycatcher. Work has recently begun on the presence and potential impacts of environmental contaminants at selected flycatcher breeding sites in Arizona. Recent research has also investigated the status, distribution, habitat use and ecology of the willow flycatcher on its wintering grounds in Central America. Much of this valuable work is expected to continue into the future (given continued funding), and will yield valuable insights on flycatcher status, distribution, and ecology – with the overall goal of better designing, executing, and evaluating flycatcher conservation and management actions. As this occurs, it will be critical to continue local, statewide, and rangewide data synthesis and reporting, and the collaborative sharing of research needs, ideas, and information.

3.3.6.3 Other Efforts of Riparian Conservation

Throughout the southwest, there are numerous private, local, state and regional efforts aimed at improving and/or reducing the degradation of riparian and wetland habitats. Specific examples include, but are not limited to: the Santa Clara River Enhancement and Management Plan; the Cascabel Community Conservation Plan; the San Pedro Riparian and Las Cienegas National Conservation Areas; the Verde River Management Plan; riparian habitat development downstream of the Nogales International Waste Water Treatment Plant; Las Vegas Wash wetlands restoration program; willow riparian restoration at Key Pittman Wildlife Management Area; San Juan Pueblo post-fire riparian restoration program; Santa Ana Pueblo riparian restoration project; Pueblo of Zuni riparian restoration program; restoration of instream flows on the Agua Fria below Lake Pleasant; water (effluent) releases into the Gila River below Phoenix; experimental releases of beaver on the San Pedro River; and riparian fuels reduction research on the Rio Grande. These projects are at varying stages of development and implementation.

Similar projects are underway in virtually every flycatcher Recovery Unit (see Section IV.A.1. in USFWS 2002). While all such projects are welcome, it is important to recognize that not all of these efforts will directly benefit breeding southwestern willow flycatchers. The flycatcher breeds only in dense, mesic riparian patches; a sub set of the types of riparian likely to be developed as a result of the above programs. It is quite possible, if not likely, that the basic objectives of many of these projects could be met without the development and maintenance of suitable flycatcher breeding habitat. Therefore, the USFWS encourages the groups responsible for these projects to work with flycatcher biologists to include, where possible, specific objectives and design criteria for development, enhancement, and protection of the types of habitats in which flycatchers breed. In this way, these myriad projects have the potential to contribute greatly to the recovery of the flycatcher.

3.3.7 Critical Habitat

In 2005, a total of 737 miles of riparian corridor were designated as critical habitat in Nevada, California, Arizona, Utah, and New Mexico. However, no critical habitat for the southwestern willow flycatcher is located within the Covered Area boundary of the SLCHCP. Critical habitat is designed to provide sufficient riparian habitat for breeding, non-breeding, territorial, dispersing, and migrating southwestern willow flycatchers throughout their range. Areas containing some or all of the habitat characteristics for life and reproductive needs (primary constituent elements) were designated as critical habitat. The primary constituent elements from US Fish and Wildlife Southwest Region (2005b) are given below.

1) Riparian habitat in a dynamic successional riverine environment (for nesting, foraging, migration, dispersal, and shelter) that comprises:

    a. Trees and shrubs that include Gooddings willow (*Salix gooddingii),* coyote willow *(Salix exigua),* Geyers willow *(Salix geyerana),* arroyo willow *(Salix lasiolepis),* red willow *(Salix laevigata),* yewleaf willow *(Salix taxifolia),* pacific willow *(Salix lasiandra),* boxelder *(Acer negundo),* tamarisk *(Tamarix ramosissima),* Russian olive *(Eleagnus angustifolia),* buttonbush *(Cephalanthus occidentalis),* cottonwood *(Populus fremontii),* stinging nettle *(Urtica dioica),* alder *(Alnus rhombifolia, Alnus oblongifolia, Alnus tenuifolia),* velvet ash *(Fraxinus velutina),* poison hemlock *(Conium maculatum),* blackberry *(Rubus ursinus),* seep willow *(Baccharis salicifolia, Baccharis glutinosa),* oak *(Quercus agrifolia, Quercus chrysolepis),* rose *(Rosa californica, Rosa arizonica, Rosa multiflora),* sycamore *(Platinus wrightii),* false indigo *(Amorpha californica),* Pacific poison ivy *(Toxicodendron diversilobum),* grape *(Vitus arizonica),* Virginia creeper *(Parthenocissus quinquefolia),* Siberian elm *(Ulmus pumila), and* walnut *(Juglans hindsii).*

    b. Dense riparian vegetation with thickets of trees and shrubs ranging in height from 2 m to 30 m (6 to 98 ft). Lower-stature thickets (2 to 4 m or 6 to 13 ft tall) are found at higher elevation riparian forests and tall-stature thickets are found at middle-and lower-elevation riparian forests.

    c. Areas of dense riparian foliage at least from the ground level up to approximately 4 m (13 ft) above ground or dense foliage only at the shrub level, or as a low, dense tree canopy.

    d. Sites for nesting that contain a dense tree and/or shrub canopy (the amount of cover provided by tree and shrub branches measured from the ground) (i.e., a tree or shrub canopy with densities ranging from 50 percent to 100 percent).

    e. Dense patches of riparian forests that are interspersed with small openings of open water or marsh, or shorter/sparser vegetation that creates a mosaic that is not uniformly dense. Patch size may be as small as 0.1 ha (0.25 acre) or as large as 70 ha (175 acres).

2) A variety of insect prey populations found within or adjacent to riparian floodplains or moist environments, including: flying ants, wasps, and bees (Hymenoptera); dragonflies (Odonata), flies (Diptera); true bugs (Hemiptera); beetles (Coleoptera); butterflies/moths and caterpillars (Lepidoptera); and spittlebugs (Homoptera)."

3.3.7.1 Species Status

3.3.7.1.1 Rangewide

Southwestern willow flycatcher breeds in dense riparian habitats in southwestern North America, and winters in southern Mexico, Central America, and northern South America. The subspecies was listed as endangered effective March 29, 1995. Reasons for the determination included significant population declines due to loss, modification, and fragmentation of habitat, and brood parasitism by brown-headed cowbirds (Finch et al. 2000, Whitfield 1996, Sferra et al. 1995).

As indicated in Section 3.3.5.1, habitat loss has occurred through water management, land use practices, fire, and introduction of exotic species such as brown-headed cowbirds. On August 2002, the USFWS approved the final Southwestern Willow Flycatcher (*Empidonax traillii extimus*) Recovery Plan (USFWS 2002). The Recovery Plan (USFWS 2002) uses a watershed approach and divides the breeding range of southwestern willow flycatcher into 6 recovery units and further divides these units into Management Units (between 4 and 7). This provides a strategy to characterize flycatcher populations, structure recovery goals, and facilitate effective recovery actions that should closely parallel the physical, biological, and logistical realities on the ground. Furthermore, using Recovery and Management Units assures that populations will be well distributed when recovery criteria are met (USFWS 2002).

LOWER COLORADO RIVER RECOVERY UNIT/LINCOLN COUNTY

In 1999, NDOW completed surveys on the eastern Nevada border, at Beaver Dam State Park and just west of the park at Clover Creek. Vegetation at the Beaver Dam site varied from aspen (*Populus tremuloides*), Gooding willow, Fremont cottonwood, and coyote willow. No resident or breeding willow flycatchers were detected. Vegetation at the Clover Creek site consisted of Gooding willow, cottonwood (*Populus* spp.), alder (*Alnus* spp.), ash (*Fraximus* spp.) and coyote willow. No flycatchers were detected (NDOW 1999). In 2001, another survey was completed at Beaver Dam and again, no willow flycatchers were detected (NDOW 2001).

In 2001, NDOW had sites at Pahranagat North near Ash Springs, west of US Highway 93 and Key Pittman State Wildlife Management Area, south of Hiko Springs and east of Highway 318. The Pahranagat North site was primarily composed of dense coyote willow patches within a meadow that was periodically inundated with water for cattle. The Key Pittman site consisted of small coyote willow patches on the west side of Nesbitt Lake. In 1999, nine nests were found at Pahranagat North and two were found at Key Pittman. In 2000, a total of 17 adult willow flycatchers were detected at Pahranagat North (8 pairs and one unpaired) and fifteen nests were found. At Key Pittman, nine adult willow flycatchers were detected (3 pairs and 3 unpaired) and five nests were found (NDOW 2001).

Brown (2004) surveyed an area along the Virgin River from the Nevada/Arizona state line to a point 1 kilometer upstream from the mouth of the Toquop Wash. One nest, six residential, two pairs, and 20 migrants were detected on this site. Birds tended to be associated with abandoned meander channels of the Virgin River. These channels have a higher water table and tend to flood periodically, promoting willow and native dominated vegetation growth. The study found 10.6 hectare of “optimal” habitat that contained all territories. This optimal habitat comprised only 1 percent of total riparian habitat in the area.

The Pahranagat National Wildlife Refuge (NWR) supports one of Nevada’s largest populations of breeding southwestern willow flycatchers. Surveys have been conducted at the NWR since the mid 1990s, and have documented successful breeding every year. Latest survey information documented 23 resident breeding flycatchers at the NWR (SWCA 2007). The main breeding site consists of large, mature Gooding’s willows adjacent to the north marsh.

Presence/absence surveys completed along the Muddy River, southeast of the Covered Area, detected four willow flycatchers (McLeod et al. 2005). Koronkiewicz et al. (2006) surveyed for willow flycatcher breeding areas around the Virgin and Lower Colorado River regions. The surveys took place near the City of Mesquite. In 2003, 30 resident willow flycatchers were recorded from 19 different breeding territories, and 8 other individuals were also observed for which no residency could be established. In 2004, six flycatcher territories

and nine resident birds were detected. All nest sites were located downstream of the Mesquite Bridge, south of the Covered Area.

3.3.7.2 Covered Area

The Covered Area is located in the southeastern portion of Lincoln County, Nevada (Figure 1-2). Although critical habitat has been designated for southwestern willow flycatcher, no critical habitat has been designated in Lincoln County, Nevada. The Covered Area includes the Meadow Valley Wash, which the Southwestern Willow Flycatcher Recovery Plan identified as an area where recovery efforts should be focused (USFWS 2002). This reach is a component of the Pahranagat Management Unit, which is included in the Lower Colorado Recovery Unit, described above.

In 1999, NDOW surveyed for southwestern willow flycatcher along the eastern Nevada border, at Beaver Dam State Park and just west of the park at Clover Creek. No resident or breeding willow flycatchers were detected (NDOW 1999). Vegetation at the Beaver Dam site varied from aspen (*Populus tremuloides*), Gooding willow, Fremont cottonwood, and coyote willow. Vegetation at the Clover Creek site consisted of Gooding willow, cottonwood (*Populus* spp.), alder (*Alnus* spp.), ash (*Fraximus* spp.) and coyote willow. In 2001, another survey was completed at Beaver Dam, and, again, no willow flycatchers were detected (NDOW 2001).

In Bio-West's review of southwestern willow flycatcher surveys within the Meadow Valley Wash area, surveys had been conducted by the San Bernandino County Museum for the US Bureau of Reclamation from 1998 to 2001 (Bio-West 2005a). During these surveys, five observations were confirmed, and no observations were made at 12 other census points. Of the six observations, five were documented in Rainbow Canyon south of the City of Caliente. One of these was a documented record of a southwestern willow flycatcher on city-owned land immediately north of US Highway 93; the bird was recorded as being a migrant. Two observations were made 7.3 miles south of the City of Caliente. In 1998, a nesting southwestern willow flycatcher was observed at Stine, approximately 12 miles south of Caliente. The fifth observation was recorded as a "historical nesting" and occurred in 1998 between Stine and Boyd, approximately 16 miles south of the City of Caliente.

Bio-West's review also discussed other observations of southwestern willow flycatchers. A BLM study conducted by the URS Corporation in 2001 recorded one observation in the Meadow Valley Wash area (URS 2001 as cited in Bio-West 2005a). From 2000 to 2002, 11 driving/pedestrian transects were surveyed by NDOW and The Nature Conservancy. On these transects, NDOW reported a confirmed southwestern willow flycatcher observation near the Lincoln/Clark County line between May and August 2002 (Bio-West 2005a). Recorded sightings of flycatchers within or adjacent to the Covered Area are illustrated on Figure 3-5.

An extensive description of southwestern willow flycatcher habitat as it occurred along the Meadow Valley Wash based upon 2003 digital imagery was conducted by Bio-West in a baseline ecological assessment created for Lincoln County. After this assessment was completed, a flood on January 11, 2005, occurred which destroyed or altered much of this habitat, prompting another assessment of post-flood conditions (Bio-West 2005b, refer to Volume III: Appendix E).

During Bio-West's 2005 post-flood vegetation assessment, southwestern willow flycatcher habitat was mapped as either suitable or potential habitat in the Meadow Valley Wash area (Figure 3-6, a series of maps 1 through 8). The post-flood evaluation of the Meadow Valley Wash area was conducted by comparing pre-flood vegetation captured in September 2003 digital imagery and delineated in July 2004 to vegetation from post-flood conditions captured in June 2005 digital imagery.

Suitable habitat was defined as woody riparian stands (either trees or shrubs), that appear to have all the components necessary for southwestern willow flycatcher to establish territories and/or nest. The primary components include: 1) a stand or patch size of 0.25 acre or greater; 2) a vegetation width of more than about 30 feet; 3) a dense canopy; 4) dense interior vegetation from ground level up to about 15 feet or dense patches interspersed with openings; and 5) surface water or saturated soils present within the stand or within 125 feet of the stand Bio-West 2005b). This definition is consistent with the suitable habitat definition in the Southwestern Willow Flycatcher Recovery Plan (USFWS 2002).

This is the definition of suitable habitat used to define the obligations of the Permittees under the SLCHCP, with a small modification to account for differences in habitat use in Lincoln County. Minimum patch size is

defined as 0.1 acres within 320 feet of another patch this size or larger; or minimum patch size of 0.25 acre if not near any other habitat. This modification is based on habitat use of flycatchers at Key Pittman Wildlife Management Area in Pahranagat Valley.

Potential habitat was defined as woody riparian vegetation stands that do not currently have all the components necessary for southwestern willow flycatchers to establish territories and/or reproduce but do have the vegetation composition, patch size, and the basic vegetation structure to potentially develop into southwestern willow flycatcher suitable habitat in the future, especially if management objectives are designed to promote suitable habitat development (Bio-West 2005b). This definition is also consistent with the Southwestern Willow Flycatcher Recovery Plan (USFWS 2002), and is the definition of potential habitat to define possible restoration areas under the SLCHCP.

Approximately 1,406 acres of flycatcher habitat (suitable and potential combined) occurred in Meadow Valley Wash according to the Bio-West delineation (2005a) prior to the January 11, 2005, flood. Of the 1,406 acres, a total of approximately 507 acres of flycatcher habitat was delineated as changed from pre-flood conditions. Of the 507 acres disturbed, a total of approximately 326 acres of southwestern willow flycatcher suitable habitat was changed from pre-flood conditions, leaving approximately 181 acres of flycatcher potential habitat changed from pre-flood conditions. Thus, approximately 899 acres of flycatcher habitat (suitable and potential combined) occurs in Meadow Valley Wash from post-flood conditions.

3.3.7.3 Relevant Consultation

Within the Covered Area of the SLCHCP, the following Section 7 consultations have been conducted on the flycatcher. All consultations conducted on the flycatcher in the Covered Area to date have been informal, and proposed projects were determined “not likely to adversely affect” the flycatcher.

File No. 1-5-02-I-441.2, May 13, 2002: Federal action agency was the BLM. Proposed action was the disposal of 103 acres of land to the City of Caliente for the development of the Meadow Valley Industrial Park. Land was adjacent to the Meadow Valley Wash and would not result in the direct loss of flycatcher habitat. Any potential indirect effects would be addressed under the SLCHCP.

File No. 1-5-02-F-494, June 16, 2003: Federal action agency was the BLM. Proposed action was the disposal of 100 acres of land for development of the Toquop Energy Project. The BLM is reinitiating consultation on this project due to significant changes to the original proposed action. Effects to listed species will be addressed during the Section 7 consultation process.

File No. 1-5-06-F-423.AMD1 and AMD2: Federal action agency was BLM. Proposed project was emergency stabilization measures and weed control by UPRR adjacent to certain bridge crossings in response to the 2005 flooding event in the Meadow Valley Wash. The projects would occur outside of the flycatcher breeding season, and all habitat removed would be replaced.

File No. 1-5-07-I-485: Federal action agency was the COE. Proposed project was Phase I of the Meadow Valley Wash Linear Park Project to be implemented by the City of Caliente. Habitat removed for construction of the Linear Park Project would be replaced as part of the City’s responsibilities under the SLCHCP.

File No. 1-5-07-I-513, 515, and 516: Federal action agency was the USACE. Proposed projects were railroad repairs by UPRR at several locations along the Meadow Valley Wash. Either the projects did not occur during the flycatcher breeding season, or did not occur within suitable flycatcher habitat. All habitat removed would be replaced.

This Page Intentionally Left Blank

Figure 3-5 Southwestern Willow Flycatcher Sightings within and Adjacent to the Covered Area

Figure 3-5 BACK

Figure 3-6 Post-Flood Potential and Suitable Southwestern Willow Flycatcher Habitat within the Covered Area (Maps 1 through 8)

Figure 3-6 Map 1 of 8 BACK

Figure 3-6 Map 2 of 8

Figure 3-6 Map 2 of 8 BACK

Figure 3-6 Map 3 of 8

Figure 3-6 Map 3 of 8 BACK

Figure 3-6 Map 4 of 8

Figure 3-6 Map 4 of 8 BACK

Figure 3-6 Map 5 of 8

Figure 3-6 Map 5 of 8 BACK

Figure 3-6 Map 6 of 8

Figure 3-6 Map 6 of 8 BACK

Figure 3-6 Map 7 of 8

Figure 3-6 Map 7 of 8 BACK

Figure 3-6 Map 8 of 8

Figure 3-6 Map 8 of 8 BACK

3.4 LITERATURE CITED

Berry, K.H. 1986. Desert tortoise (*Gopherus agassizii*) relocation: Implications of social behavior and movements. Herpetologica. 42: 113-125.

Berry, K.H. and B.L. Burge. 1984. The desert tortoise in Nevada. Chapter 8 In K.H. Berry. (ed.) 1984. The Status of the Desert Tortoise (*Gopherus agassizii*) in the United States. Report to U.S. Fish and Wildlife Service from the Desert Tortoise Council. Order No. 11210-0083-81.

Berry, K.H., D.J. Morafka and R.W. Murphy. 2002. Defining the desert tortoise(s): our first priority for a coherent conservation strategy. Chelonian Conservation and Biology 4: 249-262.

Britten, H.B., B.R. Riddle, P.F. Brussard, R.W. Marlow and T.E. Lee, Jr. 1997. Genetic delineation of management units for the desert tortoise, *Gopherus agassizii*, in northeastern Mojave Desert. Copeia 1997: 523-530.

Brooks, M.L. 1998. Ecology of a biological invasion: alien annual plants in the Mojave Desert. Ph.D. dissert. U. Calif. Riverside.

Brown. 2004.

Brooks, M.L., and T.C. Esque. 2002. Alien plants and fire in desert tortoise (*Gopherus agassizii*) habitat of the Mojave and Colorado deserts. Chelonian Conservation and Biology 4:330-340.

Brooks, M.L., and J.R. Matchett. 2006. Spatial and temporal patterns of wildlfires in the Mojave Desert, 1980-2004. Journal of Arid Environments 67 Supplement: 148-164.

Brown, D.E., and R.A. Minnich. 1986. Fire and changes in creosote bush scrub in the western Sonoran Desert, California. American Midlands Naturalist 116(2):41 1-422.

Brown, M.B., I.M. Schumacher, P.A. Klein, K. Harris, T. Correll, and E.R. Jacobson. 1994. *Mycoplasma agassizii* causes upper respiratory tract disease in the desert tortoises. Infection and Immunity 62(10):4580-4586.

Brown, M.B., K.H. Berry, I.M. Schumacher, K.A. Nagy, M.M. Christopher, and P.A. Klein. 1999. Seroepidemiology of the upper respiratory tract disease in the desert tortoise in the western Mojave Desert of California. Journal of Wildlife Diseases 35: 716-727.

Browning, M.R. 1993. Comments on the taxonomy of *Empidonax traillii* (willow flycatcher).

Bureau of Land Management (BLM). 1998. Record of Decision for the Approved Las Vegas Resource Management Plan and Final Environmental Impact Statement.

Bureau of Land Management (BLM). 2000. Approved Caliente Management Framework Plan Amendment and Record of Decisions for the Management of Desert Tortoise Habitat. Ely Field Office, Ely, Nevada. September 2000.

Bury, R.B., T.C. Esque, L.A. DeFalco and P.A. Medica. 1994. Distribution, habitat use, and protection of the desert tortoise in the eastern Mojave Desert. [Washington, DC]: USFWS. 57-72. [67595]

Christopher, M.M., K.H. Berry, B.T. Henen, and K.A. Nagy. 2003. Clinical disease and laboratory abnormalities in free-ranging desert tortoises in California (1990-1995). Journal of Wildlife Diseases 39: 35-56.

Drost, C.A., M.K. Sogge and E. Paxton. 1997. Preliminary diet study of the endangered southwestern willow flycatcher.

EnviroPlus Consulting. 1995. Desert tortoise population studies at plots in southern Nevada. Report to U.S. Department of Interior, National Biological Service. Contract # 14-48-0006-95-019. 53pp. plus appendices.

Finch, D.M. and S.M. Stoleson. 2000. Status, ecology, and conservation of the southwestern willow flycatcher. Gen. Tech Rep. RMRS-GTR-60. Ogden, Utah: U.S. Dept. of Agriculture, Forest Service, Rocky Mountain Research Station.

Germano, D.J., R.B. Bury, T.C. Esque, T.H. Fritts, and P.A. Medica. 1994. Range and habitats of the desert tortoise. In: Germano, D.J. and R.B. Bury, eds. Biology of North American tortoises. Washington, DC: DOI, National Biological Survey, Fish and Wildlife Research. 73-84. [67605]

Hanski, I., and M.E. Gilpin (eds.). 1997. Metapopulation Biology: Ecology, Genetics and Evolution. Academic Press.

Henen, B.T. 1997. Seasonal and annual energy budgets of female desert tortoises (*Gopherus agassizii*). Ecology. 78(1): 283-296. [67639]

Howell, S. and S. Webb. 1995. A guide to the birds of Mexico and northern Central America. Oxford University Press. 851 pp.

Hubbard, J.P. 1987. The status of the willow flycatcher in New Mexico. Endangered Species Program. New Mexico Department of Game and Fish, Santa Fe, New Mexico.

Jacobson, E.R, J.M. Gaskin, M.B. Brown, R.K. Harris, C.H. Gardiner, J.L. LaPointe, H.P. Adams, and C. Reggiardo. 1991. Chronic upper respiratory tract disease of free-ranging desert tortoises (*Xerobates agassizii*). Journal of Wildlife Diseases 27(2):296-316.

Jacobson, E.R., T.J. Wronski, I. Schumacher, C. Reggiardo, and K.H. Berry. 1994. Cutaneous dyskeratosis in free-ranging desert tortoises, *Gopherus agassizii*, in the Colorado Desert of southern California. Journal of Zoo and Wildlife Medicine 25: 68-81.

Jennings, W.B. 1993. Foraging ecology and habitat utilization of the desert tortoise (*Gopherus agassizii*) at the Desert Tortoise Research Natural Area, East Kern County, California. Bureau of Land Management, Riverside, California. Contract No. B95-C2-0014.

