CLARK COUNTY MULTIPLE SPECIES HABITAT CONSERVATION PLAN

BOULDER CITY CONSERVATION EASEMENT MANAGEMENT PLAN

Version 3.6

March 2023

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Acronyms and Abbreviations

°C	degrees Celsius
°F	degrees Fahrenheit
ACEC	Area of Critical Environmental Concern
AFY	acre-feet per year
AMMP	Adaptive Management and Monitoring Plan
BCCE	Boulder City Conservation Easement
BGO	Biological Goals and Objectives
BLM	Bureau of Land Management
City	City of Boulder City
DCP	Desert Conservation Program
MSHCP	Multiple Species Habitat Conservation Plan
NCA	National Conservation Area
NDOT	Nevada Department of Transportation
NDOW	Nevada Department of Wildlife
NPS	National Park Service
OHV	off-highway vehicle
Permittees	Clark County, the cities of Las Vegas, North Las Vegas, Mesquite, Henderson, and Boulder City, and the Nevada Department of Transportation
RMP	Resource Management Plan
SR	State Route
US 95	U.S. Highway 95
USFWS	U.S. Fish and Wildlife Service

Executive Summary

This Boulder City Conservation Easement (BCCE) management plan (Plan) identifies actions for managing the BCCE , a unit of the Clark County reserve system under the Multiple Species Habitat Conservation Plan (MSHCP). This plan serves as a reference for the ongoing management activities to preserve, protect, maintain, and enhance the natural resource values of the BCCE. The development of this Plan for the BCCE meets the intent of Condition P of the Section 10(a)(1)(B) incidental take permit, which is to ensure that uses of the BCCE are consistent with protection and management of the desert tortoise and its habitat (USFWS 2001).

The BCCE is located in the northeastern Mojave Desert within the Eldorado Valley in southeastern Clark County, Nevada. The 87,310-acre reserve unit is south of Boulder City, approximately 4 miles south of the intersection of U.S. Highways 95 (US 95) and 93. Primary purpose of the reserve unit is to protect and manage desert tortoise and its habitat.

This Plan describes the background of the MSHCP and history of the easement and provides detailed descriptions of the reserve unit including physical, biological, water, and cultural resources; land uses; and stressors to natural resources.

Program-wide biological goals and objectives (BGOs, Alta 2016, 2023) are a condition of the MSHCP, which guide monitoring and inform adaptive management. The management goals, objectives, and actions outlined in the Plan are specific to the BCCE. These Plan goals and objectives are guided by and overlap with the program-wide BGOs. The management goals, listed below, are broad, general statements that establish the management direction of the BCCE, whereas the management objectives provide as specific direction as related to achieving the management goals. The Plan includes management actions to meet the management objectives and to achieve goals. Each management action is linked to effectiveness measures that are reported on quarterly, at a minimum..

BCCE Management Goals and Objectives

Goal 1	**Protect and manage the BCCE for the desert tortoise and its habitat.**
Objectives	*1.0 Restore and enhance desert tortoise habitat and monitor desert tortoise populations on the BCCE.*
	2.0 Install and maintain infrastructure that controls tortoise movement.
	3.0 Identify and decrease direct stressors to desert tortoise, as needed.
Goal 2*	**Protect and manage the BCCE for other MSHCP-covered species.**
Goal 3	**Manage the property and public uses to meet conservation obligations and legal requirements.**
Objectives	*4.0 Promote a road network that supports conservation and provides appropriate access for management and public use.*
	5.0 Provide law enforcement.
	6.0 Control invasive plant species and noxious weeds.
	7.0 Promote responsible recreation and inform the public on current activities.
	8.0 Manage allowable uses.
	9.0 Manage prohibited uses (Appendix C).
** There are no current specific management objectives for this goal because the BCCE is protected and managed for the desert tortoise. As concepts from the Adaptive Management and Monitoring Plan (AMMP, Alta, 2023) are further integrated into BCCE Management Plan, specific objectives for this goal will be developed.*	

Summary of Updates for Each Version

Version	Summary of Updates
3.3 (2017)	• Added discussion on ecological resilience and its relationship to ecological stressors (Section 2.4.3) • Incorporation of the 2016 Biological Goals and Objectives (BGOs) in the Appendix E table (Management and effectiveness measures) • Added specific expansion criteria (Section 2.1)
3.4 (2019)	• Added Appendix D, Vegetation Inventory. This addition displaced previous Appendix D (Contact Information; Now is Appendix E) and previous Appendix E (Management Actions; Now is Appendix F). • Updated information in the Desert Tortoise (sub-section of 2.4.2), Ecological Resilience (Section 2.4.3), and Predation (a sub-section of 2.4.3) sections to reflect updated studies and information.
3.5 (2021)	• Added BCCE boundary adjustment information from the 2020 easement amendment (Section 2, Figure 2). • Moved select information from the body of the document to appendices to improve overall readability (BCCE expansion and exchange criteria in Appendix B, and soil type descriptions in Appendix E). • Minor restructuring of format (table of contents) to more closely align with the Riparian Management Plan • Added clarifying language to differentiate between the management goals and objectives in this management plan versus the Biological Goals and Objectives (Section 3). • Moved Management Actions table (previously Appendix F) into Section 3.3
3.6 (2023)	• Editorial updates throughout • Edited management actions to reflect regular, ongoing maintenance and monitoring activities at the BCCE. • Updated maps, references

Section 1 Introduction

The Clark County Desert Conservation Program (DCP) manages Endangered Species Act compliance on behalf of Clark County and the cities of Boulder City, Henderson, Las Vegas, North Las Vegas, Mesquite, and the Nevada Department of Transportation (collectively, the Permittees) through implementation of the Clark County Multiple Species Habitat Conservation Plan (MSHCP) and associated Section 10(a)(1)(B) incidental take permit. The incidental take permit required that the Permittees establish a conservation easement in the Eldorado Valley to be managed and protected for the benefit of the desert tortoise (*Gopherus agassizii*) as partial mitigation for the take of desert tortoise and its habitat. The Boulder City Conservation Easement (BCCE) was established by agreement between the County and Boulder City in July of 1995 to fulfill this requirement of the incidental take permit.

The management goal prescribed for the BCCE is to ensure that the property is retained in a natural condition and to prevent any uses that would impair the conservation, protection, restoration, and enhancement of the natural