Knight & Leavitt Associates, Inc (K&LA). 2000. Coyote Spring: Summary of Desert Tortoise Transects. Unpublished report prepared for Coyote Springs Investment LLC.

Koronkiewicz, T.J., M.A. McLeod, B.T. Brown, and S.W. Carothers. 2006. Southwestern Willow Flycatcher surveys, demography, and ecology along the lower Colorado River and tributaries, 2005. Annual report submitted to U.S. Bureau of Reclamation, Boulder City, NV by SWCA Environmental Consultants, Flagstaff, AZ. 176 pp.

Lamb, T., and C. Lydehard. 1994. A molecular phylogeny of the gopher tortoises, with comments on familiar relationships within the Testudinoidea. Molecular Phylogenetics and Evolution 3: 283-91.

Lamb, T., J.C. Avise and J.W. Gibbo*ns. 1989. Phylogeographic Patterns in Mitochondrial DNA of the Desert Tortoise (*Xerobates agassizi), and Evolutionary Relationships Among the North American Gopher Tortoises. Evolution. Vol. 43, No. 1 (Jan., 1989), pp. 76-87.

Levins R., and D. Culver. 1971. Regional coexistence of species and competition between rare species. Proceedings of the National Academy of Sciences 68:1246-1248.

Luckenbach, R.A. 1982. Ecology and management of desert tortoise (*Gopherus agassizii*) in California. In: North American tortoises: conservation and ecology. Wildlife Res. Rep. 12. Washington, DC: USFWS. 1-37. [13727]

Luke, C., A. Karl, and P. Garcia. 1991. A status review of the desert tortoise. Biosystems Analysis, Inc., Tiburon, California.

McLeod, M.A., T.J. Koronkiewicz, B.T. Brown, and S.W. Carothers. 2005. Southwestern willow flycatcher surveys, demography, and ecology along the Lower Colorado River and tributaries, 2004. Annual report submitted to U.S. Bureau of Reclamation, Boulder City, Nevada. SWCA Environmental Consultants, Flagstaff, Arizona. 161 pp.

McLuckie, A.M. and R.A. Fridell. 2002. Reproduction in a desert tortoise (*Gopherus agassizii*) population on Beaver Dam Slope, Washington County, Utah. Chelonian Conservation and Biology. 4(2): 288-294. [67619]

Mueller, J.M., K.R. Sharp, K.K. Zander, D.L. Rakestraw, K.R. Rautenstrauch, P.E. Lederle. 1998. Size-specific fecundity of the desert tortoise (*Gohperus agassizii*). Journal of Herpetology. 32(3): 313-319. [67641]

Nagy, K.A., B.T. Henen, and D.B. Vyas. 1998. Nutritional quality of native and introduced food plants of wild desert tortoises. Journal of Herpetology 32:260-267.

Nevada Department of Wildlife (NDOW). 1999. Breeding status of the southwestern willow flycatcher and yellow-billed cuckoo at sites in southern Nevada. Nevada Division of Wildlife, Southern Region.

Nevada Department of Wildlife (NDOW). 2001. Breeding status of the southwestern willow flycatcher and yellow-billed cuckoo at sites in southern Nevada. Nevada Division of Wildlife, Southern Region.

Owen, J.C., M.K. Sogge, and M.D. Kern. 2005. Habitat and sex differences in physiological condition of breeding southwestern willow flycatchers. Auk 122(4):1261-1270.

Phillips, A. 1948. Geographic variation in *Empidonax traillii*. Auk 65:507-514.

Ridgely, R.S. and G. Tudor. 1994. The Birds of South America. Volume II: The Suboscine Passerines. University of Texas Press, Austin. 814 pp.

Sferra, S.J., R.A. Meyer, and T.E. Corman. 1995. Arizona Partners in Flight 1994 southwestern willow flycatcher survey. Nongame and Endangered Wildlife Program Technical Report 69. Arizona Game and Fish Department, Phoenix, Arizona. 46 pp.

Sferra, S.J., T.E. Corman, C.E. Paradzick, J.W. Rourke, J.A. Spencer, and M.W. Sumner. 1997. Arizona Partners in Flight southwestern willow flycatcher survey: 1993-1996 summary report. Nongame and Endangered Wildlife Program Technical Report 113. Arizona Game and Fish Department, Phoenix, Arizona. 104 pp.

Sogge, M.K., T.J. Tibbitts, and J.R. Petterson. 1997. Status and breeding ecology of the southwestern willow flycatcher in the Grand Canyon. Western Birds 28:142-157.

Spencer, J.A., S.J. Sferra, T.E. Corman, J.W. Rourke, and M.W. Sumner. 1996. Arizona Partners in Flight 1995 southwestern willow flycatcher survey. Nongame and Endangered Wildlife Program Technical Report 97. Arizona Game and Fish Department, Phoenix, Arizona. 74 pp.

SWCA, Inc. Environmental Consultants. 2007.

Turner, F. B., P.A. Medica and C.L. Lyons. 1984. Reproduction and survival of the desert tortoise in Ivanpah Valley, California. Copeia. 1984(4): 811-820. [69495]

U.S. Fish and Wildlife Service (USFWS). 1994. Desert Tortoise (Mojave Population) Recovery Plan. Prepared for Regions 1, 2 and 6 of the USFWS, Portland, OR.

U.S. Fish and Wildlife Service (USFWS). 2001. Biological Opinion for the Disposal of 13,500 Acres of Public Lands in Lincoln County, Nevada under the Lincoln County Land Act of 2000. Nevada Fish and Wildlife Office, Reno, Nevada. File No. 1-5-01-F-517. September 7, 2001.

U.S. Fish and Wildlife Service (USFWS). 2002. Southwestern Willow Flycatcher Recovery Plan (Final). USFWS Division of Ecological Services, Albuquerque, New Mexico.

U.S. Fish and Wildlife Service (USFWS). 2005a. Draft Biological Opinion for the proposed Coyote Springs Investment LLC Development in Las Vegas, Clark County, Nevada (Corps of Engineers Permit Application No. 200125042). File No. 1-5-05-FW-536-Tier 02. Reno, Nevada.

U.S. Fish and Wildlife Service (USFWS). 2005b. Designation of Critical Habitat for the Southwestern Willow Flycatcher: Final Environmental Assessment. September 2005. U.S. Fish and Wildlife Service, Southwest Region.

Unitt, P. 1987. *Empidonax traillii extimus*: an endangered subspecies. Western Birds 18:137-162.

Walker, M., and P. Woodman. 2002. Desert tortoise population survey at Beaver Dam Slope exclosure desert tortoise study plot; spring, 2001. Report to Arizona Game and Fish Department, Phoenix, AZ.

Whitfield, M.J. and K.M. Enos. 1996. A brown-headed cowbird control program and monitoring for the southwestern willow flycatcher, South Fork Kern River, California, 1996 Final Report. Kern River Research Center, California. 18 pp.

Young, R., C. Halley, and P. Woodman. 2002. Desert tortoise population survey at Littlefield desert tortoise study plot, spring, 2002. Report to Arizona Game and Fish Department, Phoenix, AZ.

Section 4: Covered Activities

Covered Activities are actions that may result in incidental take of the Covered Species on non-Federal lands within the Covered Area by Lincoln County government, private landowners, the City of Caliente, or 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 (Table 4-1).

Table 4-1: 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	18,579
LCLA Lands	13,520	13,520
Meadow Valley Industrial Park	103	103
Alamo Industrial Park and Community Expansion Area	855	855
BLM Disposal Lands 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	400
UPRR lands and rights-of-way	3,699	854
Other privately-owned lands subject to land conversion activities (e.g. agriculture to urban or grazing to cultivated and/or irrigated agricultural land)	7,104	586
TOTAL	30,673.5	20,427.3

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 term of the Section 10 permits. An estimate of this acreage is included in the total displayed in Table 4-1 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 (Figure 4-1).

4.1 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) the Alamo Industrial Park and Community Expansion Area; 2) the Meadow Valley Industrial Park site located at the southern end of Caliente; and 3) the LCLA lands (Figure 4-1). These planned development activities are further described below.

In addition to the non-Federal lands identified above, the alternatives set forth in the Draft Ely RMP 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 disposal 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 4-1).

4.1.1 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 4-2). 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 DA between the developer(s) and Lincoln County. 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.

4.1.2 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 US 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 4-3). 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 Draft Ely RMP/Draft EIS (BLM 2005). 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 time frame. Construction of all infrastructure for the industrial and residential developments would also be a component of the property development.

4.1.3 Meadow Valley Industrial Park

The 103-acre Meadow Valley Industrial 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 4-4). As part of the Section 7 consultation conducted between the BLM and the USFWS on the sale of 103 acres of land administered by BLM to the City of Caliente for the construction and operation of the Meadow Valley Industrial Park, the Park is included in the proposed Covered Area of the SLCHCP. 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. Water and sewer improvements have already been constructed within the Meadow Valley Industrial Park.

Figure 4-1 Proposed Covered Area

Figure 4-1 BACK

Figure 4-2 LCLA Lands Parcel

Figure 4-2 BACK

Figure 4-3 Alamo Lands Including Proposed BLM Disposal Lands

Figure 4-3 BACK

Figure 4-4 Meadow Valley Industrial Park

Figure 4-4 BACK

4.1.4 Additional BLM Disposal Lands Identified in the Draft Ely Resource Management Plan

4.1.4.1 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 Draft RMP for the Ely Resource Area identifies approximately 3,461 acres between Alamo and Hiko on both sides of Highway 93 as being suitable for disposal through sale or exchange (Figure 4-3). 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, 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.

4.1.4.2 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 4-5). 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 and ESA Section 7 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.

4.2 UTILITY AND INFRASTRUCTURE DEVELOPMENT AND MAINTENANCE ACTIVITIES

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, 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 DA, 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 northwestern portion of the SLCHCP Covered Area).

4.3 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. In addition, the proposed Ely RMP also calls for the creation of a Lower Meadow Valley Wash ACEC, which could afford additional riparian habitat protection.

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 US Highway 93 and the upstream culvert at Clover Creek to increase flow capacity.

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. The City of Caliente supports habitat growth as long as it does not increase the flood threat to the City of Caliente. 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.

Figure 4-5 BLM Disposal Lands Proposed for Development within the Covered Area

Figure 4-5 BACK

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 4-6). According to the Meadow Valley Wash Baseline Ecological Assessment (Bio-West 2005a), 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. 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; and 2) construction of a linear park and other pedestrian access along the Wash. 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 flood control measures and BMPs. For the LCLA lands, Lincoln County is considering the applicability of the flood control requirements detailed in the Clark County Drainage Design Manual as provided in Volume III: Appendix F of this document 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 this SLCHCP with a Federal nexus.

4.4 ROADWAY CONSTRUCTION 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 US 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.

4.4.1 Lincoln County

Lincoln County roads are improved and maintained by the Lincoln County Road Department. The entire County contains approximately 1,274 acres of county-maintained roads (Figure 4-1) (Lincoln County Master Plan 2006). All normal 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)
- Remove 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

Figure 4-6 Caliente's Proposed Flood Control Activities

Figure 4-6 BACK

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

4.5 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 (Figure 4-1).

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, US 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,
- 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 and, in some cases, will take place on BLM Lands in the vicinity of these Union Pacific 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, 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.

UPRR 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 Clean Water Act. 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.

4.6 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. agriculture to urban use or grazing to cultivated and/or irrigated 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 (Figure 4-1). Agriculture and livestock practices have gone on for close to 100 years within the Meadow Valley Wash and Clover Creek areas. 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 cultivated and/or irrigated agricultural land and wish to participate in the SLCHCP, then the landowner could "opt in" by signing a Participation Agreement provided by Lincoln County for coverage under the Permit issued to Lincoln County for the SLCHCP.

4.7 LITERATURE CITED

Bio-West, Inc. 2005a. Meadow Valley Wash Final Baseline Ecological Assessment. March 2005. Prepared for Lincoln County, Nevada. 105 p. plus appendices.

Bio-West, Inc. 2005b. Meadow Valley Wash Post-flood Vegetation Assessment. September 2005. Prepared for the Bureau of Land Management, Ely Field Office.

Provencher, L., J. Nachlinger, T. Forbis, and W.M. Morril. 2003. Antelope and North Spring Valleys, Steptoe Valley and Uplands, Newark Valley Extended Watershed, and Meadow Valley Wash and Uplands conservation area assessment executive summary. Revised final draft. The Nature Conservancy of Nevada. Quick_Stats/index.asp. Accessed on February 14, 2007.

Section 5: Potential Effects and Anticipated Take

5.1 INTRODUCTION

The granting of a Section 10 permit requires an analysis of direct and indirect potential effects of Covered Activities on Covered Species. This section evaluates the Potential Effects of Covered Activities described in Section 4 of this document on Covered Species. As defined in Section 3 of this document, Covered Species include those for which sufficient information exists and for which adequate management prescriptions exist or can be easily defined and implemented. Potential effects are evaluated for each Covered Species separately by the following Covered Activities:

- Planned land development and maintenance activities (includes the BLM disposal lands),
- Utility and infrastructure development and maintenance activities,
- Flood control activities,
- County roadway construction and maintenance activities,
- Union Pacific Railroad activities, and
- Other privately-owned lands subject to land conversion activities (e.g. agriculture to urban use or grazing to cultivated and/or irrigated agricultural land).

The SLCHCP requests incidental take associated with loss of habitat and individuals for desert tortoise and the southwestern willow flycatcher.

5.1.1 Type of Effect

Evaluation of effects is based on both the context (e.g., type of activity) and intensity (e.g., duration) of the action. Effects can be either “Direct” or “Indirect.” Both types of effects on Covered Species are analyzed in this section.

5.1.1.1 Direct Effects

Direct effects encompass the immediate, often obvious effect of the project activity on a species or its habitat (typically direct harm or harassment to individuals and/or habitat). Examples of potential direct effects are disturbance, injury, or mortality that may occur during construction or maintenance activities, including alterations to habitat.

5.1.1.2 Indirect Effects

Indirect effects are caused by or result from the project activity. They can occur later in time, but are still reasonably certain to occur. In contrast to direct effects, indirect effects can often be more subtle, and may affect species’ populations and habitat quality over an extended period of time, long after project activities have been completed. Indirect effects are of particular concern for long-lived species like the desert tortoise, because project-related effects may not become evident in individuals or populations until years later.

5.2 METHODS FOR ESTIMATING COVERED SPECIES HABITAT

5.2.1 Methods for Estimating Desert Tortoise Habitat

Lincoln County, the City of Caliente, and UPRR are each requesting a Section 10 permit for take of desert tortoise associated with the activities described in Section 4: Covered Activities of this document that affect desert tortoise habitat on non-Federal lands and land identified for disposal by BLM in the Covered Area. The amount of requested take associated with loss of desert tortoise habitat in the Covered Area is based on the need to utilize the limited amount of existing and planned private land in the County to accommodate future foreseeable growth.

For the purposes of this analysis, potential desert tortoise habitat within the Covered Area includes all of the previously undisturbed Mojave mixed desert scrub, salt desert scrub, and blackbrush vegetation associations mapped below 4,200 foot contours. The northern edge of desert tortoise habitat in the Covered Area is at the confluence of Cottonwood Canyon and Meadow Valley Wash near UPRR railroad mile post 431.6 (Figure 3-3). However, any Permittee may present new or additional data to USFWS in order to refine the mapping of suitable desert tortoise habitat on lands within the Covered Area. Where the Permittee provides valid scientific data demonstrating a more accurate delineation of suitable habitat (as defined in the SLCHCP) than current mapping, USFWS will cooperate and coordinate with Lincoln County, City of Caliente, and UPRR, as appropriate, in reviewing results from habitat monitoring and sensitive species mapping.

If revised delineations are accepted and approved by the USFWS, the Permittees' obligations under the SLCHCP for disturbance of suitable habitat will be keyed to the new delineation and suitable habitat acreages subject to mitigation requirements will be adjusted accordingly. However, revisions to habitat delineations are not expected to result in habitat loss above the acreage limit identified in the SLCHCP during the term of the permit(s). Proposals to remove habitat above the limit identified in this plan would require an amendment to the plan.

5.2.1.1 Critical Habitat Analysis

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. Figure 3-1 illustrates the private parcels within the Covered Area that are within desert tortoise critical habitat. No private lands are present within the Beaver Dam Slope Critical Habitat Unit in the Covered Area.

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.

The parcels are within the creosote-bursage and lowland riparian vegetation classes and the vegetation within the parcels remain intact, with the exception of the linear disturbances. These disturbance areas lack native vegetation and arguably have been altered to levels that limit habitat viability. Under the SLCHCP, no Section 10 Covered Activities will occur on desert tortoise critical habitat, although several private parcels along the Meadow Valley Wash are within desert tortoise critical habitat.

5.2.2 Methods for Estimating Southwestern Willow Flycatcher Habitat

5.2.2.1 Suitable Habitat

As discussed previously in Section 3.3.7.2, suitable habitat was defined as woody riparian stands (either trees or shrubs), that appear to have all the components necessary for southwestern willow flycatcher to establish territories and/or nest. The primary components include: 1) a stand or patch size of 0.25 acre or greater; 2) a vegetation width of more than about 30 feet; 3) a dense canopy; 4) dense interior vegetation from ground level

up to about 15 feet or dense patches interspersed with openings; and 5) surface water or saturated soils present within the stand or within 125 feet of the stand (Bio-West 2005b). This definition is consistent with the suitable habitat definition in the Southwestern Willow Flycatcher Recovery Plan (USFWS 2002). This is the definition of suitable habitat used to define the obligations of the Permittees under the SLCHCP, with a small modification to account for differences in habitat use in Lincoln County. Minimum patch size is defined as 0.1 acre within 320 feet of another patch this size or larger; or minimum patch size of 0.25 acre if not near any other habitat. This modification is based on habitat use of flycatchers at Key Pittman Wildlife Management Area in Pahranagat Valley.

5.2.2.2 Potential Habitat

As discussed previously in Section 3.3.7.2, potential habitat was defined as woody riparian vegetation stands that do not currently have all the components necessary for southwestern willow flycatchers to establish territories and/or reproduce but do have the vegetation composition, patch size, and the basic vegetation structure to potentially develop into southwestern willow flycatcher suitable habitat in the future, especially if management objectives are designed to promote suitable habitat development (Bio-West 2005b). This definition is also consistent with the Southwestern Willow Flycatcher Recovery Plan (USFWS 2002), and is the definition of potential habitat to define possible restoration areas under the SLCHCP.

5.2.2.3 Unsuitable Habitat

Unsuitable habitats are those riparian and upland areas which do not have the potential for developing into suitable habitat, even with extensive management. Examples of unsuitable habitat are found far outside of floodplain areas, along steep-walled and heavily bouldered canyons, at the bottom of very narrow canyons, and in other areas where physical and hydrological conditions could not support the dense riparian shrub and tree vegetation used by breeding flycatchers, even with all potential stressors removed (USFWS 2002).

5.2.2.4 Habitat Analysis

Within the Covered Area, suitable habitat for the southwestern willow flycatcher as described above occurs discontinuously along Meadow Valley Wash. The Meadow Valley Wash is approximately 68 miles long from Caliente to the Clark County line. Of the 68 miles, 25 miles cross non-Federal land and 43 miles cross BLM managed public land. Approximately 1,406 acres of southwestern willow flycatcher habitat (suitable and potential combined) occurred in Meadow Valley Wash prior to the January 11, 2005, flood. According to Bio-West (2005b), a total of approximately 507 acres of southwestern willow flycatcher habitat was delineated as changed from pre-flood conditions, including 326 acres of suitable habitat and 181 acres of potential habitat.

A primary goal of the SLCHCP is to attain no net loss of suitable southwestern willow flycatcher habitat along the Meadow Valley Wash and in the vicinity of the US Highway 93 right-of-way due to human activities. Any Permittee or landowner seeking coverage under the SLCHCP may comply with the SLCHCP by utilizing the habitat mapping in the SLCHCP that reflects the location and acreage of suitable habitat. In other words, the minimization and mitigation requirements of the SLCHCP may be keyed to the Bio-West mapping (2005b) for purposes of delineating suitable habitat disturbance pursuant to covered activities and the Permittee's resulting mitigation obligations. Alternatively, any Permittee may present new or additional data to USFWS in order to refine the mapping of habitat on lands within the Covered Area. Where the Permittee provides valid scientific data demonstrating a more accurate delineation of suitable habitat (as defined in the SLCHCP) than the Bio-West mapping, USFWS will cooperate and coordinate with Lincoln County, the City of Caliente, and UPRR, as appropriate, in reviewing results from habitat monitoring and sensitive species mapping. If accepted and approved by the USFWS, the Permittee's obligations under the SLCHCP will be keyed to the new delineation. However, revisions to habitat delineations are not expected to result in suitable habitat loss above the acreage limit identified in the SLCHCP during the life of the permit(s). Proposals to remove suitable habitat above the limit identified in this plan would require an amendment to the plan.

Planned habitat removal will be mitigated by habitat creation. Lincoln County proposes to create habitat in areas identified as potential habitat in the Meadow Valley Wash Post-Flood Vegetation Assessment (Bio-West 2005b).

5.3 POTENTIAL EFFECTS BY ACTIVITY TO THE COVERED SPECIES

This section presents the analysis of potential effects for the Covered Species, organized by Covered Activity. Potential direct and indirect effects are included in the analysis. In this evaluation of potential effects, the level of potential incidental take and related effects expected to result from proposed project activities are presented for each of the Covered Species. These potential effects are then compared with proposed Conservation Measures (Section 6 of this document) to determine the level of incidental take for each of the Covered Species to be covered by the Section 10 permit(s). This information is presented in Section 7: Expected Outcomes, Adaptive Management, and Monitoring of this document. Table 5-1 summarizes the potential effects by all the Covered Activities on the Covered Species.

Table 5-1: 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)
Planned Land Development & Maintenance (including BLM disposal lands)	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, disposal lands)	Direct and indirect effects accounted for in Land Development	Direct/indirect effects to 8.3 acres of suitable habitat by City of Caliente in the Meadow Valley Wash
Union Pacific Railroad	Direct/indirect effects to 800 acres of habitat	Direct/indirect effects to 54 acres of habitat
Other Privately-owned Lands Subject to Land Conversion Activities (e.g. agriculture to urban or grazing to agricultural land)	Potential direct/indirect effects to 564 acres of habitat if private land is converted from agriculture to urban use or grazing to cultivated and/or agricultural land	Potential direct/indirect effects to 22 acres of habitat if private land is converted from agriculture to urban use or cultivated and/or grazing to agricultural land
TOTAL	19,840 acres	84.3 acres

5.3.1 Planned Land Development and Maintenance Activities

5.3.1.1 Desert Tortoise

The Covered Area is within the Northeast Mojave Desert Tortoise Recovery Unit, which includes 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 by BLM as ACECs for special management of desert tortoise. A total of 198,163 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 lie adjacent to and directly north and west of the LCLA parcel on Federal lands. Adjacent to and south of the LCLA parcel is the expanding urban development of the City of Mesquite. 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. 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 (Figure 5-1).

The total area of these private parcels represents less than 21 percent of the land area permanently protected as designated ACECs in the Covered Area. Only 215 acres of the 30,673.5 acres of private lands addressed in the SLCHCP are within designated desert tortoise critical habitat; however, there are no known plans for changing the current land use within these parcels. No critical habitat or land within desert tortoise ACECs is identified for future disposal by BLM. Though various established road rights-of-way cross critical habitat and ACECs, the SLCHCP does not address any direct loss, disposal, or development of designated desert tortoise critical habitat or BLM designated ACECs. Therefore, there will be no direct effect on designated critical habitat or ACECs, though indirect effects are considered.

Figure 5-1 Proposed Land Development on Desert Tortoise Habitat

Figure 5-1 BACK

5.3.1.1.1 Direct Effects

With the disposal of Federal lands, BLM has already relinquished management authority (as a result of land disposal) over activities associated with the use of the LCLA land and as a result of recent sales is in the process of relinquishing management authority over the 228-acre Alamo Industrial Park site and 159 acres in the Alamo Community Expansion Area. Additionally, the 479-acre balance of the Alamo Community Expansion Area; 3,461 acres of desert tortoise habitat around the Alamo area and the 640-acre Section 36 disposal parcel within the Covered Area have been identified for future potential disposal by BLM, at which time management of those lands would be conveyed to private interests and subject to County permits and other local ordinances. Activities conducted on the Meadow Valley Industrial Park site 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 desert scrub to human residential, commercial, recreational and light industrial use; 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 land within the Covered Area, land development activities are proposed to occur on the 13,520-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.

With the disposal of Federal lands, BLM has relinquished discretion over activities associated with the use of the LCLA parcel and will relinquish discretion over activities on the Alamo Industrial Park parcel. In addition, 4,101 acres (which includes the 640-acre Section 36 disposal parcel plus the 3,461 acres around Alamo) of desert tortoise habitat on BLM lands within the Covered Area have been identified for future potential disposal, at which time management of those lands would be conveyed to private interests and subject to county permits and other local ordinances.

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 (refer to Table 5-1) comprising the Covered Area, which are not designated as critical habitat.

5.3.1.1.2 Indirect Effects

Due to indirect effects arising from increased human presence, conversion of the land to human uses in the Covered Area could adversely affect 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.

Roads may result in indirect effects 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 2002).

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.

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 2002). 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).

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 tortoise could contribute to the spread of diseases such as 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 2002).

Development activities within the Covered Area that create ground disturbance could cause increases in non-native plants 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, increased due to disturbance by OHV, 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-natives (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). Indeed, over 500,000 acres of desert lands burned in the Mojave Desert in the 1980s. Thus, the potential for increases in non-native plants through ground disturbance within the Development Area could also result in increases in fire frequency in surrounding desert tortoise habitat.

Changes in plant communities caused by recurrent fire may negatively affect 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.

5.3.1.2 Southwestern Willow Flycatcher

5.3.1.2.1 Direct Effects

The one proposed development project to occur near the Meadow Valley Wash within the Covered Area is the 103-acre Meadow Valley Industrial Park. However, no direct effects to southwestern willow flycatchers or their habitat would result from development activities due to activities being contained within the area of effect, which does not include the Meadow Valley Wash or its riparian area. The LCLA lands and the 640-acre Section 36 disposal parcel do not occur in southwestern willow flycatcher habitat. The Alamo Industrial Park and Community Expansion Area and proposed BLM disposal lands around Alamo do not occur in close proximity to the Pahranagat Wash; 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).

Recreation occurs along the Meadow Valley Wash in the City of Caliente, but no other recreation has been documented on non-Federal lands in suitable habitat. The only documented recreational activities taking place in suitable habitat is not a significant threat to the southwestern willow flycatcher. However, over time, recreational activities in the Meadow Valley Wash may become a significant threat to the southwestern willow flycatcher as development increases in Lincoln County. This could result in degradation of riparian habitat from activities including but not limited to trampling, woodcutting, wildfire, off-road incursions, and harassment from noise.

5.3.1.2.2 Indirect Effects

Due to indirect effects arising from increased human presence from the proposed development of the 103-acre Meadow Valley Industrial Park, conversion of the land to human uses in the Covered Area could reduce the quality of habitat within the Meadow Valley Wash.

The proposed development 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).

The development of this site could also 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 13,520-acre LCLA parcel and the 640-acre Section 36 disposal 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, future Section 7 consultation with the USACE will cover the direct and indirect effects of issuing a Section 404 permit for altering existing drainage patterns.

5.3.2 Utility and Infrastructure Development and Maintenance Activities

5.3.2.1 Desert Tortoise

5.3.2.1.1 Direct Effects

Construction and maintenance of utilities result in effects similar to land development and maintenance activities described above. Other than the LCLA lands, effects to the tortoise from utility construction and maintenance activities on non-Federal land are expected to be minor, because the land is already disturbed or developed. However, desert tortoises may wander onto roads and into rights-of-way of construction sites; thus are susceptible to mortality from vehicular traffic. The potential for mortality to occur from vehicular encounters increases in construction zones or on roads or rights-of-way with higher levels of traffic that cross through areas with higher desert tortoise densities.

Urban development in the Covered Area will necessarily entail 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 just outside of the northwestern portion of the SLCHCP Covered Area); thus, no additional loss of desert tortoise habitat outside of the LCLA area is expected.

5.3.2.1.2 Indirect Effects

Primary threats from utilities include habitat removal during construction and rights-of-way maintenance and the potential spread of weeds through the 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. Construction and maintenance of utilities 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 2002). 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 2002), 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. Common raven (*Corvus corax*) predation of juvenile tortoises is a major cause of mortality. 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.

5.3.2.2 Southwestern Willow Flycatcher

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.

5.3.3 Flood Control Activities

5.3.3.1 Desert Tortoise

Construction and maintenance of flood control facilities associated with County and UPRR rights-of-ways and land parcels proposed for development result in effects similar to land development and maintenance activities described above. Other than the LCLA lands, threats due to flood control activities on non-Federal land is limited, because the land is already disturbed or developed.

5.3.3.1.1 Direct Effects

Flood control measures 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 measures for the LCLA land, Section 36 disposal parcel and Alamo area (including lands proposed for disposal by BLM) could affect individual tortoises by changing flow patterns around these parcels, but these changes would not result in injury or mortality unless individuals or eggs were missed during clearance surveys. The loss of desert tortoise habitat associated with these parcels has been discussed under land development and maintenance activities described above.

5.3.3.1.2 Indirect Effects

Indirect effects related to the amount of flow leaving Lincoln County due to flood control activities would not be greater than currently exists; therefore, drainage basins within these parcels would comprise the majority of the change. Additional effects to tortoises would be limited to alteration of the landscape configuration of drainages and washes, resulting in potential changes in desert tortoise distribution in the area.

Other areas in the Covered Area, including the LCLA land, 640-acre Section 36 disposal parcel and Alamo area (including lands proposed for disposal by BLM) will require flood control measures. Properly designed flood control structures have low or unquantifiable effects to downstream resources.

5.3.3.2 Southwestern Willow Flycatcher

The City of Caliente proposes to reconfigure the Meadow Valley Wash along the reach that runs through the community, from the US Highway 93 bridge on the northeastern edge of town to the US Highway 93 bridge on the southwestern edge of town.

5.3.3.2.1 Direct Effects

The flood control measures outlined in detail in Section 4: Covered Activities of this document would essentially result in the removal of all current riparian vegetation in the bottom of the Meadow Valley Wash between the two bridges described above, which covers approximately 17.5 acres. In doing so, 8.3 acres of suitable southwestern willow flycatcher habitat (less than one percent of total existing suitable habitat in the

Meadow Valley Wash) and 9.2 acres of potential southwestern willow flycatcher habitat would be lost (less than one percent of total potential suitable habitat in Meadow Valley Wash) (see Figure 4-6). These flood control measures would affect the normal stream function and the dynamic nature of the riparian corridor.

As mature riparian vegetation returns to the reach after flood control measures are implemented, future flood events would be less likely to adversely affect this 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 what type and design of flood control measures will be implemented in the wash, it is assumed that this area will no longer be capable of supporting suitable flycatcher habitat.

As part of their Covered Activities, UPRR conducts flood control activities within their rights-of-way along the Meadow Valley Wash. Please refer to Section 5.3.5 for a description of effects on desert tortoise and southwestern willow flycatcher from these activities.

5.3.3.2.2 Indirect Effects

As a result of flood control measures implemented in Meadow Valley Wash by the City of Caliente, some changes to channel structure above and below this reach could be expected. This could result in long-term changes to riparian habitats near this reach, depending upon how the flood control measures are implemented.

Stormwater flows (further detail provided in the accompanying EIS for the SLCHCP) that enter the Virgin River from the LCLA land and 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.

5.3.4 Roadway Construction and Maintenance Activities

Under the SLCHCP, the Lincoln County Roads Department will implement avoidance and minimization measures, as well as best management practices (BMPs), described further in Section 6.6 of this document to offset any potential direct and indirect effects to the desert tortoise and its habitat from roadway construction and maintenance activities.

5.3.4.1 Desert Tortoise

The presence of paved and unpaved roads has the potential to affect tortoises both directly and indirectly (Burge 1977, Boarman 2002, Tracy et al. 2004). Recent inventories and analyses indicate that the number of roads and routes has increased in the Mojave Desert (Tracy et al. 2004) and that these roads must be considered as an important component of desert tortoise management.

5.3.4.1.1 Direct Effects

State and County roads 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 tortoise due to traffic. Effects 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 (Figure 5-2). 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 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 (Figure 5-3).

5.3.4.1.2 Indirect Effects

In addition to depletion of populations near roadways through direct mortality, roads and recreational trails increase access to desert environments. This concomitantly increases other deleterious human impacts, including poaching, plinking, feral dogs, and fires. Brooks and Lair (2005) also cite several studies that document the pathway for non-native plant invasions into the desert along vehicular routes. Because increases in non-native plants may play a role in increased levels of fire in the Mojave-Sonoran Desert area, roads could play a role in fire's effects on the desert tortoise.

Vegetation along roadsides sustained by rainwater runoff may provide benefits to tortoises from a consistent food source over time (Boarman et al. 1997 as cited in Boarman 2002). However, attraction to roads could also increase threats to the tortoise from wandering onto the road, vehicles pulling off into the vegetation along shoulders, mowing activities occur in roadside vegetation while tortoises are present, herbicide application, and if tortoises are seen by passersby (Boarman 2002). The presence of roads is also likely to attract the common raven (*Corvus corax*) seeking road kill which is a major cause of juvenile tortoise mortality (Boarman 2002).

Effects of noise and vibration on desert tortoise are not well understood. A study on flight noise from jet aircrafts and sonic booms concluded that tortoises could suffer permanent hearing loss from repeated long-term exposure to loud sounds such as from OHVs and construction blasts (Bowles et al. 1999 as cited in Boarman 2002). Noises from vehicles on highways are on-going, but much lower in decibel levels than OHVs or construction blasts, making hearing loss unlikely for tortoises that reside near roads. The Desert Tortoise Recovery Plan (USFWS 1994) analyzes other potential effects of noise, such as interference with communication, but no research has been conducted specific to the desert tortoise (Boarman 2002).

5.3.4.2 Southwestern Willow Flycatcher

Under the SLCHCP, the Lincoln County Roads Department will implement avoidance and minimization measures, as well as best management practices (BMPs), described further in Section 6.6 of this document to offset any potential direct and indirect effects to the southwestern willow flycatcher and its habitat from roadway construction and maintenance activities (Figure 5-4).

5.3.4.2.1 Direct Effects

Roadway construction and maintenance activities (i.e., bridge and culvert maintenance activities) require vegetation removal and trimming over time which could affect suitable southwestern willow flycatcher habitat.

5.3.4.2.2 Indirect Effects

Increased urbanization within the Covered Area could result in indirect effects to the southwestern willow flycatcher such as noise and/or light disturbance, because of the proximity of County roads to flycatcher suitable and potential habitat.

5.3.5 UPRR Construction and Maintenance Activities

5.3.5.1 Desert Tortoise

In the Covered Area, approximately 1,542 acres of railroad rights-of-way occur within desert tortoise habitat; however, UPRR activities have the potential and UPRR is requesting authorization to disturb up to 800 acres of previously undisturbed suitable desert tortoise habitat over the 30-year permit term as a result of its activities (Figure 5-5).

5.3.5.1.1 Direct Effects

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 2002).

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 2002). However, benefits to desert tortoise are also provided by railroad presence, because tortoises regularly build burrows in railroad berms not covered with gravel (Boarman 2002). UPRR Covered Activities could also result in the use of roads to access the railroads, thereby increasing the possibility of tortoise mortality. While road mortality would be possible, it would also be unlikely, given that vehicle speed on access roads would be slow, allowing drivers to stop for tortoises if they are in the road, and the probability that tortoises would be in the road at the same time railroad workers were accessing sites would be low.

5.3.5.1.2 Indirect Effects

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.

5.3.5.2 Southwestern Willow Flycatcher

5.3.5.2.1 Direct Effects

Railroad operations, maintenance and urgent response activities could result in disturbance to approximately 54 acres of suitable southwestern willow flycatcher habitat (Figure 5-4). Thus, UPRR is requesting authorization to remove up to 54 acres of suitable flycatcher habitat within its rights-of-way and lands within the Covered Area. 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 conduct flycatcher surveys in up to four areas of suitable southwestern willow flycatcher habitat in the vicinity of mile post markers 447 to 452 and between mile post markers 395 and 396 as delineated by the USFWS; UPRR would carry out these surveys one time during the term of the HCP prior to conducting covered activities. Up to 3 to 4 acres total suitable habitat could be disturbed in these areas (refer to Figure 5-4, maps 2 and 8, and Section 6.7.1.2).

Figure 5-2 Lincoln County Roads and UPRR ROWs on Desert Tortoise Habitat

Figure 5-2 BACK

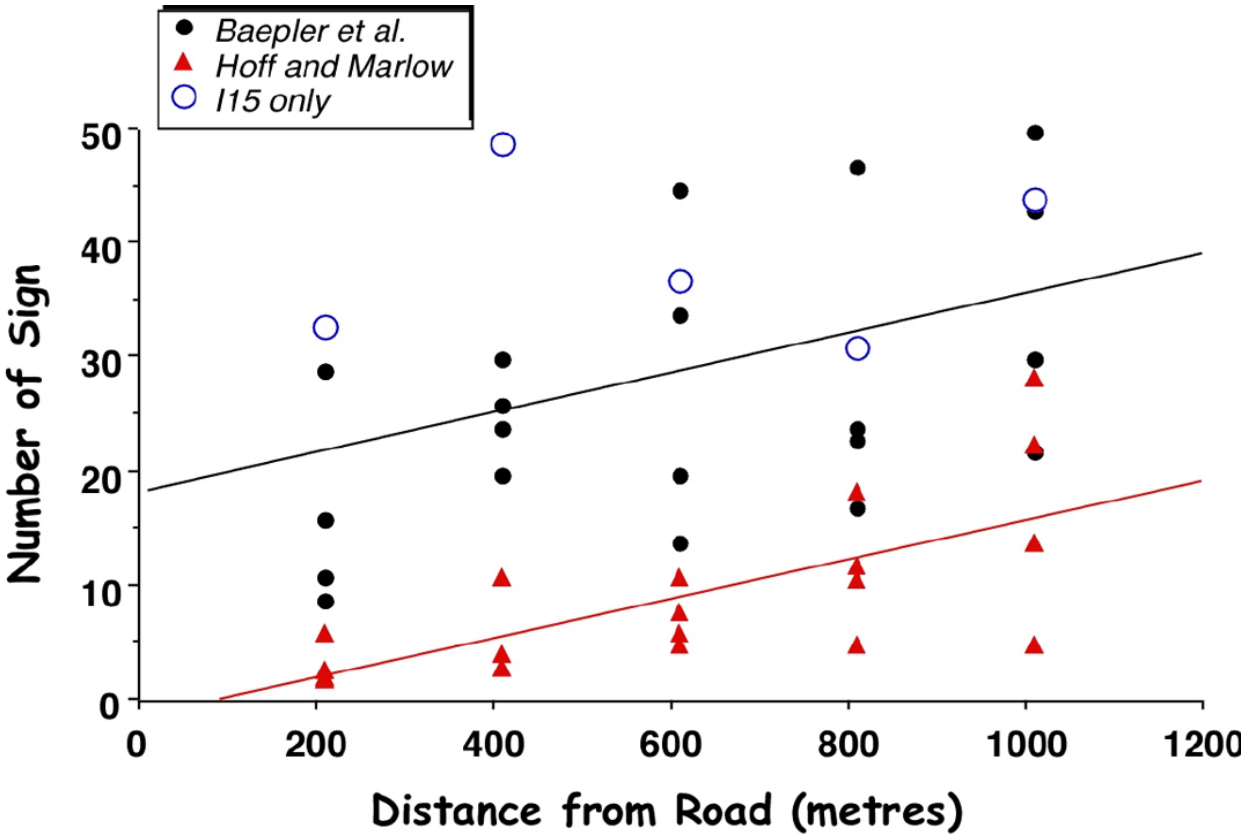

Figure 5-3 BRRC Analysis of Existing Data on Effects of Roads on Presence of Tortoise Sign

This Page Intentionally Left Blank

Figure 5-4 Lincoln County ROWs and UPRR ROW on Potential and Suitable SWWF Habitat (Maps 1 through 8)

Figure 5-4 Map 1 of 8 BACK

Figure 5-4 Map 2 of 8

Figure 5-4 Map 2 of 8 BACK

Figure 5-4 Map 3 of 8

Figure 5-4 Map 3 of 8 BACK

Figure 5-4 Map 4 of 8

Figure 5-4 Map 4 of 8 BACK

Figure 5-4 Map 5 of 8

Figure 5-4 Map 5 of 8 BACK

Figure 5-4 Map 6 of 8

Figure 5-4 Map 6 of 8 BACK

Figure 5-4 Map 7 of 8

Figure 5-4 Map 7 of 8 BACK

Figure 5-4 Map 8 of 8

Figure 5-4 Map 8 of 8 BACK

Figure 5-5 UPRR ROW on Desert Tortoise Habitat

Figure 5-5 BACK

5.3.5.2.2 Indirect Effects

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.

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 avoidance and minimization measures described in Section 6.7.1.2, these potential indirect effects would be limited in scale.

5.3.6 Other Privately-Owned Lands Subject to Land Conversion Activities

5.3.6.1 Desert Tortoise

As discussed previously in Section 4.6, there are approximately 7,104 acres of privately-owned lands along the Meadow Valley Wash within the Covered Area used for agricultural and grazing activities (Figure 5-6). Of the 7,104 acres of private land occurring within the Covered Area, approximately 2,256 acres occur on desert tortoise habitat along the Meadow Valley Wash, and approximately 215 acres occur within desert tortoise designated critical habitat. However, under the SLCHCP no Section 10 Covered Activities, including the conversion of private lands to another land use (e.g. agriculture to urban use or grazing to cultivated and/or irrigated agricultural lands) will occur on desert tortoise critical habitat.

5.3.6.1.1 Direct Effects

Direct effects to desert tortoise would occur from the conversion of agriculture land to urban use or from the conversion of grazing land to cultivated and/or irrigated agricultural land due to the potential for direct mortality of desert tortoises from encounters with heavy equipment during grading activities. Land conversion activities on private lands could eliminate up to approximately 564 acres of suitable desert tortoise habitat, excluding critical habitat, along the Meadow Valley Wash within the Covered Area. This loss would be the result of conversion of existing agriculture land to human residential, commercial, recreational and light industrial use or the conversion of grazing land to cultivated and/or irrigated agricultural land. Buildings, roads, landscaping, and/or crops would replace desert tortoise habitat. However, because desert tortoises are known to occur at low densities within the Covered Area, the likelihood of direct mortality of desert tortoises would be minimal.

5.3.6.1.2 Indirect Effects

Due to indirect effects arising from increased human presence, conversion of existing private lands to human uses along Meadow Valley Wash in the Covered Area could adversely affect desert tortoise.

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, and Berry 1986). 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 the newly developed area could adversely affect nearby desert tortoises. Unauthorized and authorized deposition of refuse occurs close to towns, cities, and settlements in remote, inaccessible areas. Turtles and 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. The incidence of unrestrained domestic and/or feral dogs in tortoise habitat in and adjacent to the Development 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 2002). 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 2002).

Anticipated increases in human use and habitation of the newly developed 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.

Land conversion activities on up to approximately 564 acres along the Meadow Valley Wash within the Covered Area that create ground disturbance could cause increases in nonnative plants both inside and outside the newly developable 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, increased due to disturbance by OHV, 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 aliens (Jennings 1993). Alien 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).

5.3.6.2 Southwestern Willow Flycatcher

5.3.6.2.1 Direct Effects

The conversion of existing private lands along the Meadow Valley Wash from agriculture to urban use or grazing land to cultivated and/or irrigated agricultural land would result in direct effects to southwestern willow flycatcher habitat. The modification or reduction of riparian habitat could adversely affect approximately 88 acres of suitable flycatcher habitat (Figure 5-7). Lincoln County is requesting take coverage on up to 22 acres of suitable flycatcher habitat over the 30-year permit term.

5.3.6.2.2 Indirect Effects

If 22 acres of suitable southwestern willow flycatcher habitat along the Meadow Valley Wash were converted from one land use to another land use as described above, this habitat would not be indirectly affected by grading and construction activities. Any ground disturbance and increases in impervious surface that occur in the proposed area to be developed or farmed would be unlikely to alter riparian habitats of the southwestern willow flycatcher due to the implementation of avoidance and minimization measures discussed further in Chapter 6: Conservation Measures of this document.

Figure 5-6 Other Privately-Owned Lands along Meadow Valley Wash on Desert Tortoise Habitat within the Covered Area

Figure 5-6 BACK

Figure 5-7 Other Privately-Owned Lands along Meadow Valley Wash on Southwestern Willow Flycatcher Habitat within the Covered Area

Figure 5-7 BACK

5.4 LITERATURE CITED

Adrian, E.D., K.J.W. Craik, and R.S. Sturdy. 1938. The electrical response of the ear: vertebrates. Proceedings of the Royal Society of London 125:435-455.

Bailey, W.J., and G.K. Morris. 1986. Confusion of phonotaxis by masking sounds in the bushcricket, *Conocephalus brevipennis* (Tettigoniidae: Conocephalinae). Ethology 73:19-28.

Berry, K.H. 1986. Desert tortoise (*Gopherus agassizii*) relocation: Implications of social behavior and movements. Herpetologica. 42: 113-125.

Berry, K.H. and B.L. Burge. 1984. The desert tortoise in Nevada. Chapter 8 In K.H. Berry. (ed.) 1984. The Status of the Desert Tortoise (*Gopherus agassizii*) in the United States. Report to U.S. Fish and Wildlife Service from the Desert Tortoise Council. Order No. 11210-0083-81.

Berry, K.H. and L.L. Nicholson. 1984. A summary of human activities and their impacts on desert tortoise populations and habitat in California. Chapter 3. In K. H. Berry (ed.), The Status of the Desert Tortoise (*Gopherus agassizii*) in the United States. Desert Tortoise Council report to U.S. Fish and Wildlife Service, Order No. 11310-0083-81, Sacramento, California.

Bio-West, Inc. 2005a. Meadow Valley Wash Final Baseline Ecological Assessment. March 2005. Prepared for Lincoln County, Nevada. 105 p. plus appendices.

Bio-West, Inc. 2005b. Meadow Valley Wash Post-flood Vegetation Assessment. September 2005. Prepared for the Bureau of Land Management, Ely Field Office.

Bjurlin, C.D., and J.A. Bissonette. 2001. The impact of predator communities on early life history stage survival of the desert tortoise at the Marine Corps Air Ground Combat Center, Twenty-nine Palms, California. US Dept. of the Navy Contract N68711-97-LT-70023. UCFWRU Pub. #00-4: 1-81.

Boarman, W.I. 2002. Threats to Desert Tortoise Populations: A Critical Review of the Literature. Prepared for West Mojave Planning Team, Bureau of Land Management by USGS. Available on the Internet at http://www.werc.usgs.gov/sandiego/pdfs/tortoisethreats.pdf. Accessed on August 3, 2005.

Boarman, W.I., and K.H. Berry. 1995. Common Ravens in the Southwestern United States, 1968-92. In Our living resources: A report to the nation on the distribution, abundance, and health of U.S. plants, animals, and ecosystems (E. T. Laroe, ed.) Pp.73-75. U.S. Department of the Interior--National Biological Service, Washington D.C.

Boarman, W.I. and M. Sazaki. 1996. Highway mortality in desert tortoises and small vertebrates: success of barrier fences and culverts. Pages 169 - 173 in Transportation and wildlife: reducing wildlife mortality and improving wildlife passageways across transportation corridors. G. Evink, D. Zeigler, P. Garrett, and J. Berry, editors. U.S. Department of Transportation, Federal Highway Administration, Washington, DC.

Bowles, A.E., S. Eckert, L. Starke, E. Berg, L. Wolski, and J. Matesic, Jr. 1999. Effects of flight noise from jet aircraft and sonic booms on hearing, behavior, heart rate, and oxygen consumption of desert tortoise (Gopherus agassizii). AFRL-HE-WP-TR-1999-0170. Sea World Research Institute, Hubbs Marine Research Center, San Diego, CA. 131 pages.

Brattstrom, B.H. 1974. The evolution of reptilian social behavior. American Zoology 14: 35-49.

Brooks, M.L. 1998. Ecology of a biological invasion: alien annual plants in the Mojave Desert. Ph.D. dissert. U. Calif. Riverside.

Brooks, M.L., and T.C. Esque. 2002. Alien plants and fire in desert tortoise (*Gopherus agassizii*) habitat of the Mojave and Colorado deserts. Chelonian Conservation and Biology 4:330-340.

Brown, D.E., and R.A. Minnich. 1986. Fire and changes in creosote bush scrub in the western Sonoran Desert, California. American Midlands Naturalist 116(2):41 1-422.

Brown, M.B., I.M. Schumacher, P.A. Klein, K. Harris, T. Correll, and E.R. Jacobson. 1994. *Mycoplasma agassizii* causes upper respiratory tract disease in the desert tortoises. Infection and Immunity 62(10):4580-4586.

Brown, M., L. Wendland, C. Perez-Heydrich, P. Klein, M. Allen, J. Berish, and M. Oli. 2005. UTRD and the environmentally threatened gopher tortoise. Statewide population surveys and acute UTRD disease outbreak. Abstract of paper presented at the Thirtieth Annual Meeting of the Desert Tortoise Council, February 18-21, Tucson, Arizona.

Bureau of Land Management (BLM).1998. Las Vegas Resource Management Plan and Final Environmental Impact Statement. Las Vegas, Nevada.

Burge, B.L. 1977. Daily and seasonal behavior, and areas utilized by the desert tortoise, *Gopherus agassizii*, in southern Nevada. The Proceedings of the Desert Tortoise Council Symposium 1977: 59-94.

Burge, B.L. 1989. What goes up must come down. Massive balloon releases are a potential threat to tortoises and other wildlife. Tortoise Tracks l0 (3): 4.

Campbell, H.W. and W.E. Evans. 1967. Sound production in two species of tortoise, *Gopherus agassizi*i and *Geochelone carbonaria.* Herpetologica 23: 204-209.

Demmon, A., and K.H. Berry. 2005. Evaluating trauma in live desert tortoises. Wild vs. domestic canids. A progress report. Abstract of paper presented at the Thirtieth Annual Meeting of The Desert Tortoise Council, February 18-21, Tucson, Arizona.

Ehret, G. and H.C. Gerhardt. 1980. Auditory masking and effects of noise on responses of the green treefrog *(Hyla cinerea*) to synthetic mating calls. Journal of Comparative Physiology. 141: 13-18.

Esque, T.C. and C.R. Schwalbe. 2002. Alien annual plants and their relationships to fire and vegetation change in Sonoran Desertscrub. In Invasive organisms in the Sonoran Desert. Tellman, B. and T. R. Van Devender, eds. Arizona-Sonoran Desert Museum and University of Arizona Press, Tucson.

Esque, T.C., C.R. Schwalbe, L.A. DeFalco, T.J. Hughes, and R.B. Duncan. 2003. Effects of wildfire on small desert vertebrates, especially desert tortoises (*Gopherus agassizii*). The Southwestern Naturalist 48:103-110.

Hoff, K.S. and R.W. Marlow. 2002. Impacts of vehicle road traffic on desert tortoise populations with consideration of conservation of tortoise habitat in southern Nevada. Chelonian Conservation Biology 4:449-457.

Jacobson, E.R. 1994. Causes of mortality and disease in tortoises: a review. Journal of Zoo and Wildlife Medicine. 25: 2-17.

Jacobson, E.R, J.M. Gaskin, M.B. Brown, R.K. Harris, C.H. Gardiner, J.L. LaPointe, H.P. Adams, and C. Reggiardo. 1991. Chronic upper respiratory tract disease of free-ranging desert tortoises (*Xerobates agassizii*). Journal of Wildlife Diseases 27(2):296-316.

Jennings, W.B. 1993. Foraging ecology and habitat utilization of the desert tortoise (*Gopherus agassizii*) at the Desert Tortoise Research Natural Area, East Kern County, California. Bureau of Land Management, Riverside, California. Contract No. B95-C2-0014.

Jones, C.A., C.R. Schwalbe, J.D. Capps, B.D. Weise, and W.W. Shaw. 2005. Desert Tortoises in Phoenix Area Mountain Parks. Student Poster for the 30th Annual Meeting and Symposium of The Desert Tortoise Council in Tuscon, Arizona. February 2005.

Nature Conservancy, The. 2003. Antelope and North Spring Valleys, Steptoe Valley & Uplands, Newark Valley Extended Watershed and Meadow Valley Wash & Uplands Conservation Area Assessment Executive Summary.

Patterson, R.G. 1976. Vocalization in the desert tortoise. Proceedings of the Symposium for the Desert Tortoise Council l976. Pages 77-83.

Patterson, R.G. 1971. Vocalization in the Desert Tortoise, *Gopherus agassizi*. M.A. Thesis, California State Univ., Fullerton.

Stewart, G.R. 1991. Movements and survival of desert tortoises (Xerobates[=*Gopherus agassizi*]) following relocation from the LUZ solar electric generating station site at Kramer Junction. San Bernardino County, California. Report submitted to LUZ Development and Finance Corporation, Los Angeles, California. 94 pages.

Tracy, C.R., R. Averill-Murray, W.I. Boarman, D. Delehanty, J. Heaton, E. McCoy, D. Morafka, K. Nussear, B. Hagerty, P. Medica. 2004. Desert Tortoise Recovery Plan Assessment. Reno, NV, Biological Resources Research Center (BRRC), University of Nevada.

U.S. Fish and Wildlife Service (USFWS). 1994. Desert Tortoise (Mojave Population) Recovery Plan. Prepared for Regions 1, 2 and 6 of the USFWS, Portland, OR.

U.S. Fish and Wildlife Service (USFWS). 2002. Southwestern Willow Flycatcher Recovery Plan (Final). USFWS Division of Ecological Services, Albuquerque, New Mexico.

Wilcox, B.A., and D.D. Murphy. 1985. Conservation strategy: the effects of fragmentation on extinction. American Naturalist 125:879-887.

Woodbury, A.M., and R. Hardy. 1948. Studies of the desert tortoise, *Gopherus agassizi*. Ecological Monographs. 18:146-200.

This Page Intentionally Left Blank

Section 6: Conservation Measures

Conservation Measures for the SLCHCP are those actions that avoid, minimize and/or mitigate the potential effects 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 effects 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).

6.1 BIOLOGICAL GOALS AND OBJECTIVES

The biological goals and objectives for desert tortoise and southwestern willow flycatcher, proposed for coverage under the SLCHCP, are listed below. The goals and objectives for the desert tortoise are both habitat and population based where as the goals and objectives for the southwestern willow flycatcher are habitat based. Population-based goals are focused on conserving and/or increasing population levels while habitat-based goals focus on restoring or conserving habitat.

6.1.1 Desert Tortoise

Biological goals and objectives for the desert tortoise recovery are described in the USFWS Desert Tortoise Recovery Plan (USFWS 1994). The Caliente MFP Amendment (BLM 2000) describes Conservation Measures for land managed by the BLM within and adjacent to the Covered Area. The Site Conservation Plan for the Mormon Mesa DWMA (The Nature Conservancy 2002) provides management recommendations for conservation within the Covered Area. The aforementioned plans were considered during development of biological goals and objectives for the SLCHCP to ensure consistency with other on-going planning efforts within the Covered Area.

GOAL

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.

OBJECTIVES

- 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 the baseline level.
- 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 5-1) and the potential effects of taking desert tortoises on these lands by participating in a Head Start Program and Translocation of Desert Tortoises, Habitat Restoration of Burned Desert Tortoise Habitat Areas, Research Efforts on the Ecological Implications of Fire, and Public Outreach and Education Program as appropriate to avoid or reduce desert tortoise mortality.

6.1.2 Southwestern Willow Flycatcher

Biological goals and objectives for the recovery of southwestern willow flycatcher are described in the Southwestern Willow Flycatcher Final Recovery Plan (USFWS 2002). The recovery plan was considered during development of the SLCHCP to ensure that the biological goals and objectives and Conservation Measures for the SLCHCP are consistent with those in the recovery plan. The minimization and mitigation measures for the biological goals and objectives listed below are described in this section.

GOAL

Achieve no net loss of suitable southwestern willow flycatcher habitat along the Meadow Valley Wash or Clover Creek due to human activities within the Covered Area of the SLCHCP.

OBJECTIVES

- Create, enhance, and/or protect a minimum of 84.3 acres of suitable southwestern willow flycatcher habitat (refer to Table 5-1) in the Meadow Valley Wash on land owned by interested landowners and/or managed by BLM. The objective of the program is to provide funds that will allow the creation of habitat to replace the loss of native suitable flycatcher habitat with native habitat at a ratio of 2:1, and the loss of non-native suitable flycatcher 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.

6.2 CONSERVATION MEASURES COMPONENTS

As outlined above, Conservation Measures are typically categorized into three groups: avoidance, minimization, and mitigation measures. Avoidance measures avoid the potential effect from a given activity. Minimization measures reduce the potential effects to lesser levels over time. Mitigation measures compensate for the remaining potential effects after avoidance and minimization measures are implemented. Collectively, the purpose of these Conservation Measures is to offset the potential effects of an action on each of the Covered Species.

The principal components of the SLCHCP's Conservation Measures are:

- Avoidance and minimization of effects to Covered Species through the identification and implementation of specific minimization measures or BMPs.
- Mitigation of unavoidable effects to Covered Species based on compensation for habitat losses through funds to be set aside for funding mitigation projects or providing local share for grant programs on endangered species programs and establishment of a riparian habitat mitigation bank.
- Development and implementation of an Adaptive Management Plan (AMP) to allow the modification of Conservation Measures to react to new information and changing conditions.
- The Permittees and Plan Participants shall have the following mitigation responsibilities during the long-term implementation process for the SLCHCP:
- Lincoln County will collect and administer mitigation fees, and/or other funds as described in this document.
- The Permittees will contribute to Plan Implementation as determined appropriate by payment of the mitigation fees as established for the Covered Activities. Such contribution shall occur prior to effects to Covered Species and their habitats.
- The Permittees and Plan Participants will take all necessary and appropriate actions, following applicable land use permit enforcement procedures and practices, to enforce the terms of project approvals for Lincoln County projects, including compliance with the SLCHCP, the permits and Implementing Agreement (IA).
- The Permittees and Plan Participants will carry out all other applicable requirements of the SLCHCP, the IA and the permits.

Cumulatively, the avoidance and minimization measures will not offset the potential effects for all of 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, 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 the LCCD.

Most mitigation measures will occur on public land because, other than the lands listed as available for disposal in the Caliente MFP Amendment and proposed in the draft Ely RMP, there are only 40,681 acres of private land, in desert tortoise habitat 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 habitat on private and public land along the Meadow Valley Wash within the Covered Area, of which 84.3 acres will be subject to "take" as a result of the Covered Activities.

Therefore, implementation of the minimization and mitigation measures relies heavily on a cooperative management process between the Permittees, Plan Participants, and the USFWS.

6.3 PLANNED LAND DEVELOPMENT AND MAINTENANCE ACTIVITIES

6.3.1 Avoidance and Minimization Measures

6.3.1.1 Desert Tortoise

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

6.3.1.1.1 Interim Measures

DESERT TORTOISE CLEARANCE SURVEYS, PROCESS AND TRANSPORT

Prior to habitat disturbance, tortoises will be cleared from project areas by USFWS-approved qualified biologists, 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 Desert Tortoise Conservation Center 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).

Desert tortoise clearance surveys will be completed in accordance with existing USFWS recommendations (USFWS 1994, 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 qualified biologist. If fence construction occurs during periods of higher desert tortoise activity (generally March 1 – October 31), an

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.

approved 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 – end of February), a biologist will thoroughly examine the proposed fence line and burrows for the presence of tortoises no more than five (5) days before construction.
- Any desert tortoises or eggs found in the fence line will be relocated by a qualified 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 qualified biologists to locate and remove desert tortoises prior to grading or actions which might result in harm to desert tortoises. A USFWS-approved 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 2005c). 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 2005c).

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;
- 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.

6.3.1.1.2 Construction Best Management Practices

Both 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 effects 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.
- Qualified 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. All biological monitors shall be approved by the USFWS to handle desert tortoises and other special-status species. 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.
- 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 an agency approved 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 shall have a qualified biologist(s) 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 need to arrange for tortoises to be 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 noxious weed management would be employed to minimize the potential to introduce weeds into the project 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 project 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.

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.

6.3.1.1.3 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 inches below two-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) 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 LCLA 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.

6.3.1.2 Southwestern Willow Flycatcher

Development of the 103-acre Meadow Valley Industrial Park may result in indirect effects to southwestern willow flycatcher habitat such as increased traffic and noise, disturbance from lights, and an increase in non-point source pollution. However, at this time, it is unknown how these factors may affect flycatcher habitat in the Meadow Valley Wash. 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 construction 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.

The development of this site could also lead to future development pressures. If these future development pressures were to affect southwestern willow flycatcher and/or its habitat, a separate Section 10 permit would need to be obtained, or the existing permit and SLCHCP would need to be amended.

6.3.2 Mitigation Measures

6.3.2.1 Desert Tortoise Mitigation Fees

Cumulatively, the avoidance and minimization measures will not offset all of the potential effects from land development and maintenance activities on approximately 18,476 acres of desert tortoise habitat on non-Federal property within the Covered Area (refer to Table 5-1). As a result, land developers will pay a per-acre development fee to mitigate for the residual effects associated with these activities. The fee is based on a tiered rate structure associated with specific geographic areas within the Covered Area (Figure 6-1).

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 use of 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 6-1). This area includes 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 within their rights-of-way on desert tortoise suitable habitat will be subject to the $550/acre mitigation fee.

Figure 6-1 Desert Tortoise Mitigation Fee Zones

Figure 6-1 BACK

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 6-1). 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.

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, resulting in complete removal of the vegetation. Areas that are completely devoid of vegetation, such as roads, pavement, and dry lake beds are examples.

6.3.2.1.1 Desert Tortoise Conservation Efforts

A portion of 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. 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. Potential allocation of funds from mitigation fees collected for desert tortoise conservation measures and disturbance fees collected for southwestern willow flycatcher is provided in Table 9-6 in Section 9: Funding of this document.

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 competence and disease, and 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. Unfortunately, those prescriptions have not been implemented in ways that have produced 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 1994, 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). 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). 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 Desert Tortoise Recovery Office. 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 (refer to Figure 3-4). 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 (Brown and 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 (*Schismu*s spp.), and filaree (*Erodium cicutarium*) after just one fire (Esque et al. 2003). 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 et al. 2003). 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 on-going 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 Desert Tortoise Recovery Office.

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 land 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 3-4). 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 currently the 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 either be applied 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 recently conducted by NPS 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 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.

Table 6-1: List of Plants Suitable for Desert Tortoise Rehabilitation Projects in Southern Nevada

Grasses (Desert Tortoise Forage)	
Aristida adscensionis	Six-weeks threeawn
Bouteloua sp.	Gramma grass
Erioneuron pulchellum	Fluffgrass
Hilaria rigida	Big galleta grass
Muhlenbergia porteri	Bush muhly
Oryzopsis hymenoides	Indian rice grass
Sporobolis cryptandrus	Sand dropseed
Stipa speciosa	Desert needle grass
Vulpia octoflora	Six-weeks fescue
Shrubs (Desert Tortoise Cover)	
Ambrosia dumosa	White bursage
Coleogyne ramosissima	Blackbrush
Ephedra sp.	Mormon tea
Eriogonum fasciculatum	California buckwheat
Grayia spinosa	Spiny hopsage
Krameria parvifolia[1]	Little-leaf ratany
Larrea tridentate	Creosote
Forbs (Desert Tortoise Forage)	
Allionia incarnate	Windmills
*Astragalus didymocarpus**	Two-seeded milkvetch
*Camissonia boothii**	Wholly bottlebrush
Euphorbia albomarginata	Rattlesnake weed
Euphorbia micromera	Sandmat
*Lotus strigosus**	Deer vetch
*Malacothrix glabrata**	Desert dandelion
Plantago sp.	Plantain
Sphaeralcea ambigua	Desert globemallow

Source: Oftedal 2002

*Denotes preferred desert tortoise forage plants (plants with high PEP values)
[1]Flowers may be used as forage

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 (refer to Table 9-8). In general, priority will be given to burned areas within desert tortoise ACECs and designated critical habitat. However, Lincoln County will rely on guidance associated with the enhancement techniques and prioritization for the use of these funds from the USFWS Desert Tortoise Recovery Office. Enhancement of burned desert tortoise habitat will include the following components: 1) seed purchase, 2) enhancement techniques, and 3) monitoring/evaluation. Any proposal to conduct seeding on BLM managed lands is subject to BLM's review and approval.

The costs associated with 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. 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.[3] 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.

3 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 (3) to four (4) years.

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) 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 an LCIMC 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.
- 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.

LCLA ROAD, FENCING AND TRAIL PLAN

Lincoln County will develop a road/fence/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. 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 effects 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 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 animals. The need for a Wildlife Services Specialist will be considered by the IMC through the AMP as development expands.

6.3.2.2 Southwestern Willow Flycatcher

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

6.4 UTILITY AND INFRASTRUCTURE DEVELOPMENT AND MAINTENANCE ACTIVITIES

6.4.1 Avoidance, Minimization and/or Mitigation Measures

6.4.1.1 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.

6.4.1.2 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.

6.5 FLOOD CONTROL ACTIVITIES

6.5.1 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.

6.5.1.1 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.

6.5.1.2 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. 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 restoration efforts on public (BLM) land and/or by using conservation easements on private land (refer to Section 6.7.2.2.3 herein). Thus, the City of Caliente would be required to pay $12,000 per acre of suitable flycatcher habitat removed to cover costs of flycatcher habitat restoration, as described in Section 6.7.2.2.1: Southwestern Willow Flycatcher Conservation Options herein.

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 any USFWS initiated and led process for developing a long-term conservation strategy for Meadow Valley Wash.

6.5.1.2.1 Development of Meadow Valley Wash Riparian Restoration and Management Strategy

A restoration and management strategy for the conservation of flycatcher habitat in the Meadow Valley Wash will be developed. Lincoln County will develop the strategy with assistance from the other Permittees and Participants as part of the SLCHCP. The USFWS will approve the final strategy. The strategy will be developed within one year after permit issuance. The strategy will:

- Identify specific areas along the Meadow Valley Wash within the Covered Area for riparian restoration for southwestern willow flycatcher;
- Incorporate the basic components of riparian restoration described in Section 6.7.2.2.4;
- Address riparian habitat restoration needs on both private and BLM lands along the Meadow Valley Wash;
- Recommend management actions for establishing, enhancing, and maintaining riparian vegetation composition and structure that will provide suitable habitat for the flycatcher, and;
- Develop a monitoring plan to determine the effectiveness of conservation measures implemented for the flycatcher.

6.6 ROADWAY CONSTRUCTION AND MAINTENANCE ACTIVITIES

6.6.1 Avoidance and Minimization Measures

6.6.1.1 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.

6.6.1.1.1 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 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 an USFWS qualified desert tortoise biologist hired by the Applicant(s).[4] Workers will be advised on the biology and ecology of the species, the definition of "take," the mitigation measures, and their responsibilities for avoiding effects 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-activity surveys and clearance in desert tortoise habitat where qualified biologists are reasonably certain that the species exists. Pre-disturbance surveys will not be

[4] 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 Plan Applicants and make its training program available to employees of the other Applicants.

required within sites where a qualified 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 procedures approved by USFWS.

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.

6.6.1.2 Southwestern Willow Flycatcher

The proposed Conservation Measures to be implemented by Lincoln County to avoid and minimize effects of roadway construction 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 has participated in an USFWS approved training 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 an USFWS qualified 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 effects that may result in "take," including the potential for fines if take occurs that could have been avoided.

6.7 UNION PACIFIC RAILROAD ACTIVITIES

6.7.1 Avoidance and Minimization Measures

6.7.1.1 Desert Tortoise

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

WORKER EDUCATION

The worker training program will be developed and conducted by a USFWS qualified 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. Upon USFWS approval of the materials, the qualified 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 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 qualified biologists to conduct one-time surveys in those suitable habitat areas where qualified biologists are reasonably certain that desert tortoises exist. Pre-disturbance surveys will not be required within sites where a qualified 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-approved qualified biologist or a UPRR employee or contractor that has USFWS-approved training by a qualified biologist. The qualified 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.

6.7.1.2 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.

WORKER EDUCATION

The worker training program will be developed and conducted by a USFWS qualified 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 qualified 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 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 (refer to Figure 5-4, maps 2 and 8). 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.

6.7.2 Mitigation Measures

6.7.2.1 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 5.2.1. UPRR estimates that its activities will potentially disturb 100 percent of the total 800 acres of suitable habitat within its rights-of-way. Thus, UPPR will pay the $550 per-acre mitigation fee on the 800 acres (approximately $440,000) for disturbance of suitable habitat on non-Federal property throughout the Covered Area associated with UPRR's Covered Activities (refer to Figure 6-1).

The fees that are generated will be used toward the implementation of the SLCHCP and desert tortoise habitat restoration and research efforts described above in Section 6.3.2.1.1 (i.e., Head Start Program, Translocation of Desert Tortoises, Habitat Restoration and Research on the Ecological Implications of Fire, and Public Outreach and Education) 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.

6.7.2.2 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. 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, maintenance and emergency response activities. Thus, UPRR will be required to pay $12,000 per acre (up to 54 acres total) of suitable flycatcher habitat removed to cover costs of flycatcher habitat restoration (further described in Section 6.7.2.2.1 below), 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.

6.7.2.2.1 Conservation Options

The responsible Party will pay $12,000 per acre for loss of suitable flycatcher habitat as identified in Bio-West's Meadow Valley Wash Post-Flood Vegetation Assessment (Bio-West 2005b) as modified pursuant to Section 5.2.2.1. The contribution of funds collected by Lincoln County from the Permittees whose activities affect southwestern willow flycatcher habitat 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 a habitat bank or conservation easement on private or 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.

6.7.2.2.2 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 and protected in perpetuity.

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 which will have much higher wildlife habitat values.

Habitat restoration or replacement (see Section 6.7.2.2.4 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. Conservation easement areas will have a management and monitoring program to ensure that the habitat is functioning in perpetuity. 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 on-going 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) or ACEC management plan that would provide management within the BLM's riparian ACEC.

6.7.2.2.3 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 in perpetuity through conservation easement(s). Because perpetual conservation easements are binding on future owners, the resource values of these properties are protected indefinitely. Many states 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. Conservation easement areas will have a management and monitoring program to ensure that the habitat is functioning in perpetuity. Funding for LCCD/NRCS development and implementation of the Landowner Assistance Program would be derived from SLCHCP sources. However, Lincoln County is committed to seeking additional monies to aid in implementation of the SLCHCP.

6.7.2.2.4 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 riparian 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 8.2.1.

6.8 OTHER PRIVATELY-OWNED LANDS SUBJECT TO LAND CONVERSION ACTIVITIES

6.8.1 Avoidance, Minimization and Mitigation Measures

6.8.1.1 Desert Tortoise

Should suitable desert tortoise habitat be removed through conversion of existing private agriculture land to urban use or grazing land to cultivated and/or agricultural land 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 these land conversion activities. Lincoln County is requesting take coverage on up to 564 acres of private agriculture and grazing lands on desert tortoise habitat, excluding desert tortoise critical habitat, within the Covered Area from land conversion activities.

6.8.1.2 Southwestern Willow Flycatcher

Should suitable flycatcher habitat be removed through conversion of existing private agriculture land to urban use or grazing land to cultivated and/or irrigated agricultural land 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 construction 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 from land conversion activities.

6.9 LITERATURE CITED

Bio-West, Inc. 2005b. Meadow Valley Wash Post-flood Vegetation Assessment. September 2005. Prepared for the Bureau of Land Management, Ely Field Office.

Brooks, M.L. 1999. Alien annual grasses and fire in the Mojave Desert. Madrono 46:13-19.

Brown, D.E., and R.A. Minnich. 1986. Fire and changes in creosote bush scrub in the western Sonoran Desert, California. American Midlands Naturalist 116(2):41 1-422.

Bureau of Land Management (BLM). 2000. Approved Caliente Management Framework Plan Amendment and Record of Decisions for the Management of Desert Tortoise Habitat. Ely Field Office, Ely, Nevada. September 2000.

DeFalco, L.A., T.C. Esque, K.E. Nussear, S.J. Scoles, M.A. Walden, and K.K. Drake. 2006. Monitoring the effectiveness of seeding burned critical habitat for the desert tortoise – progress report. U.S. Geological Survey, Western Ecological Research Center, Henderson, NV.

Desert Tortoise Council. 1994. Guidelines for Handling Desert Tortoises during Construction Projects.

Drake, K.K., K.E. Nussear, T.C. Esque, P.A. Medica, and T.M. Camona. 2007. Monitoring desert tortoise use of burned critical habitat – progress report. U.S. Geological Survey, Western Ecological Research Center, Henderson, N.V.

Duck, T.A., T.C. Esque, and T.J. Hughes. 1995. Fighting wildfires in desert tortoise habitat: considerations for land managers. Proc. 1994 Desert Tortoise Council Symposium 1995:58-67.

Esque, T.C. 1994. Diet and diet selection of the desert tortoise (*Gopherus agassizii*) in the northeast Mojave Desert. M.S. Thesis, Colorado State Univ. Fort Collins, Colorado.

Esque, T.C., C.R. Schwalbe, L.A. DeFalco, T.J. Hughes, and R.B. Duncan. 2003. Effects of wildfire on small desert vertebrates, especially desert tortoises (*Gopherus agassizii*). The Southwestern Naturalist 48:103-110.

Nagy, K.A., B.T. Henen, and D.B. Vyas. 1998. Nutritional quality of native and introduced food plants of wild desert tortoises. Journal of Herpetology 32:260-267.

Nature Conservancy, The. 2002. Site Conservation Plan for the Mormon Mesa Desert Wildlife Management Area. Report prepared by The Nature Conservancy for the USFWS.

Nature Conservancy, The. 2003 Antelope and North Spring Valleys, Steptoe Valley & Uplands, Newark Valley Extended Watershed and Meadow Valley Wash & Uplands Conservation Area Assessment Executive Summary.

Nussear, K.E. 2004. Mechanistic investigation of the distributional limits of the desert tortoise (*Gopherus agassizii*). Dissertation. University of Nevada, Reno.

Oftedal, O.T. 2002. The nutritional ecology of the desert tortoise in the Mohave and Sonoran deserts. Pp. 194-241 in Van Devender, T. R. (Ed.), The Sonoran Desert Tortoise. Natural History, Biology and Conservation. University of Arizona Press, Tucson, AZ.

Scoles, S., T. Esque, L. DeFalco, S. Eckert, and D. Haines. 2003. Cheatgrass and red brome abundance following post-fire revegetation treatments in a pinyon-juniper community at Parashant National Monument, Arizona. USDI-Bureau of Land Management.

U.S. Fish and Wildlife Service (USFWS). 1994. Desert Tortoise (Mojave Population) Recovery Plan. Prepared for Regions 1, 2 and 6 of the USFWS, Portland, OR.

U.S. Fish and Wildlife Service (USFWS). 2002. Southwestern Willow Flycatcher Recovery Plan (Final). USFWS Division of Ecological Services, Albuquerque, New Mexico.

U.S. Fish and Wildlife Service (USFWS). 2005c. Recommended Specifications for Desert Tortoise Exclusion Fencing. Available on the Internet at: http://www.fws.gov/southwest/es/arizona/Documents/SpeciesDocs/DesertTortoise/Tortoise%20Fencing.pdf. September 2005.

Section 7: Expected Outcomes

This section summarizes the potential outcome of implementing the Covered Activities and Conservation Measures for each of the Covered Species. Conclusions are drawn for each individual species considered, based on the anticipated physical changes to habitat and information regarding the life history, habitat use, distribution, and current habitat within the Covered Area of the SLCHCP and the benefits of implementing the proposed Conservation Measures.

Section 6: Conservation Measures of this document described a list of mitigation measures that will be implemented by the Permittees with the funds generated from the habitat disturbance fees in coordination with the USFWS. The mitigation measures and the benefits to the desert tortoise and southwestern willow flycatcher in terms of habitat enhancement are summarized in Tables 7-1 and 7-2, respectively.

It is expected that successful implementation of these mitigation measures will result in a net benefit to the target species. 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), including measurable project goals and objectives. The SLCHCP Plan Facilitator, with assistance from the IMC, will be responsible for implementation of the mitigation plan.

7.1 EXPECTED OUTCOMES FOR DESERT TORTOISE

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 and the future development of the BLM disposal lands have the largest potential effect, 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 activities conducted by the City of Caliente, for instance, within the Covered Area have the potential to indirectly affect tortoises along the Meadow Valley Wash, but these activities are not anticipated to have a detectable affect on this species due to the nature of the activities or location. Should desert tortoise habitat be removed through the conversion of agriculture land to urban use or grazing land to cultivated and/or irrigated agricultural land within the Covered Area during the life of the Section 10 permit, then up to 564 acres of private lands within desert tortoise habitat could be affected.

To offset the effect of 19,840 acres of potential desert tortoise habitat to be affected, a one-time per-acre mitigation fee will be paid by those Permittees disturbing suitable habitat. The funds generated from the mitigation fees collected will then be used to implement the mitigation measures that will offset the effects to desert tortoise as presented in Table 7-1. Also, implementation of such avoidance and minimization measures listed in Table 7-1 will further reduce the likelihood of actual mortality of tortoises from Covered Activities.

7.1.1 Planned Land Development and Maintenance Activities

Planned Land Development and Maintenance activities (including future BLM disposal lands) have the potential to result in the loss of up to 18,476 acres of desert tortoise habitat located in the Covered Area. The potential for direct mortality through construction activities also exists.

Table 7-1: Expected Outcomes from Implementation of the SLCHCP on Desert Tortoise

Covered Activity	Potential Effect	Conservation Measures			Expected Outcome
		Action	Total Habitat Affected (acres)	Expected Result	
Planned Land Development & Maintenance Activities (includes the development of future BLM disposal lands)	*Direct effects:* ▪ direct mortality from construction ▪ habitat loss ▪ road mortality *Indirect effects:* ▪ habitat fragmentation ▪ trash disposal ▪ pet encounters ▪ increases in natural predators ▪ illegal collection ▪ disease ▪ reduction in habitat and forage quality ▪ increase in fire frequency and intensity ▪ increased mortality or injury due to vandalism	*Avoidance:* ▪ BMPs for construction/operation/maintenance ▪ surveys and clearance ▪ translocation ▪ trash management ▪ conservation education	18,476 acres	Avoid direct mortality through pre-construction surveys, clearance and translocation of desert tortoises Avoid unnecessary disturbance of desert tortoise habitat not previously surveyed and cleared and not directly affected by construction activities	Losses to habitat would be offset by implementing Conservation Measures such as mitigation fees Conservation measures would reduce mortality to desert tortoise and protect adjacent habitat Mitigation fees would address overall loss of habitat through implementation of Conservation Measures including: ▪ research critical to the recovery of desert tortoise ▪ head start and translocation ▪ habitat restoration ▪ public outreach and education ▪ LCLA Road, Fencing and Trail Plan ▪ Predator Monitoring Control
		Minimization: ▪ permanent fencing ▪ temporary fencing and barriers		Reduce mortality from roads and residential areas through fencing and other minimization measures Reduce degradation of habitat through fire and non-native plant management	
		Mitigation: ▪ mitigation fees and associated research would result in a benefit to desert tortoise throughout southern Nevada		Mitigation fees of desert tortoise would benefit the future recovery of the species through improved understanding of this species and its conservation needs and increased habitat protection	

Table 7-1: Expected Outcomes from Implementation of the SLCHCP on Desert Tortoise

Covered Activity	Potential Effect	Conservation Measures			Expected Outcome
		Action	Total Habitat Affected (acres)	Expected Result	
Utility and Infrastructure Development	See effects for Planned Land Development and Maintenance	*Avoidance:* ▪ Measures for Planned Land Development and Maintenance Activities applicable to this activity *Minimization:* ▪ Measures for Planned Land Development and Maintenance Activities applicable to this activity *Mitigation:* ▪ Measures for Planned Land Development and Maintenance Activities applicable to this activity	See acreage for Planned Land Development and Maintenance	Avoid direct mortality through land clearance and translocation of desert tortoise Avoid unnecessary disturbance of desert tortoise habitat not directly affected by construction activities Reduce mortality from roads and residential areas through exterior boundary fencing, signs, education and other minimization measures Mitigation fees of desert tortoise would benefit the future recovery of the species through improved understanding of this species and its conservation needs and increased habitat protection	No change in conditions would result from those associated with implementation of Land Development & Maintenance Activities
Flood Control Activities	See effects for Planned Land Development and Maintenance	*Avoidance:* ▪ Measures for Planned Land Development and Maintenance Activities applicable to this activity *Minimization:* ▪ Measures for Planned Land Development and Maintenance Activities applicable to this activity *Mitigation:* ▪ Measures for Planned Land Development and Maintenance Activities applicable to this activity	See acreage for Planned Land Development and Maintenance	Avoid direct mortality through land clearance and translocation of desert tortoise Avoid unnecessary disturbance of desert tortoise habitat not directly affected by construction activities Reduce mortality from roads and residential areas through exterior boundary fencing, signs, education and other minimization measures Mitigation fees of desert tortoise would benefit the future recovery of the species through improved understanding of this species and its conservation needs and increased habitat protection	No change in conditions would result from those associated with implementation of Land Development & Maintenance Activities

Table 7-1: Expected Outcomes from Implementation of the SLCHCP on Desert Tortoise

Covered Activity	Potential Effect	Conservation Measures			Expected Outcome
		Action	Total Habitat Affected (acres)	Expected Result	
County Roadway Construction and Maintenance Activities	*Potential effects:* ▪ habitat fragmentation ▪ increase in noise levels ▪ increased mortality or injury due to increased traffic levels	*Avoidance:* ▪ BMPs for roadway construction and maintenance activities ▪ monitoring and management ▪ worker education ▪ surveys and clearance ▪ translocation ▪ roadway design	--	Avoid direct mortality through land clearance and translocation of desert tortoise	Losses to habitat would be offset by implementing avoidance and minimization measures including BMPs
Union Pacific Railroad Covered Activities	*Direct effects:* ▪ habitat loss ▪ railroad mortality *Indirect effects:* ▪ habitat fragmentation ▪ increase in noise levels and vibrations	Avoidance: ▪ *BMPs for railroad operations/maintenance/emergency response activities* ▪ worker education ▪ pre-disturbance surveys and clearance ▪ translocation ▪ railway design *Mitigation:* ▪ mitigation fees and associated research would result in a benefit to desert tortoise throughout southern Nevada	800 acres	Avoid direct mortality through land clearance and translocation of desert tortoise prior to disturbance Mitigation fees of desert tortoise would benefit the future recovery of the species through improved understanding of this species and its conservation needs and increased habitat	Losses to habitat would be offset by implementing Conservation Measures such as mitigation fees Conservation measures would reduce mortality to desert tortoise and protect adjacent habitat Mitigation fees would address overall loss of habitat through implementation of Conservation Measures and improved funding for research critical to the recovery of desert tortoise

Table 7-1: Expected Outcomes from Implementation of the SLCHCP on Desert Tortoise

Covered Activity	Potential Effect	Conservation Measures			Expected Outcome
		Action	Total Habitat Affected (acres)	Expected Result	
Other Privately-Owned Lands Subject to Land Conversion Activities (e.g. agriculture land to urban use or grazing land to cultivated and/or irrigated agricultural land)	Potential effects of land conversion activities area as follows: *Direct effects:* ▪ direct mortality from grading ▪ habitat loss ▪ road mortality *Indirect effects:* ▪ habitat fragmentation ▪ increases in natural predators ▪ reduction in habitat and forage quality	*Avoidance:* ▪ Measures for Planned Land Development and Maintenance Activities applicable to this activity *Mitigation* (if landowner wishes to participate in the SLCHCP and sign the Participation Agreement with Lincoln County): ▪ Measures for Planned Land Development and Maintenance Activities would be applicable to this activity	Up to 564 acres	If private land is converted from one land use to another land use then avoid direct mortality through land clearance and translocation of desert tortoise Mitigation fees of desert tortoise would benefit the future recovery of the species through improved understanding of this species and its conservation needs and increased habitat protection	Losses to habitat would be offset by implementing Conservation Measures such as mitigation fees Mitigation fees would address overall loss of habitat through implementation of Conservation Measures and improved funding for research critical to the recovery of desert tortoise

Table 7-2: Expected Outcomes from Implementation of the SLCHCP on Southwestern Willow Flycatcher

Covered Activity	Potential Effect	Conservation Measures			Expected Outcome
		Action	Total Habitat Affected (acres)	Expected Result	
Planned Land Development & Maintenance Activities (includes the development of future BLM disposal lands)	No direct effects *Indirect effects:* ▪ habitat fragmentation ▪ reduction in habitat and forage quality	*Avoidance:* ▪ construction along the Meadow Valley Wash ▪ conservation education	0	Avoid unnecessary disturbance of southwestern willow flycatcher habitat not directly affected by construction activities	The potential indirect effects of these activities would be offset by the implementation of avoidance and minimization measures
Utility and Infrastructure Development	See effects for Planned Land Development and Maintenance	*Avoidance:* ▪ Measures for Planned Land Development and Maintenance Activities applicable to this activity	See acreage for Planned Land Development and Maintenance	Avoid unnecessary disturbance of southwestern willow flycatcher habitat not directly affected by construction activities	The potential indirect effects of these activities would be offset by the implementation of avoidance measures
Flood Control Activities	*Direct effects:* ▪ habitat loss *Indirect effects:* ▪ habitat fragmentation ▪ reduction in habitat and forage quality	*Avoidance:* ▪ local public education *Mitigation:* ▪ habitat replacement/ restoration	8.3 acres	Avoid unnecessary disturbance of southwestern willow flycatcher habitat not directly affected by flood control activities Restore willow riparian habitat to provide a net increase in suitable habitat for the flycatcher; resulting in a net increase in habitat area	Losses to habitat would be offset by establishing and/or protecting suitable or potential flycatcher habitat elsewhere along the Meadow Valley Wash Permittees would contribute funds ($12,000 per acre of suitable habitat removed) to cover costs of flycatcher habitat restoration
County Roadway Construction and Maintenance Activities	*Potential effects:* ▪ habitat fragmentation ▪ reduction in habitat and forage quality ▪ increased noise and traffic levels	*Avoidance:* ▪ maintenance/construction timing ▪ roadway design/ construction ▪ worker education	--	Avoid unnecessary disturbance of southwestern willow flycatcher habitat not directly affected by roadway construction/maintenance activities	Losses to habitat would be offset by implementing avoidance and minimization measures including BMPs
Union Pacific Railroad Covered Activities	*Direct effects:* ▪ habitat loss *Indirect effects:* ▪ habitat fragmentation ▪ reduction in habitat and forage quality ▪ increased noise and/or vibration levels	*Avoidance:* ▪ worker education ▪ pre-disturbance surveys *Mitigation:* ▪ habitat replacement/restoration	54 acres	Avoid unnecessary disturbance of southwestern willow flycatcher habitat not directly affected by railroad construction/maintenance/ emergency response activities Restore willow riparian habitat to provide a net increase in suitable habitat for the flycatcher; resulting in a net increase in habitat area	Losses to habitat would be offset establishing and/or protecting suitable or potential flycatcher habitat elsewhere along the Meadow Valley Wash UPRR would contribute funds ($12,000 per acre of suitable habitat removed) to cover costs of flycatcher habitat restoration

Table 7-2: Expected Outcomes from Implementation of the SLCHCP on Southwestern Willow Flycatcher

Covered Activity	Potential Effect	Conservation Measures			Expected Outcome
		Action	Total Habitat Affected (acres)	Expected Result	
Other Privately-Owned Lands Subject to Land Conversion Activities (e.g. agriculture land to urban use or grazing land to cultivated and/or irrigated agricultural land)	Potential effects of land conversion activities area as follows: *Indirect effects:* ▪ habitat fragmentation ▪ reduction in habitat and forage quality ▪ increases in natural predators (i.e., cow birds) ▪ disease	*Avoidance:* ▪ Measures for Planned Land Development and Maintenance Activities for desert tortoise (see above) applicable to this activity *Mitigation* (if landowner wishes to participate in the SLCHCP and sign the Participation Agreement with Lincoln County): ▪ habitat replacement/restoration	Up to 22 acres	If private land is converted from one land use to another land use then avoid unnecessary disturbance of southwestern willow flycatcher habitat Restore willow riparian habitat to provide a net increase in suitable habitat for the flycatcher; resulting in a net increase in habitat area	Losses of flycatcher habitat from the conversion of agriculture land to urban use or grazing land to cultivated and/or irrigated agricultural land would be offset by establishing and/or protecting suitable or potential flycatcher habitat elsewhere along the Meadow Valley Wash Landowners would either be required to pay $12,000 per acre of suitable habitat removed to be used toward restoration and protection purposes for the flycatcher or provide in-kind habitat replacement for the loss of native habitat at a 2:1 ratio and the loss of non-native habitat at a 1:1 ratio

Take of tortoises and losses to habitat would be minimized and offset by implementing Conservation Measures including, but not limited to, clearing tortoises from construction sites prior to development, construction of desert tortoise-proof fencing, and the collection of mitigation fees. A portion of the mitigation fees collected for disturbance to desert tortoise habitat will be used toward the implementation of mitigation measures (i.e., Head Start and Translocation programs, desert tortoise habitat restoration and research efforts, public education and outreach, predator monitoring control, and the LCLA Road/Fencing/Trail Plan) to offset potential effects from Land Development and Maintenance Activities. These Conservation Measures would reduce mortality of desert tortoises and protect remaining habitat. Mitigation fees would address overall loss of habitat through implementation of Conservation Measures and improved funding for research critical to the recovery of desert tortoise within the Northeastern Mojave Recovery Unit.

Clearance surveys, translocation, and fencing measures would avoid and minimize incidental take of desert tortoise to the maximum extent possible. A limited potential for take would still exist through handling of species during translocation and the possibility of not detecting all individuals prior to construction activities.

Indirect effects of Land Development and Maintenance activities (e.g. habitat fragmentation, trash disposal, pets, increased natural predators, illegal collection, disease, toxicosis, non-native plants, increased fire frequency, vandalism) on desert tortoise would be offset by the implementation of Conservation Measures such as fencing and construction BMPs. Trash disposal would occur within the fenced proposed development project areas, be contained by adequate trash receptacles, and would be removed to landfills outside of the Covered Area. Education programs and fencing of the proposed development project areas, which would lead to reduced contact of tortoise with humans, would reduce the transfer of disease (particularly URTD) to wild populations of desert tortoise. Following BMPs to reduce the potential for pollutants to enter the environment would also reduce the potential for toxicosis in desert tortoise. The potential for increased fire frequency and non-native plants would be reduced through invasive species management strategies. These actions would also reduce the numbers of existing non-native plants and their potential for spreading outside of the Covered Area. Overall, these Conservation Measures would reduce indirect effects to desert tortoise.

7.1.2 Utility and Infrastructure Development and Maintenance Activities

Expected outcomes from direct and indirect effects to desert tortoise from Utility Infrastructure Activities within the Covered Area have already been addressed under the Planned Land Development and Maintenance Activities section above.

7.1.3 Flood Control Activities

Within the proposed land development areas and UPRR rights-of way, direct and indirect effects to desert tortoise from construction of flood control structures would be offset by the same Conservation Measures described in the Land Development and Maintenance Activities section: clearance, translocation, fencing, and mitigation fees. Therefore, expected outcomes from direct and indirect effects to desert tortoise, such as disturbance of habitat and potential for direct mortality from construction, have already been addressed under the Planned Land Development and Maintenance Activities section above.

7.1.4 Roadway Construction and Maintenance Activities

Within County rights-of way, effects to desert tortoise from construction and maintenance of roadways would be offset by the implementation of avoidance and minimization measures, including BMPs, described in Section 6.6.1 herein.

7.1.5 Union Pacific Railroad Activities

UPRR's activities on desert tortoise have the potential to result in the loss of up to 800 acres of desert tortoise habitat located in the Covered Area. The potential for direct mortality through construction and maintenance activities also exists.

Within UPRR's right-of ways, direct and indirect effects to desert tortoise from operations, maintenance and emergency response activities would be offset by the Conservation Measures listed in Table 7-1. Therefore,

expected outcomes from direct and indirect effects to desert tortoise, such as disturbance of habitat and potential for direct mortality from construction, will be offset by these Conservation Measures.

7.1.6 Other Privately-Owned Lands Subject to Land Conversion Activities

Lincoln County is requesting coverage for disturbance of up to 564 acres of suitable desert tortoise habitat on existing private lands from the conversion of agriculture land to urban use or grazing land to cultivated and/or irrigated agricultural land along the Meadow Valley Wash within the Covered Area. As part of signing the Participation Agreement with Lincoln County, the landowner would pay the per-acre development fee ($250/acre or $550/acre, refer to Section 6.3.2.1: Desert Tortoise Mitigation Fees in this document) for disturbance on non-Federal property that would result in take associated with loss of desert tortoise habitat.

A portion of the mitigation fees collected for disturbance to desert tortoise habitat would then be used toward the implementation of the same Conservation Measures described under the Planned Land Development and Maintenance Activities section: Head Start program and Translocation programs, desert tortoise habitat restoration and research efforts, and public education and outreach, predator monitoring control, and the LCLA Road/Fencing/Trail Plan to offset potential direct and indirect effects to desert tortoise. Indirect effects on desert tortoise would be offset by the implementation of the same avoidance and minimization measures described under the Planned Land Development and Maintenance Activities section such as fencing, construction BMPs, and etc.

7.2 EXPECTED OUTCOMES FOR SOUTHWESTERN WILLOW FLYCATCHER

Results of the Potential Effects analysis indicate that of the approximately 440 acres of existing suitable southwestern willow flycatcher habitat within the Meadow Valley Wash, approximately 84.3 acres of suitable flycatcher habitat could be affected by the Covered Activities. UPRR's Covered Activities have the largest potential affect with requested take of 54 acres. Flood control activities conducted by the City of Caliente will affect a total of 8.3 acres of suitable southwestern willow flycatcher habitat. Should riparian habitat be removed through the conversion of agriculture land to urban use or grazing land to cultivated and/or irrigated agricultural land within the Covered Area during the life of the Section 10 permit, then up to 22 acres of suitable flycatcher habitat could be affected.

The Permittees propose to disturb up to 84.3 acres of suitable southwestern willow flycatcher habitat within the Covered Area over the 30-year permit term from their respective activities. To mitigate for the loss of 84.3 acres of flycatcher habitat, the Permittees will contribute funds (payment of $12,000 for each acre of suitable habitat removed) or provide in-kind habitat replacement for the loss of native habitat at a 2:1 ratio and the loss of non-native habitat at a 1:1 ratio. Also, implementation of such avoidance and minimization measures listed in Table 7-2 will further reduce disturbance to the flycatcher and its habitat from Covered Activities.

7.2.1 Planned Land Development and Maintenance Activities

No direct effects of Planned Land Development and Maintenance Activities on southwestern willow flycatcher would occur within the Covered Area over the life of the permits; therefore, no mitigation is needed. Indirect effects of Planned Land Development and Maintenance Activities on southwestern willow flycatcher would be offset by the implementation of Conservation Measures listed in Table 7-2 above. Overall, these Conservation Measures would reduce indirect effects to southwestern willow flycatcher.

7.2.2 Utility and Infrastructure Development and Maintenance Activities

No direct effects of Utility and Infrastructure Development and Maintenance Activities on southwestern willow flycatcher would occur within the Covered Area over the life of the permits; therefore, no mitigation is needed. Indirect effects of Utility and Infrastructure Development and Maintenance Activities on southwestern willow flycatcher would be offset by the implementation of conservation measures listed in Table 7-2 above. Overall, these Conservation Measures would reduce indirect effects to southwestern willow flycatcher.

7.2.3 Flood Control Activities

Flood control activities conducted by the City of Caliente on southwestern willow flycatcher have the potential to result in the loss of 8.3 acres of suitable southwestern willow flycatcher habitat located in the Meadow Valley Wash. Thus, the City of Caliente will pay $12,000 per acre of suitable flycatcher habitat removed from their activities to be used toward restoration purposes within a mitigation site.

7.2.4 Roadway Construction and Maintenance Activities

Within County rights-of way, effects to southwestern willow flycatcher from construction and maintenance of roadways would be offset by the implementation of avoidance and minimization measures, including BMPs, described in Section 6.6.1 herein.

7.2.5 Union Pacific Railroad Activities

Railroad operations, maintenance and emergency response activities conducted by UPRR on southwestern willow flycatcher have the potential to result in the loss of 54 acres of suitable flycatcher habitat located within UPRR's railroad rights-of-way. Thus, UPRR will pay $12,000 per acre of suitable flycatcher habitat removed to be used for restoration purposes within a mitigation site.

Indirect effects of UPRR's Covered Activities (e.g., habitat fragmentation, increased noise and vibration levels and traffic) on southwestern willow flycatcher would be offset by the implementation of Conservation Measures by UPRR such as worker education and one-time pre-disturbance surveys. Overall, these Conservation Measures would offset indirect effects to southwestern willow flycatcher.

7.2.6 Other Privately-Owned Lands Subject to Land Conversion Activities

Lincoln County is requesting coverage for disturbance of up to 22 acres of suitable southwestern willow flycatcher habitat on existing private land from the conversion of agriculture land to urban use or grazing land to cultivated and/or irrigated agricultural land along the Meadow Valley Wash within the Covered Area. Per the Participation Agreement with Lincoln County, the landowner would either pay $12,000 for each acre of suitable habitat removed by this activity to cover costs of flycatcher habitat restoration elsewhere in the Meadow Valley Wash and/or provide in-kind habitat replacement for the loss of native habitat at a 2:1 ratio and the loss of non-native habitat at a 1:1 ratio.

7.3 ADAPTIVE MANAGEMENT

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 8.1.2.2) 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 8.1.2.2 of this document. 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 in this document) 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 described in the previous section (Section 6.0: Conservation Measures) of this document. 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 effects. 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 (i.e., desert tortoise and southwestern willow flycatcher).

7.3.1 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), 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 affect 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 effects 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 (Lincoln County, the City of Caliente, and UPRR), the IMC, Lincoln County Board of Commissioners, 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 8.3 of this document. 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 fees to be collected.

7.4 MONITORING

Monitoring tracks compliance with the terms and conditions of the HCP, IA and permit(s) and provides information for making adaptive management decisions. Three general categories of monitoring have been identified for the SLCHCP: 1) integrated monitoring within the Covered Area; 2) project specific compliance monitoring which tracks the Permittee's compliance with the requirements specified in the HCP, IA, and permit(s); and 3) mitigation measures (action) effectiveness monitoring tracks the progress of the conservation actions in meeting the SLCHCP's overall goals and objectives.

Monitoring is a mandatory element of all HCPs (50 CFR 17.22, 17.32, and 222.307). Monitoring is the most important tool when using an adaptive management approach and should be designed so that data is properly collected, analyzed, and used to adjust mitigation strategies, as appropriate. Monitoring programs for HCPs should provide the information necessary to assess compliance and project effects, and verify progress toward the biological goals and objectives in the HCP. Monitoring also provides the scientific data necessary to evaluate the success of the HCPs conservation actions.

For each management action, the IMC will establish one or more units of measurement to evaluate success of the action, termed "performance metrics." Some of these metrics are derived from compliance monitoring, while others are derived from effectiveness monitoring.

- Project Specific Compliance Monitoring. Asks the question, are the avoidance and/or minimization measures being implemented properly? For these, the performance metric will be a numeric tally or straightforward "yes" or "no" observations; i.e., "yes," it is being implemented properly, or "no," it is not.
- Mitigation Measures Effectiveness Monitoring. Questions whether the mitigation action is effective at achieving the overall objective of the HCP. This is generally a statistical or numeric measurement resulting from experimentation.

For each performance metric, a threshold is established and serves as a "trigger" for the adaptive management process. For example, a numeric threshold derived from project specific compliance monitoring could be increased and strengthened, if it can be demonstrated that the Covered Activities or mitigation measures are having a detrimental outcome on the Covered Species within the SLCHCP Covered Area. A numeric threshold might be reduced if it is shown that, despite the threshold being exceeded, no detrimental effects are occurring. For instance, rather than continually exceeding the threshold for no reason, it would be changed to be more meaningful.

7.4.1 Compliance Monitoring

Compliance monitoring verifies that the Permittees are carrying out the terms and conditions of the SLCHCP and permit and implementing the avoidance, minimization and mitigation measures described in Section 6: Conservation Measures of this document.

7.4.1.1 Compliance Monitoring Requirements

Compliance monitoring would ensure that:

- Land is cleared and surveyed for desert tortoises and the tortoises are translocated prior to ground disturbing activities.
- Temporary and permanent fencing is installed as appropriate.
- Weed management plan and road/trail/fencing plan are implemented.
- Mitigation fees have been collected.
- Other avoidance and minimization measures as described in the SLCHCP are being implemented.

7.4.1.2 Compliance Reporting Requirements

Each Permittee will have to show compliance to the terms and conditions of the SLCHCP, IA and Section 10 permits on an annual basis in a report to Lincoln County. Lincoln County will then incorporate each of the reports from the Permittees into the Annual Report to be distributed by Lincoln County to USFWS. Components of the compliance report to be prepared by each Permittee include, but are not limited to:

- The acreage of habitat disturbance involved with each of the Covered Activities in the previous year;
- A summary of mitigation fees collected and other funds obtained, expended and available; and
- A summary of mitigation research efforts selected and implemented.

USFWS may approve adjustments to the elements of the compliance report for any particular Permittee. All the information/data gathered will be incorporated in the annual report developed by the SLCHCP Plan Facilitator. Lincoln County will establish a database to house/record the acres of disturbance from all Covered Activities on an annual basis.

7.4.2 Mitigation Measures Effectiveness Monitoring

Lincoln County will conduct effectiveness monitoring commensurate to the level of anticipated take associated with the loss of Covered Species habitat (i.e., desert tortoise and southwestern willow flycatcher). Effectiveness monitoring is used to determine whether the mitigation actions to be implemented are achieving the biological goals and objectives for each of the species to be covered under the SLCHCP. Careful attention will be given to how the sampling protocols for the potential conservation actions described in Section 6: Conservation Measures of this document can provide feedback to the objectives of the SLCHCP that are designed to ensure the long-term survival of the Covered Species within the Covered Area of the SLCHCP.

Restoration and management actions are intended to mitigate for take associated with loss of listed species habitat and ameliorate disturbances directly and indirectly resulting from land development, flood control activities, roadway construction and maintenance activities, and UPRR activities. If appropriate, pilot (or demonstration) projects will be implemented to help determine the potential effectiveness of a proposed action such as habitat restoration. Monitoring of the management action within and adjacent to proposed disturbance and restoration areas will provide the information necessary for tracking ecosystem conditions, evaluating progress toward the species biological goals and objectives, and reevaluating all features of the AMP. As previously stated, the AMP will be responsible for monitoring the effectiveness of current land use plan management prescriptions in meeting the biological goals and objectives of the species covered by the SLCHCP, and recommending alternative management strategies if monitoring indicates that current conservation actions are not effective or if changes in land management actions are expected to affect species beyond that considered in the SLCHCP.

Once information is collected through monitoring, it will be evaluated to determine whether the biological goals in the SLCHCP are being met, and whether modifications to the mitigation measures for the Covered Activities might be required to maintain the HCP's effectiveness.

FUNDED RESEARCH

This section describes research opportunities and questions relevant to desert tortoise and the SLCHCP in addition to those of highest priority, which were described in Section 6: Conservation Measures of this document. Mitigation fees from the SLCHCP would directly fund some or all of this research. The SLCHCP IMC would determine on an annual basis which research efforts would be appropriate to fund for implementation. It is anticipated that each research effort would include the appropriate methodology to evaluate the effectiveness of the given conservation action being evaluated. Effectiveness monitoring of the research efforts would be the responsibility of researcher's receiving SLCHCP mitigation funds. Activities, progress, and results of the research efforts would be summarized in the annual compliance report; provided, that the researcher delivers a research report to the SLCHCP Plan Facilitator no less than 60 days before the date the compliance report would be submitted. The specific process for managing this process is outlined in Section 8: Plan Implementation of this document.

7.4.3 Monitoring Overview

It is reasonable to expect that monitoring techniques and related technology could change substantially through the life of the SLCHCP. Therefore, it is essential to build flexibility into the monitoring program to respond to such changes. Some monitoring protocols may be replaced, by more efficient, and/or accurate techniques, to address the same issues, and entirely new monitoring programs may be implemented to address unforeseen issues. Proposed changes to the monitoring program will be evaluated by the IMC to insure that they do not reduce the ability of the program to achieve its goals and objectives and to provide feedback for adaptive management. Periodic reviews of the monitoring programs, every 5 years or upon substantially changed circumstance(s), should justify any changes. All changes to the monitoring program will be subject to the concurrence of USFWS, BLM and the Permittees.

Long-term monitoring efforts of the mitigation actions proposed in Section 6: Conservation Measures of this document are anticipated to occur over the life of the SLCHCP for the Covered Species. The information acquired from these monitoring programs, in conjunction with the integrated monitoring activities conducted in southeastern Lincoln County that are relevant to this HCP, will be incorporated into an annual report prepared by the IMC and approved by the Board of Lincoln County Commissioners for submission to the USFWS.

7.5 FEEDBACK FOR ADAPTIVE MANAGEMENT

Based upon monitoring results, Lincoln County, USFWS and BLM would determine annually how the AMP should be implemented in the forthcoming Annual Work Plan. Depending upon Covered Species status measured through monitoring, these efforts may include some or all of the following:

- Changes to how Covered Activities under the Section 10 permit are implemented,
- Changes to the extent, timing, or types of Conservation Measures under the Section 10 permit, and
- Changes to how the funds are provided for research activities.

These determinations would be based upon reviewing monitoring results, as well as resulting IMC discussions. Funding to implement these recommendations would come from mitigation fees paid for by the Permittees and other funding sources described in Section 9: Funding of this document.

7.6 LITERATURE CITED

U.S. Fish and Wildlife Service (USFWS) and National Marine Fisheries Service (NMFS). 1996. Endangered Species Habitat Conservation Planning Handbook. November 1996.

Section 8: Plan Implementation

Lincoln County will fund the permit management and Conservation Measures presented in the SLCHCP primarily from Long Term funding sources but will pursue Supplemented revenue sources as well (refer to Section 9: Funding in this document). All Long Term revenues received will be deposited into the Section 10 Trust Fund Account, as allowed by law, and be utilized to address expenses required to implement the Annual Work Plan (see Section 8.1.2.2) for the SLCHCP. Immediately upon issuance of the Section 10 permit, Lincoln County will begin implementing the SLCHCP and AMP.

Following issuance of the Section 10 permit, the Permittees will:

- Identify a Plan Facilitator, Technical Advisor, and organize the LCIMC.
- Develop an annual work plan based on the priority activities in the 5-year work plan provided herein.
- Establish the LCLA GID and levy the SLCHCP related ad valorem tax.
- Provide, through a Lincoln County ordinance, for the collection of disturbance or mitigation fees by creating a permitting process that establishes the fee schedule for disturbance or mitigation fees and penalties for any disturbance prior to completing the permit process or payment of fees.

In addition to the items listed above, prior to take associated with loss of southwestern willow flycatcher habitat, the Permittees will:

- Identify suitable areas for southwestern willow flycatcher habitat restoration, coordinate with the BLM or interested landowners to secure the land, develop a project-specific plan, and initiate habitat protection/enhancement initiatives in accordance with the project plan.

Prior to carrying out activities that would result in incidental take of the Covered Species, all Permittees will collect or pay the mitigation fee(s), contribute funds or establish an alternative for mitigation acceptable to USFWS. If a mitigation fund is not yet established, mitigation fees shall be set aside in an escrow account to be established for that purpose. Proposed activities will progress commensurate with mitigation and minimization measures as detailed in the Annual Work Plan approved by the USFWS.

8.1 SLCHCP 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. Funding for implementation of the SLCHCP is expected to come from Section 10 mitigation fees and supplemental funding sources.

Upon signing the IA, the BLCC will undertake the following:

- Appoint a Plan Facilitator (role described in Section 8.1.2 below),
- Create the Lincoln County IMC (refer to Section 8.1.1),
- Establish the Section 10 Trust Fund account for collected revenues (refer to Section 9.0: Funding in this document),
- Establish the Landowner Assistance Program with the LCCD (refer to Section 6.7.2.2.2), and
- The IMC will meet within the first three months of issuance of the incidental take permit. Within the first six months following issuance of the take permit, the BLCC will work with the Applicants to develop a draft annual plan and implementation budget. The participant reports would then be due to the Lincoln County IMC twelve months after development of the plan. IMC meetings will be held at a minimum every three months during the first year of implementation and six months every following year.

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 Plan and implementation budget (refer to Table 8-1),
- 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 for Lincoln County to manage implementation of the SLCHCP including administration, reporting and coordination of the IMC is approximately $150,000 annually (further described in Section 9: Funding of this document).

8.1.1 Implementation and Monitoring Committee

The Lincoln County IMC will oversee implementation of the SLCHCP with the assistance of the technical advisor(s) 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.

8.1.1.1 Structure and Organization of the Committee

- Members of the Lincoln County IMC will be appointed by the BLCC and will consist of the Permittees and Participants of the SLCHCP including a representative from Lincoln County, USFWS, BLM, the City of Caliente, UPRR, and the LCCD.
- The Lincoln County IMC may be expanded to include other entities and consultants upon approval by the BLCC and the concurrence of USFWS.
- In the event the Lincoln County IMC is unable to reach agreement on annual conservation measure prioritization and funding, it will forward the minutes of the meetings to the BLCC for further consideration and final action. The USFWS must approve the final action.
- Concerns of the BLCC about any aspect of prioritized Conservation Measures; studies or budgets will be presented to the Lincoln County IMC. The Lincoln County IMC, with the assistance of a technical advisor(s), will prepare a report for the BLCC to address such concerns.
- Meetings of the Lincoln County IMC will be held as necessary to administer and implement the SLCHCP. At a minimum, Lincoln County IMC meetings will be held semi-annually or as needed. IMC meetings will be subject to Nevada's Open Meeting Law and as such, notices of all meetings will be posted in advance and all meetings will be open to the public.

8.1.1.2 Duties and Responsibilities of the Committee

The Lincoln County IMC will undertake the following:

- Prioritize the Conservation Measures and determine how the mitigation funds should be spent.
- Monitor the amount of take and success of the Conservation Measures.
- Evaluate and recommend to the BLCC and USFWS approval, denial, or modification of proposed expenditure of funds for Conservation Measures.
- Perform additional duties and responsibilities as directed by the BLCC from time to time.
- Establish a technical advisory subcommittee(s), as necessary or appropriate, which would assist the Lincoln County IMC with decisions of a technical nature required for implementation of the SLCHCP, including the AMP. Members of the subcommittees will not be required to be members of the Lincoln County IMC.

- Provide oversight on the development of public information/education programs required by the SLCHCP.
- Recommend to the BLCC, with assistance from the USFWS and the technical advisor(s), additional desert tortoise research efforts that may be important for conservation of the desert tortoise in the SLCHCP Covered Area.
- Assist with the preparation of the annual work plans and other reports, as required to address the requirements of the SLCHCP and the Section 10 permit.

8.1.2 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.

8.1.2.1 Duties and Responsibilities of the Plan Facilitator

The Plan Facilitator's responsibilities would include the following:

- Develop a process to monitor "take" of the Covered Species by those subject to Lincoln County's permit during the first year of implementation of the SLCHCP as part of development of the mitigation plan (refer to Sections 7.4.1: Compliance Monitoring and 7.4.2: Mitigation Measures Effectiveness Monitoring in this document).
- Coordinate minimization and mitigation measures funding as well as implementation of the measures by the Permittees and plan participants.
- Report to the BLCC on the SLCHCP funding status and the effectiveness of minimization and mitigation measures.
- Report to the BLCC the status and likelihood of species located within the County to be listed by either the state or Federal agencies.
- Recommend to the BLCC measures to avoid future ESA listings and courses of action to support efforts to delist species.
- Facilitate coordination of efforts between the various Federal and state resource managers to avoid conflict and duplication of efforts, and maximize the effectiveness of SLCHCP Conservation Measures.
- Coordinate public inquiries concerning the SLCHCP.
- Meet and confer with county, state and Federal land managers and non-Federal landowners regarding specific requirements and the progress in implementing the SLCHCP. This includes review of Building Department procedures for the issuance of grading or building permits and facilitating preparation of the Annual Work Plan with the Lincoln County IMC.
- Present to the BLCC the findings and recommendations of the Lincoln County IMC.
- Participate in the AMP.
- Prepare an annual report addressing items 1–9 above and any other reports or information requested by the BLCC.
- Provide the BLCC information needed to report to the USFWS as may be required in the Section 10 permit.

8.1.2.2 Annual Work Plan

Implementation of the SLCHCP will require annual planning and budgeting by the Plan Facilitator and the Lincoln County IMC. The Plan Facilitator, with the assistance of the Lincoln County IMC, will prepare the Annual Work Plan detailing the specific accomplishments to be achieved in order to meet the Conservation Measures identified in the SLCHCP. 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 Annual Work Plan will be presented to the BLCC for approval consistent with the County's annual budgeting process. The USFWS will also review the work plan for approval. USFWS' approval is dependent, in part, on the requirement to ensure that all avoidance, minimization and mitigation measures are commensurate with the level of effect in any one year.

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.

8.1.3 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.

8.1.3.1 Duties and Responsibilities of the Technical Advisor(s)

- Develop the finer details of the Adaptive Management Program, effectiveness monitoring and its experimental design in consultation with the Lincoln County IMC and the USFWS.
- Coordinate with the USFWS to evaluate the design of the proposed mitigation plan which will describe in detail conservation measures to be implemented for the Covered Species (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), including measurable project goals and objectives.
- Evaluate the effectiveness of the implemented mitigation measures.
- Oversee all monitoring programs.
- Advise the Lincoln County IMC on prioritization of mitigation measures, studies, or projects.
- Contribute to development of the monitoring methodologies.

The ultimate outcome of these actions is to determine the efficiency of management actions and document the effectiveness of implemented management actions.

8.1.4 Plan Participants

The Plan Participants, as discussed in Section 1.3.3 of this document, are as follows:

- Lincoln County
- City of Caliente
- Union Pacific Railroad
- US Fish and Wildlife Service
- Bureau of Land Management
- Lincoln County Conservation District

8.1.4.1 Roles and Responsibilities of the Plan Participants

8.1.4.1.1 Lincoln County

- Fee Collection and Implementation of a Section 10 Trust Fund
- Lincoln County is committed to seeking supplemental funding sources to aid in implementation of the SLCHCP
- SLCHCP Administration, Reporting and Establishment of the Implementation and Monitoring Committee
- Public Outreach and Education
- County Road Worker Education
- Species Avoidance for County Road Maintenance
- The SLCHCP Specific Measures for Disturbances in Desert Tortoise Habitat Associated with the Lincoln County Land Act Lands
  - LCLA Road, Fencing, and Trail Plan: A road/fence/trail system strategic plan will be developed for the areas in or adjacent to the LCLA lands to discourage unauthorized vehicle access to critical habitat and to protect ACECs. 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 effects in the adjacent ACECs.
  - Predator Monitoring and Control: Potential effects to desert tortoise habitat from urban development and the associated increase in solid waste that attracts predators, including dogs, will be minimized or mitigated in part by hiring a Wildlife Services Specialist for the LCLA lands. 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 LCIMC through the AMP as development expands.
  - LCLA Development Agreements: Development Agreements (DAs) for the LCLA lands require that the LCLA 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.
  - The BLCC has the responsibility to ensure that the DAs adhere to the terms and conditions of Lincoln County's SLCHCP Section 10 permit 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. The USFWS will be requested to review the final DAs when they are available.
- Weed Control Program: Lincoln County will implement a weed control and monitoring program for the LCLA development boundary areas.
- Education Program: Lincoln County will implement an education program for the LCLA development boundary areas. The Plan Facilitator may elect to organize an 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 permit(s).
  - 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 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, disturbance by OHV and ground disturbance associated with development.
  - Encourage participation in volunteer programs.
- Landowner Assistance Program: Private landowners along the Meadow Valley Wash or along Clover Creek may have suitable or potential habitat for the southwestern willow flycatcher on their property. The Meadow Valley Wash Post-Flood Vegetation Assessment (Bio-West 2005b) inventoried the presence or absence of existing suitable or potential habitat on all private lands for which access was granted at the time of the inventory. The Plan Facilitator will maintain copies of the maps contained in the Meadow Valley Wash Baseline Ecological Assessment and will then provide them to landowners upon request.
  - If a landowner needs further assistance with habitat delineation on his property, then the Plan Facilitator will offer to coordinate habitat delineation assistance for the landowner through the Lincoln County Conservation District (LCCD). The LCCD assistance regarding southwestern willow flycatcher habitat would be funded through funds generated through the SLCHCP.
  - The LCCD is a legal entity of the State government that functions at the local level. The purpose of the LCCD is to identify and carry out the conservation priorities 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 the SLCHCP working with the LCCD, than if they were to work with other state or Federal personnel.
  - The landowners within the District elect the LCCD Supervisor. A chairman is elected by the LCCD Board to serve annually. The LCCD meets and coordinates with the Natural Resource Conservation Service (NRCS) District Conservationist regularly to discuss the on-going conservation program and to outline additional work needs. The LCCD Board assists in setting NRCS priority work.
  - The NRCS is the technical arm of USDA, housing multidisciplinary staffs available to assist Conservation Districts (CDs) in carrying out the local conservation priorities established by the CDs in concert with the NRCS. The services of the NRCS are provided at no cost to landowners that sign a cooperative agreement with the CD to carry out conservation on their property. The NRCS technical assistance will be provided to private landowners who qualify under the CD guidelines.
  - The NRCS would meet with landowners at their request regarding southwestern willow flycatcher habitat identification, protection, and/or restoration. Any information exchanged between the NRCS and the landowner would remain confidential unless the landowner chooses to participate in the southwestern willow flycatcher No Net Loss Program described herein.

- Southwestern Willow Flycatcher Habitat No Net Loss Program: The primary goal of the SLCHCP concerning the southwestern willow flycatcher is to achieve no net loss of suitable habitat in the Covered Area. Permanent removal of suitable habitat will be mitigated either on private land or on public land by creating suitable habitat out of "potential habitat" as identified in the Meadow Valley Wash Baseline Ecological Assessment. 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 a 1:1 replacement ratio for loss of non-native suitable habitat.
  - Habitat mitigation through habitat creation may take place on either private land or public land. In both cases, funds generated through the SLCHCP will be used for habitat creation, enhancement, monitoring, maintenance, and protection.

8.1.4.1.2 City of Caliente

- Public Education: The City of Caliente will participate in local public education programs with Lincoln County and assist Lincoln County in disseminating information regarding programs available to assist private landowners deal with southwestern willow flycatcher habitat.
- Pay $12,000 per acre of habitat removed by the City within the Meadow Valley Wash to be used for covering the costs of replacing suitable flycatcher habitat elsewhere in the Meadow Valley Wash. Payments will be deposited into Lincoln County's riparian habitat mitigation bank.

8.1.4.1.3 Union Pacific Railroad

- Implement Avoidance and Minimization Measures as provided in the SLCHCP and as more fully described in Section 6.7.1.
- Pay Desert Tortoise Suitable Habitat Disturbance Fee: UPRR will pay $550 per-acre mitigation fee for Covered Activities within their rights-of-way that will result in the loss of 800 acres of desert tortoise suitable habitat.
- Pay $12,000 per acre of suitable flycatcher habitat removed (a total of 54 acres) by UPRR Covered Activities to be used for covering the costs of replacing suitable flycatcher habitat elsewhere in the Meadow Valley Wash.
- Responsible for their own monitoring and reporting the results to USFWS and Lincoln County.

8.1.4.1.4 U.S. Fish and Wildlife Service

- The USFWS will provide assistance in determining the most beneficial use of the mitigation funds based on current and future Recovery Plans, scientific white papers and other guiding documents as well as best professional judgment. Although the SLCHCP describes a set of specific Conservation Measures that will be implemented, priorities are likely to change over the course of the 30 year permit and funds may be redirected as necessary to meet new priorities.
- The USFWS will coordinate with the Parties to the SLCHCP to assist in development of the Annual Work Plan. Each year, the Annual Work Plan will be provided to the USFWS for approval.
- The USFWS will participate in all IMC and technical workgroup meetings and will provide technical assistance as needed.
- The USFWS, in coordination with the Desert Tortoise Recovery Office, will provide technical assistance and instructions for the disposition of desert tortoises to be removed from the development lands within the Covered Area.
- The USFWS, in coordination with the Desert Tortoise Recovery Office, will approve all qualified/authorized desert tortoise biologists to be used in tortoise clearances within the development lands.

- Qualified desert tortoise biologists must comply with Procedures for Endangered Species Act Compliance for the Mojave Desert Tortoise (USFWS 1994) and USFWS-approved handling protocol (Desert Tortoise Council 1994).
- If the Desert Tortoise Council releases a revised protocol for handling of desert tortoises before initiation of project activities, the revised protocol will be implemented for the project area.
- All tortoise biologists must complete the "Desert Tortoise Monitor and Biologist Qualifications Statement" or other applicable form and submit to the USFWS for review and final approval as appropriate prior to clearing tortoises from the development lands.
- The USFWS, in coordination with the Desert Tortoise Recovery Office, will determine where tortoises will be taken upon removal from the development lands.
- The USFWS, in coordination with the Desert Tortoise Recovery Office, will provide guidance to the Parties on the development of the Desert Tortoise Head Start Program, and will approve the final program design. Components of the Head Start Program to be considered in the design include number of tortoises to be used in the program, length of time tortoises are held at a facility, design of the breeding program, and translocation of tortoises back into the wild.
- Within 45 days of receipt, the USFWS will review and approve all individual desert tortoise-proof fencing plans to be submitted by the developers prior to commencement of construction activities on the development lands in the Covered Area.
- The USFWS will review and approve all training and education programs prepared by the Permittees or their contractors to instruct staff members on the biology of the Covered Species and the proper protocols and procedures to follow for avoiding or minimizing effects to the Covered Species.
- The USFWS will participate with the Parties in the development of strategies as described in the SLCHCP, and will include approval of lands identified as a mitigation or conservation bank to offset effects to the flycatcher.
- The USFWS will participate with the Parties in the development of habitat restoration projects, plans, and associated research studies, and will include approval of lands where habitat restoration will occur for the benefit of the tortoise and the flycatcher.
- At its discretion, the USFWS will initiate and facilitate the development of a long-term conservation strategy for the Meadow Valley Wash.
- The USFWS will identify locations within the Meadow Valley Wash where surveys for flycatchers will be conducted prior to commencement of normal planned maintenance activities. The USFWS will approve biologists and survey protocols to be used for flycatcher surveys.

8.1.4.1.5 Bureau of Land Management

- Participation of BLM or use of public lands for any mitigation work, or any other action under the SLCHCP, is at BLM's discretion; however, BLM agrees to work with the Permittees to review proposed actions seeking use of lands administered by BLM in a timely manner.
- BLM has not authorized any specific proposed mitigation actions on public land administered by BLM through the SLCHCP, EIS or accompanying IA. All future actions on lands administered by BLM would be subject to applicable laws, regulations, and BLM policy.
- In general, BLM will be the lead agency for all regulatory compliance (i.e., NEPA, National Historic Preservation Act, Endangered Species Act, etc.) for any proposed actions on public lands administered by BLM; however, any document preparation or other action to comply with laws, regulations, and BLM policy will be paid for by the Permittees. Under some circumstances, other agencies (such as USFWS) may act as a lead and BLM will be a partner or cooperator.
- After appropriate regulatory compliance review, BLM may authorize mitigation work on BLM-administered land, and the Permittees will accomplish the mitigation work. Any maintenance, restoration, rehabilitation,

or funding of accomplished mitigation projects carried out on BLM-administered lands would be the responsibility of the Permittees unless otherwise agreed to by BLM.

- Based on BLM's watershed assessments or other relevant information, BLM may set restoration priorities. Restoration will conform to the Ely RMP management decisions. Permittees will coordinate with BLM on priorities for mitigation projects.
- All mitigation monitoring costs will be the responsibility of the Permittees or USFWS. BLM staff may participate in mitigation monitoring in a technical advisory capacity and will be compensated for its participation.
- BLM may agree to translocation and habitat restoration research studies. Translocations will conform to BLM's Manual Section 1745 "Introduction, Transplant, Augmentation and Reestablishment of Fish, Wildlife and Plants." Prior to, and following translocation, the Permittees, USFWS, or their assignees will conduct an assessment of desert tortoise habitat, densities, carrying capacity, and mortality in suitable areas proposed for translocation.
- The Permittees shall bear all costs associated with issuing authorizations, coordinating actions, development of mitigation proposals, and project meeting attendance time and travel costs incurred by BLM for all activities pertaining to the SLCHCP. Other than attendance at the IMC meetings, BLM will not encumber base funding to ensure success of the SLCHCP and is under no obligation to expend any appropriated funds for any activity required under or related to the SLCHCP. Expenses to the BLM will be offset through a cost recovery structure.
- BLM may identify projects that could be used for SLCHCP mitigation. Permittees may select the projects they want to accomplish or propose others. Permittees (or an appropriate third party) shall enter into a cooperative agreement with BLM to accomplish restoration/rehabilitation/mitigation work according to such terms and conditions as BLM may specify.
- All data collected pertaining to the SLCHCP on BLM administered lands will be made available to BLM. Original work of authorship in any medium, including data in any form, prepared and originated by BLM, USFWS or Permittees as a result of work conducted under the SLCHCP on or pertaining to BLM administered lands, shall be shared jointly by the BLM, USFWS or Permittees with each having full and unlimited rights of use. If any requirement of the SLCHCP or Implementing Agreement involves information, including data, previously developed and under the control or copyright of BLM, USFWS or Permittees, BLM, USFWS or Permittees shall permit the other parties limited use of such information and data as necessary, to the extent otherwise allowed by law.
- BLM will have a seat on the Implementation and Monitoring Committee.

8.2 REPORTING

8.2.1 Annual Report

The Plan Facilitator with the assistance of the Lincoln County IMC will prepare an Annual Report no more than 60 days following the end of the fiscal year detailing the accomplishments of the previous year and how well the goals and objectives of the previous year's work plan were met. The annual report will include information from the LCCD for the Landowner Assistance Program, as well as reports from Lincoln County and all participants including the City of Caliente, UPRR, and BLM. If landowners conduct conservation activities for the southwestern willow flycatcher without the assistance of the LCCD, then they will submit their own report to the Plan Facilitator. Each party's obligation to submit a report shall be a condition requirement prior to project authorization (grading, building, or other authorization) to ensure that Lincoln County has enforcement means. Permittees and Plan Participants will be required to provide their reports to the Plan Facilitator by the end of August.

The Annual Report will present the status of implemented Conservation Measures and the effectiveness of those measures as well as any problems encountered with the avoidance, minimization, and/or mitigation efforts implemented during that year. The report will make recommendations for changes for the following

year. The Lincoln County IMC may request additional information or clarification from SLCHCP Permittees and non-Federal landowners, if needed.

The Annual Report will be used to track land disturbance, take, funding levels in the Section 10 land disturbance account, and expenditures related to SLCHCP implementation. The number of acres disturbed within a specific time period and the amount of remaining acres available under the Section 10 permit(s) will be included. Lincoln County anticipates planning a year in advance for land disturbance activities and therefore compliance monitoring will be reported annually.

The Annual Report will be a compilation of several elements including, at a minimum, the following:

- A description of all Conservation Measures initiated, continued, or completed during the previous year, as a part of the Annual Work Plan, a description of Conservation Measures to be implemented for the upcoming year;
- A tabulation and description of incidental take of individuals and acres of habitat loss known to have occurred during the previous year and a projection of habitat disturbance for the upcoming year;
- A description of findings, results, and conclusions of monitoring or research conducted and, as part of the Annual Work Plan, the monitoring and research that will be conducted for the upcoming year as determined by the AMP;
- A monthly tabulation of funds collected from desert tortoise habitat disturbance fees and for riparian restoration;
- A tabulation and description of funds expended during the previous year and, as part of the Annual Work Plan, the funds to be expended during the upcoming year for the conservation and monitoring actions described in the preceding reports; and
- Other recommendations such as minor modifications or amendments to the HCP documents.

The Annual Report will be approved by the BLCC and forwarded to the USFWS. The Annual Report must provide sufficient information to prove compliance with the SLCHCP Section 10 permit(s). If additional detail is needed, the USFWS must submit a request in writing to the BLCC within 30 days of receipt of the Annual Report. The BLCC shall have 30 days to respond to the USFWS request.

8.2.2 Reporting/Budget Schedule

A general reporting schedule is provided below (Table 8-1). Changes to the dates may occur over the permit term to accommodate other Federal or county timeline constraints or to improve Plan implementation efficiency.

Table 8-1: A Proposed Reporting Schedule

Date	Action/Description
July 31	Participant's reports due to the Plan Facilitator
August 31	Plan Annual Report due to the BLCC
September 30	Annul Report due to the Service
October 31	Service comments on the Annual Report due to the BLCC
April 30	BLCC approves SLCHCP implementation budget for each subsequent fiscal year (July-June)

8.3 CHANGED AND UNFORESEEN CIRCUMSTANCES

Section 10 regulations [50 CFS 17.22 (b)(2)(iii)] require that an HCP specify the procedures to be used for dealing with unforeseen circumstances that may arise during the implementation of the HCP. In addition, the Habitat Conservation Plan Assurances ("No Surprises") Rule [50 CFR 17.21 (b)(5)-(6) and 17.22 (b)(5)-(6); 63 F.R. 8859] defines "unforeseen circumstances" and "changed circumstances" and describes the obligations of the Permittee and USFWS. In addition, the HCP No Surprises Rule [50 CFR 17.22 (b)(5) and 17.32 (b)(5)] describes the obligations of the Permittee and USFWS. The purpose of the No Surprises Rule is to provide

assurance to the non-Federal landowners participating in the SLCHCP under the ESA that no additional land restrictions or financial compensation will be required for species adequately covered by a properly implemented HCP, in light of unforeseen circumstances, without the consent of the Permittee.

8.3.1 Changed Circumstances

Changed circumstances are defined in 50 CFR 17.3 as changes in circumstances affecting a species or geographic area covered by a conservation plan that can reasonably be anticipated by plan developers and the USFWS and for which contingency plans can be prepared (e.g. the new listing of species, a fire, or other natural catastrophic event in areas prone to such an event). If additional conservation and mitigation measures are deemed necessary to respond to changed circumstances and these additional measures were already provided for in the plan's operating conservation program (e.g. the conservation management activities or mitigation measures expressly agreed to in the SLCHCP or IA), then the Permittee will implement those measures as specified in the plan. However, if additional conservation management and mitigation measures are deemed necessary to respond to changed circumstances and such measures were not provided for in the plan's operating conservation program, the USFWS will not require these additional measures absent the consent of the Permittee, provided that the SLCHCP is being "properly implemented" (which means the commitments and provisions of the SLCHCP and the IA have been or are being fully implemented).

Reasonably foreseeable circumstances for which the Plan Participants will implement remedial measures should they occur are listed in Table 8-2. The process for responding to Changed Circumstances will be initiated as soon as practicable but no later than 30 days after monitoring reveals a Changed Circumstance. The response actions will be handled through the AMP described in Section 7.3 of this document. Effects and responses will be summarized in a report and submitted to the USFWS.

In the event that a non-covered species that may be affected by Covered Activities becomes listed under the ESA, Lincoln County will implement the "no-take/no jeopardy/no adverse modification" measures identified by the USFWS until the permit is amended to include such species, or until the USFWS notifies the Permittees that such measures are no longer needed to avoid jeopardy to, take of, or adverse modification of the designated critical habitat, if any, of the non-covered species.

8.3.2 Unforeseen Circumstances

The policy defines unforeseen circumstances as changes in circumstances that affect a species or geographic area covered by the SLCHCP that could not reasonably be anticipated by plan developers and USFWS at the time of the plan's negotiations and development and that result in a substantial and adverse change in status of a covered species. The purpose of the "No Surprises Rule" is to provide assurances to non-Federal landowners participating in the SLCHCP under the ESA that no additional land restrictions or financial compensation will be required for species adequately covered by the properly implemented SLCHCP, in light of unforeseen circumstances, without the consent of the Permittee.

In case of an unforeseen event, the USFWS shall have the burden of demonstrating that an unforeseen circumstance has occurred and that such circumstance is having or is likely to have a significant adverse affect on the Covered Species and/or its habitat. The findings of the USFWS must be clearly documented and be based upon the best scientific and commercial data available regarding the status and habitat requirements of the species. Based on the results of an expedited analysis of the changed or unforeseen circumstance(s) and the information provided by the Permittees, the USFWS shall provide the justification and approval for any reallocation of funds or resources necessary to respond to the circumstance(s) within the existing commitments of the Permittees under the SLCHCP.

The USFWS will determine that an unforeseen circumstance has occurred by evaluating factors such as 1) the size of the current range of the affected species; 2) percentage of range conserved by the SLCHCP; 3) percentage of range adversely affected; 4) the ecological significance of the portion of the range covered by the SLCHCP; 5) the level of knowledge of the affected species or habitat; and 6) whether failure to adopt additional Conservation Measures would significantly reduce the likelihood of survival and recovery of the species in the wild. Any party to the Implementation Agreement may request that the Plan Facilitator schedule the Lincoln County IMC to meet to discuss appropriate amendments to the SLCHCP.

In implementing the "No Surprises" Rule, Congress intended that additional mitigation requirements should not be imposed on a Section 10(a)(1)(B) Permittee in the event of unforeseen circumstances. If the USFWS determines that an unforeseen circumstance has occurred and additional Conservation Measures subsequently are deemed necessary to provide for the conservation of a species that is otherwise adequately covered under the SLCHCP, and the SLCHCP is properly functioning, the obligation for such measures shall not rest with Lincoln County and/or UPRR. The USFWS agrees that it will consider all practical measures and alternatives, and adopt only those that will have the least effect on the lifestyle and economy of Lincoln County and/or the economic performance of UPRR, while at the same time addressing the unforeseen circumstance and the survival and recovery of the affected Covered Species and/or habitat.

Table 8-2: Potential Changed Circumstances and Remedial Measures

Changed Circumstances	Remedial Measures
The creation of habitat for one or more of the covered species in accordance with the SLCHCP is unsuccessful (for instance, fails to provide essential habitat elements).	Change the mix of management actions; no additional fees will be assessed.
Insufficient water is available, regardless of cause, to maintain established or created southwestern willow flycatcher habitat.	Lincoln County will coordinate with the USFWS to prioritize the distribution of available water among created habitat areas to ensure that the greatest benefits for the southwestern willow flycatcher will be provided by the amount of water available for maintenance of the created habitat.
Created habitat is lost as a result of floods, vandalism or fire.	Lincoln County will notify the USFWS and, within the limits of available SLCHCP derived funding, replant damaged vegetation planted as mitigation pursuant to implementation of the SLCHCP and/or replace any damaged infrastructure installed or constructed as mitigation pursuant to implementation within the burned area. Created habitats will be reestablished following loss. Land management and created habitat restoration measures listed in Sections 6.3.2.1.1 & 6.7.2.2.2 will be implemented in conservation areas to ensure the reestablishment of native vegetation through active management or natural processes. No additional fees will be assessed
Invasion of nonnative species	Lincoln County will develop a plan to implement standard (non-pesticide) measures to control and eradicate (if possible) the infestation. The plan will be presented to the USFWS and BLM for approval. The plan will include a detailed implementation plan and describe SLCHCP derived funding required to implement the plan.
Listing of a new species	In such a case, the Section 10 permit will be reevaluated by the USFWS and the SLCHCP Covered Activities may be modified, as necessary, to ensure that activities covered under the SLCHCP are not likely to jeopardize or result in take or adverse modification of any designated critical habitat of the newly listed species. Lincoln County will implement the modifications to the SLCHCP Covered Activities identified by the USFWS as necessary to avoid the likelihood of jeopardy or adverse modification of the designated critical habitat of the newly listed species. Lincoln County and, if appropriate, UPRR will continue to implement such modifications until such time as Lincoln County and, if appropriate, UPRR have applied for and the USFWS has approved an amendment of the Section 10 permit, in accordance with applicable statutory and regulatory requirements to cover the newly listed species or until the USFWS notifies Lincoln County and, if appropriate, UPRR in writing that the modifications to the SLCHCP Covered Activities are no longer required to avoid the likelihood of jeopardy or adverse modification of designated critical habitat of the newly listed species.

8.4 REVISIONS AND AMENDMENTS

Revisions and amendments shall be processed in accordance with all applicable legal requirements, including but not limited to the ESA, NEPA, and any applicable Federal regulations. Revisions and amendments shall be processed in accordance with all applicable legal requirements, including but not limited to the ESA, NEPA, and any applicable Federal regulations.

8.4.1 Revisions

Revisions to the SLCHCP are changes to the Plan that do not modify the scope or nature of activities or actions covered by the Section 10 permit(s) or result in operations under the SLCHCP that are significantly different

from those contemplated or analyzed in connection with the Plan as approved, such as adverse effects on the environment that are new or significantly different from those analyzed in connection with the Plan as approved or additional take not analyzed in connection with the SLCHCP as approved.

Revisions to the SLCHCP may include, but are not limited to the following:

- Updating construction windows for the SLCHCP Covered Species;
- Correction of any maps or exhibits to correct errors in mapping or to reflect previously approved changes in the Section 10 permit(s) or habitat conservation plan;
- Modifying existing or establishing new Incidental Take Avoidance Measures;
- Modifying reporting protocols for annual reports;
- Minor changes to monitoring or reporting protocols;
- Revising mitigation area enhancement and management techniques; or
- Any other modifications to the SLCHCP that are consistent with the biological goals and objectives of the SLCHCP and the USFWS have analyzed.

Lincoln County may submit the proposed revision to USFWS for review. The USFWS shall respond in writing to a proposed revision within thirty (30) calendar days of receipt of the request. The responses shall 1) concur in the proposed revision; 2) identify additional information necessary to enable the USFWS to approve or disapprove the revision, or 3) disapprove the revision. If the USFWS disapproves the revision, it must be processed as an amendment to the Plan and Section 10 permit. If USFWS disapproves the revision, it shall include in its written response an explanation of its determination.

8.4.2 Minor Amendments

According to the Habitat Conservation Plan Handbook (USFWS and National Marine Fisheries Service 1996), clarifications, and minor administrative amendments may be incorporated into the SLCHCP administratively if:

- The amendment has the unanimous consent of the Permittees and the USFWS;
- The original SLCHCP established specific procedures for incorporating minor amendments so that the public had an opportunity to comment on the process, and such amendments are consistent with those procedures;
- The SLCHCP defines what types of amendments are considered minor;
- A written record of any such amendments is prepared; and
- The net effect on the species involved and level of take resulting from the amendment is not significantly different than that analyzed under the original SLCHCP and the USFWS decision documents.

8.4.2.1 Procedures for Incorporating Minor Amendments and Public Comment

Any Permittee under the SLCHCP or signatory to the IA, including the USFWS, may submit a request for a minor amendment. The request must be submitted to the Plan Facilitator, reviewed by the Lincoln County IMC, and recommended to the BLCC for adoption, with a written request submitted to the USFWS for concurrence. The minor amendments or clarifications will be presented and open for public comment at a regularly scheduled BLCC meeting. If the USFWS concurs with the proposed minor amendment, then they will authorize the amendment in writing within 30 days. The amendment will be effective on the date of the written authorization from the USFWS.

8.4.2.2 Types of Amendments that are Considered Minor

Clarifications or minor amendments include:

- Corrections of typographic, grammatical, and similar editing errors that do not change the intended meaning.
- Correction of any maps or exhibits to correct errors in mapping or to reflect previously approved changes in the permits or habitat conservation plan.
- Correction of land ownership and/or land boundaries.
- Correction of the acres of suitable and potential habitat for the southwestern willow flycatcher along the Meadow Valley Wash within the Covered Area. Any adjustments to the amount of suitable and potential habitat available in the Meadow Valley Wash must not result in increasing the acres of suitable habitat removed within the term of the permits.
- Within the Covered Area, inclusion of new non-Federal lands if they leave Federal ownership through public land disposal or other means and have gone through a Section 7 consultation with the USFWS. This includes new parcels, new and expanded rights-of-ways, and the like. For example, inclusion of new land with very low to low desert tortoise densities proximate to existing development might be included as a minor amendment. The inclusion of additional non-Federal land to the Covered Area that supports desert tortoise habitat, regardless of the density of tortoises on the land, would not be considered a minor amendment if it would result in take of the species above what was authorized under the permits.
- Minor changes to surveying, monitoring, or reporting protocols.
- Changes or adjustments to avoidance, minimization and mitigation measures recommended through the AMP.
- Changes in the ad valorem tax rate for the LCLA GID as described in Section 9.1.1.3, of this document either increased or decreased, as appropriate to support the minimization and mitigation measures.

8.4.3 Major Amendments

Major amendments to the HCP include significant alterations in funding, schedule, boundary, the addition of species, or new major activity. Any Permittee under the HCP or signatory to the IA, including the USFWS, may submit a request for a major amendment. The request must be submitted to the Plan Facilitator, reviewed by the Lincoln County IMC, and recommended to and approved by the BLCC with a written request submitted to the USFWS for concurrence. Major amendments would be reviewed by the Lincoln County IMC; formally proposed to the USFWS by the County Commissioners; and ultimately approved, modified, or rejected by the USFWS. Any major amendment should have approval by all signatories (Permittees and Plan Participants) to the IA. The Lincoln County IMC will be responsible for evaluating and recommending any potential HCP amendment.

The permit amendment will follow the same process as the original permit application following 50 CFR Parts 13 and 17, requiring 1) an amendment to the HCP addressing the new circumstance, 2) a Federal Register notice, 3) NEPA compliance, and 4) and intra-Service Section 7 consultation. A Section 7 consultation results in a BO.

8.5 SUSPENSION, REVOCATION AND TERMINATION

The USFWS may suspend, revoke, or terminate any Section 10 permit issued in relation to the SLCHCP if Lincoln County or UPRR fail to implement the SLCHCP in accordance with the terms and conditions of the permits or if suspension, revocation, or termination is otherwise required by law. Suspension, revocation, or termination of the Section 10 permit(s), in whole or in part, by the USFWS shall be in accordance with 50 CFR 13.27-29, 17.32(b)(8). Prior to taking any action to suspend, revoke, or terminate a Section 10 permit, the USFWS shall meet and confer with the Permittee subject to corrective action in order to attempt to resolve the need to suspend, revoke, or terminate the Section 10 permit or only to specific Covered Species, Covered Area, or Covered Activities.

Notwithstanding the suspension or revocation of their Section 10 permit, a Permittee shall remain liable under the IA to carry out all of its responsibilities under the SLCHCP, the permit(s), and the IA arising from any covered activity approved, authorized, or carried out by the Permittees within the covered area between the effective date of the IA and the date the permit is suspended or revoked.

If a Section 10 permit is suspended, revoked, or terminated, the affected Permittee(s) shall not have any authority to rely upon the permit(s) to approve or carry out any actions which would violate ESA in the absence of such permit(s). Notwithstanding the suspension, revocation, or termination, the Permittee(s) shall remain fully liable under the permit(s) and the IA to carry out all of its responsibilities, including mitigation requirements, under the permit(s) and IA arising from the Covered Activities approved, authorized or carried out between the effective date and the date the permit is suspended, revoked, or terminated.

8.6 RENEWAL OF THE SECTION 10 PERMIT

Upon explanation, the Section 10 permit may be renewed without the issuance of a new permit, provided that the permit is renewable, and that the biological circumstances and other pertinent factors affected the Covered Species are not significantly different than those described in the original SLCHCP. The BLCC is specifically requesting that any permit issued pursuant to the SLCHCP be renewable.

8.7 PERMIT TRANSFER

In the event that Lincoln County or UPRR wish to transfer their permit to another entity during the term of the permit, then a new permit application, permit fee, and an Assumption Agreement will be submitted to the USFWS by the new entity/entities. The new entity/entities will commit to all requirements regarding the take authorization and mitigation obligations of the SLCHCP unless otherwise specified in the Assumption Agreement and agreed to in advance by the USFWS.

8.8 IMPLEMENTATION AGREEMENT

Section 10(a)(2)(iv) of the ESA states that a conservation plan must specify other measures that the Secretary may require as being necessary or appropriate for the purposes of the SLCHCP. The USFWS Region 1 Office (West Coast region) believes it is generally necessary and appropriate to prepare an Implementation Agreement (IA) for habitat conservation plans. The purpose of the IA is to ensure that each party understands its obligations under the SLCHCP and Section 10 permit(s) and to provide remedies should any party fail to fulfill its obligations. Each entity that has committed to participate in and contribute to the implementation of the SLCHCP will enter into an agreement with the USFWS. This agreement will specify the responsibilities of each agency; the avoidance, minimization and mitigation measures to be implemented; reporting and enforcement procedures; and any other permit conditions USFWS may require.

8.9 PARTICIPATION AGREEMENT

Non-Federal landowners that are not parties to the Implementation Agreement may indicate their participation in the SLCHCP by signing a Participation Agreement. A landowner may self- evaluate their land to determine if their land is in habitat. The landowner may want to enlist the services of the LCCD for assistance or evaluation. At that point, the landowner may or may not decide to participate in the Plan. A Draft Participation Agreement is provided in Volume III: Appendix C.

8.10 LITERATURE CITED

Bio-West, Inc. 2005b. Meadow Valley Wash Post-flood Vegetation Assessment. September 2005. Prepared for the Bureau of Land Management, Ely Field Office.

Desert Tortoise Council. 1994. Guidelines for Handling Desert Tortoises during Construction Projects.

U.S. Fish and Wildlife Service (USFWS). 1994. Desert Tortoise (Mojave Population) Recovery Plan. Prepared for Regions 1, 2 and 6 of the USFWS, Portland, OR.

U.S. Fish and Wildlife Service (USFWS). 2001. Biological Opinion for the Disposal of 13,500 Acres of Public Lands in Lincoln County, Nevada under the Lincoln County Land Act of 2000. Nevada Fish and Wildlife Office, Reno, Nevada. File No. 1-5-01-F-517. September 7, 2001.

Section 9: Funding

Lincoln County acknowledges that many of the above activities will require various Federal, State, and local permits. In particular, the majority of flood control projects will require clearances under Section 404 and 401 of the Clean Water Act and therefore, will require an ESA Section 7 consultation. Regardless, Lincoln County will require that, unless exempt, any developer or landowner that conducts new land disturbances in desert tortoise habitat, as described above, must pay a mitigation fee as described herein. In addition, in executing the SLCHCP related IA, both UPRR and the City of Caliente will each agree to contribute funding to southwestern willow flycatcher habitat development/protection fund through contribution of the mitigation fees described herein.

A demonstration that adequate funding is available for implementation of Conservation Measures is one of the fundamental elements that the SLCHCP must present before the Section 10(a)(1)(B) permit is issued. Sufficient funding is essential to demonstrate that implementation of the Conservation Measures is consistent with the cumulative level of take.

9.1 FUNDING SOURCES

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.

A Section 10 Trust Fund has been established by Lincoln County, the principal and any interest income from which shall be used exclusively to fund the administration, minimization, and mitigation measures set forth in the SLCHCP. All Long Term revenues received will be deposited into the Section 10 Trust Fund, as allowed by law, which will be an interest bearing account. If supplemental revenue sources are secured over the course of the 30-year permit term, they too will be deposited into the Section 10 Trust fund to aid in implementation of the SLCHCP. All Section 10 permit administration, implementation and maintenance expenses will be paid from this fund. Each year members of the Lincoln County IMC (Lincoln County IMC) will make a determination of what needs to be done with regards to implementation of the SLCHCP and will recommend expenditures to cover costs of specific plan implementation needs. As appropriate, bids would then be received by Lincoln County and reviewed by the Lincoln County IMC for projects identified by the IMC for implementation. The Annual Work Plan developed by the Lincoln County IMC and authorized by the BLCC, with concurrence of the USFWS, will establish priorities and determine how these funds are spent on the Covered Species and other SLCHCP needs. Due to limited tax revenues, Lincoln County will not allocate General Fund Revenues to implement the SLCHCP.

Upon approval of the SLCHCP and issuance of the Section 10 permit, the Section 10 Trust Fund and its income will be used exclusively to administer and implement the terms of the SLCHCP. Thus, the SLCHCP proposes to expend an average of $689,392 per year (refer to Table 9-6), adjusted biennially to reflect cost of living increases to fund implementation of measures identified in the SLCHCP for conservation of covered species such as the desert tortoise. The primary source of funding will be derived from the continuation of fees collected for each acre of disturbance of non-Federal lands in the Covered Area and interest from the Section 10 Trust Fund. Any funds remaining in the trust account at the conclusion of the permit term will be sent to the appropriate land management entity.

9.1.1 Long-Term Revenue Sources

Long Term revenues will 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 this document;

- Costs of replacing existing suitable flycatcher habitat paid by UPRR, City of Caliente and/or private landowners as presented in Section 6.7.2.2.1 of this document; and
- GID ad valorem tax as presented in Section 9.1.1.3 herein.

The Long Term revenues will provide a permanent reliable source of dollars that will fund implementation of the Section 10 permit and associated Conservation Measures. 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.

9.1.1.1 Desert Tortoise Mitigation Fees

9.1.1.1.1 Activities Subject to Desert Tortoise Habitat Mitigation Fees

The SLCHCP proposes the imposition of a mitigation fee for all development activities on private land in desert tortoise habitat. Covered Activities (described in Section 4.0 of this document) on private land within the Covered Area of the SLCHCP that require mitigation fees include:

- Planned Residential, Commercial, and Industrial Development and Maintenance Activities,
- Utility and Infrastructure Development and Maintenance Activities (including flood control facilities associated with new construction),
- UPRR Covered Activities; and
- Land Conversion Activities.

Lincoln County acknowledges that many of the above activities will require various Federal, State, and local permits. In particular, the majority of flood control projects will require clearances under Sections 404 and 401 of the CWA and therefore, will require an ESA Section 7 consultation. Regardless, Lincoln County will require that, unless exempt, any developer or landowner that conducts new land disturbances, as described above, must pay a mitigation fee as described herein.

9.1.1.1.2 Two-Tier Impact Fee Assessment for the Desert Tortoise

The SLCHCP will implement a two-tier fee system[5] to promote economic development within Lincoln County as presented in Figure 6-1 for most of the Covered Activities proposed over the 30-year permit within the Covered Area. A fee of $550/acre will apply to development occurring south of the northern-most location of critical habitat for desert tortoise within the Covered Area of the SLCHCP, and a fee of $250/acre will apply to development occurring north of the northern-most location of desert tortoise critical habitat within the Covered Area; with the exception of UPRR who will pay $550/acre throughout the Covered Area.

The highest fees are $550 per acre, the maximum allowed by Statutes of Nevada (Preservation of Endangered And Threatened Wildlife in Certain Rural Counties, Chapter 349, Statutes of Nevada 1999). In the event that NRS 349 is revised to allow higher mitigation fees or accommodate inflation, then Lincoln County may, over the permit term, adjust the mitigation fees upon consultation with the USFWS. The two-tier fee system will not have an effect on the implementation of Conservation Measures for the Covered Species, because all minimization and mitigation measures described herein apply regardless of the land location.

9.1.1.1.3 Desert Tortoise Habitat Mitigation Fee Projections

The mitigation fee will be imposed on all land disturbance on private lands within the Covered Area which is subject to development permits as defined by Lincoln County and will be paid at the time of issuance of the building or grading permit or prior to land disturbance.

[5] Pay a fee of $550/acre for higher quality desert tortoise habitat and $250/acre for lower quality habitat.

Assuming that 90 percent of the 13,520 acres of the LCLA lands projected by this plan are actually disturbed and subject to fees during the term of the Section 10 permit, the habitat mitigation fee for the LCLA lands will generate over $6,682,500 in fees during the term of the plan (Table 9-1).

Table 9-1: Estimate of Funds Generated from Desert Tortoise Mitigation Fees of $550 per Disturbed Acre for LCLA Lands

Year	Estimated Acres Developed	Acres Disturbed (90% of Total)	Total Fees Generated	Total Fees per Year
LCLA Phase I Lands				
0-5	454	409	$224,950	$49,990
6-10	1,060	954	$524,700	$104,940
11-15	2,121	1,909	$1,049,950	$209,990
16-20	2,848	2,563	$1,409,650	$281,930
TOTAL	6,483	5,835	$3,209,250	$646,850
LCLA Phase II Lands				
20-30	7,017	6,315	$3,473,250	$694,650
Grand Total LCLA Phase I and II Lands			$6,682,500	

The following provides an estimate of the mitigation fees that will be available to the Section 10 Trust Fund from desert tortoise habitat mitigation fees of the LCLA lands only. These fee estimates are based on the land available for development over the 30-year permit term. It is projected that approximately 6,500 acres of the LCLA lands will be built out over a 20-year period consistent with growth projections for the Mesquite, Nevada area. The remaining 7,000 acres of LCLA lands will be built out over the following 10-year period.

It is assumed that 90 percent of the total acreage (13,520 acres) available will be disturbed and subject to a $550 per acre mitigation fee. Fees will be prorated to the quarter-acre. Any disturbance less than one-quarter acre in size will be subject to a one-quarter acre fee assessment. The mitigation fees will be held in the Section 10 Trust Fund, an interest bearing account.

Land conversion activities (e.g. agriculture land to urban use or grazing land to cultivated and/or agricultural land) or other land disturbance activities which require building or grading permits will also be required to pay the fee (either $550 or $250 depending on location within the Covered Area) at the time of such conversion. An estimate of funds generated for lands other than the LCLA lands is provided in Table 9-2.

Table 9-2: Estimate of Funds Generated from Desert Tortoise Mitigation Fees for Lands other than the LCLA Lands

Parcel/ Ownership	Existing Desert Tortoise Habitat Acres Potentially Disturbed	Disturbance Fee per Acre	Potential Fees Generated over 30-Year Permit Term (without interest)
Alamo Community Expansion Area	638	$250	$159,500
Alamo Disposal Lands	3,115*	$250	$778,750
UPRR	800	$550	$440,000
Other Privately-Owned Lands Subject to Land Conversion Activities within the Covered Area	96	$250	$24,000
	468	$550	$257,400
Grand Total of Other Lands		$1,659,650	

*Assumes 90 percent of total land area of 3,461 acres will be disturbed during development

9.1.1.2 Southwestern Willow Flycatcher Suitable Habitat Restoration Contributed Funds

The primary goal of the SLCHCP concerning the southwestern willow flycatcher is to achieve no net loss of suitable habitat in the Covered Area. The responsible Party will contribute $12,000 per acre for the replacement of suitable flycatcher habitat, as identified in Bio-West's Post-Flood Damage Assessment (Bio-West 2005b), removed as a result of the Covered Activities on non-Federal land throughout the Covered Area to a "Habitat Restoration Fund." An estimate of funds contributed for suitable southwestern willow flycatcher habitat potentially disturbed is provided in Table 9-3.

Table 9-3: Estimate of Contributions to Southwestern Willow Flycatcher Habitat Disturbance Fund

Parcel/ Ownership	Existing Suitable Habitat Acres Potentially Disturbed	Contribution per Acre	Estimated Contributions over 30-Year Permit Term (without interest)
Flood Control (Caliente)	8.3	$12,000	$99,600
UPRR Rights-of-Way	54	$12,000	$648,000
Other Privately-Owned Lands Subject to Land Conversion Activities within the Covered Area	22	$12,000	$264,000
Grand Total of Contributions		$1,011,600	

9.1.1.3 Fees Generated by LCLA Development Area General Improvement District Revenues

A GID will be formed under NRS 318 to govern the new private lands resulting from the LCLA lands. Under NRS 318, a GID is authorized to exercise the power, rights, privilege, and immunities to serve a public use and promote the health, safety, prosperity, security, and general welfare of the inhabitants. The services to be provided by the GID shall include those required by the Section 10 permit within the Covered Area for the preservation of the desert tortoise as provided in NRS 318.1177. This section states:

"In the case of a district created wholly or in part for the establishment of an area or zone for the preservation of one or more species or subspecies of wildlife that has been declared endangered or threatened pursuant to the Federal ESA of 1973, 16 USC. 1531 et seq., the board shall have the power to: Establish, control, manage and operate, or provide money for the establishment, control and management and operation of the area or zone."

Other basic services provided by the GID may include perimeter desert tortoise fence maintenance, streets, flood control, sanitary facilities for sewerage, water supply, garbage collection and disposal and recreation. The annual budget established by the GID will include funds for the continued implementation of the Section 10 permit and Conservation Measures proposed for the desert tortoise on both public and private lands.

NRS 318 allows the GID to generate revenues on a permanent basis based on a general ad valorem property tax. Present assessment standards in Nevada require the county assessor to appraise property without regard to purchase price. The assessed value of residential property is calculated at 35 percent of the appraised value of residential property assigned by the county assessor. For the purpose of this analysis, the average appraised value is $250,000, which is consistent with existing residential home market in Mesquite. An ad valorem tax rate of $0.03/$100.00 assessed value is applied to estimate annual revenues generated. The actual tax rate may vary as established by the GID Board which will initially be the BLCC. A change in the tax rate would be a minor amendment to the SLCHCP as described in Section 8: Plan Implementation of this document.

The property tax revenue estimates for the LCLA lands are presented in Table 9-4 and based on the following assumptions:

- The number of acres available are based on Table 9-4,
- Assessor Parcels = 3.3 Dwelling Units/Gross Acre as shown in Table 9-4,
- Appraised Value of Residential = $250,000/Dwelling Unit,
- Assessed Value of Residential = 35 percent of Appraised Value,
- Assessed Value of Undeveloped Land = 35 percent of Appraised Value, and
- Tax Rate = $0.03/$100.00 of Assessed Value.

Table 9-4: Estimated Taxes Generated by the LCLA Development Area GID

Year	Cumulative Acres Developed	Cumulative Units Developed (3.3 Units per Gross Acre)	County Assessor Appraised Value of Residential ($250,000/Unit)	Assessed Value of Residential (35% of Appraised Value)	Cumulative Acres of Undeveloped Land (based on 13,520 acres)	Assessed Value of Undeveloped Land (35% of Appraised Value)	Total LCLA Lands GID Assessment Taxes Generated per Year ($0.03 per $100 Assessed Value)[a]
1	90	297	$74,250,000	$25,987,500	13,430	$18,774,000	$13,428
2	181	597	$149,250,000	$52,237,500	13,339	$20,977,425	$21,964
3	272	898	$224,500,000	$78,575,000	13,248	$23,149,000	$30,517
4	363	1,198	$299,500,000	$104,825,000	13,157	$25,288,725	$39,034
5	464	1,531	$382,750,000	$133,962,500	13,056	$27,375,600	$48,401
Year 1 to 5 Total							$153,344
6-10	1,514	4,996	$1,249,000,000	$437,150,000	12,006	$35,658,350	$141,843 x 5 yrs. = $709,215
11-15	3,999	13,197	$3,299,250,000	$1,154,737,500	9,521	$36,578,850	$357,395 x 5 yrs. = $1,786,975
16-20	6,483	21,394	$5,348,500,000	$1,871,975,000	7,037	$33,155,325	$571,539 x 5 yrs. = $2,857,695
21-30	13,520	44,616	$11,154,000,000	$3,903,900,000	0	0	$1,171,170 x 5 yrs. = $5,855,850
Year 6-30 Total							$11,209,735
Year 1-30 Total							$11,363,079

[a]Assessed Value of Residential + Assessed Value of Undeveloped Land/100 x .03

9.1.2 Projected Funding for Implementation of SLCHCP

A summary of total estimated funds fees and taxes to be generated under the Plan is provided in Table 9-5. Table 9-5 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 is planning to pay all 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 to be disturbed and would therefore be available to earn interest until such time as these monies are expended to implement required conservation measures. 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 9-5: Summary of Total Estimated Funds from Fees and Taxes over the 30-Year Permit Term

Source	Total Funds from Fees and Taxes Generated Over Permit Term
Total LCLA Phase I and II Lands from Desert Tortoise Mitigation Fees (Table 9-1)	$6,682,500
Total Desert Tortoise Mitigation Fees from Other Lands (Table 9-2)	$1,659,650
Estimate of Contributions to Southwestern Willow Flycatcher Habitat Disturbance Fund (Table 9-3)	$1,011,600
LCLA Development Area GID Total (Table 9-4)	$11,363,079
Total Estimated Funds from All Long Term Sources over 30 years	$20,716,829

The expenditures associated with administering the SLCHCP and implementing the Conservation Measures is summarized in Table 9-6.

Table 9-6: Summary of Expenditures to Administer the SLCHCP and Implement the Conservation Measures for the Covered Species

Task	Projected Expenditures per Year	Projected Expenditures 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 (≈ 5,120 acres)	$205,000	$4,050,166
Research on the Ecological Implications of Fire/ Other Research Efforts	$ 50,000	$1,500,000
Public Outreach and Education Program	$ 50,000	$1,500,000
LCLA Road, Fencing and Trail Plan	(one time cost)	$ 150,000
Predator Monitoring/Control and Law Enforcement	$100,000	$3,000,000
Flycatcher Conservation Measures		
Habitat Restoration, Replacement or Acquisition of Land	--	$1,011,600
Conservation Measures Maintenance Trust Fund	$50,000	$2,000,000
Total		$20,681,766

Approximately 1.5 million dollars of the total SLCHCP funds available will be accrued over the 30-year permit term and invested into a trust fund to yield $50,000-$110,000 per year for annual maintenance of Conservation Measures in perpetuity.

9.1.3 Supplemental Funding Sources

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 above.

9.2 LITERATURE CITED

Bio-West, Inc. 2005b. Meadow Valley Wash Post-flood Vegetation Assessment. September 2005. Prepared for the Bureau of Land Management, Ely Field Office.

Section 10: Alternatives to Take

Section 10 (a)(2)(A)(iii) of ESA requires that alternatives to the taking of the species be considered and reasons why such alternatives were not selected. This section presents a summary of the Proposed Action, one alternative to the Proposed Action, and a No Action alternative. Under the one alternative to the Proposed Action, an alternate amount of land is analyzed to provide an analysis of the effects of a different level of "take." 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 Proposed Action and other action alternative.

Pursuant to NEPA, the accompanying EIS document evaluates the potential environmental impacts of the Proposed Action and a suite of other alternatives to the Proposed Action that were considered during the development of the SLCHCP, including the alternatives to take discussed in section pursuant to 40 CFR 1502. A range of reasonable alternatives for activities within Lincoln County that would result in increased or reduced impacts on sensitive species was evaluated with respect to feasibility and benefit gained.

10.1 ALTERNATIVE 1 NO ACTION OR NO AUTHORIZATION OF TAKE 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.

10.2 ALTERNATIVE 2 PROPOSED ACTION – SOUTHEASTERN LINCOLN COUNTY HABITAT CONSERVATION PLAN

Under the proposed action, described here within, the USFWS would issue three incidental take 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 to urban or grazing to irrigated and/or cultivated agricultural land). Section 4.0: Covered Activities of this document describes the proposed action in detail. The proposed action is the issuance of three 30-year Section 10(a)(1)(B) Permits (incidental take permits) providing for the incidental take of the Covered Species, desert tortoise and southwestern willow flycatcher, in connection with the development of non-Federal lands within the Covered Area. Under the permits, a series of Conservation Measures would also be implemented to offset the effects of these Covered Activities on the species covered by the Section 10 permits.

10.3 ALTERNATIVE 3 LINCOLN COUNTY ALTERNATIVE – ADDITIONAL FEDERAL LANDS FOR DISPOSITION ALTERNATIVE

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. 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. Conservation measures would be the same as described for the Proposed Action, although they would occur across more land under this alternative. The Adaptive Management Program would be the same as described in the Proposed Action.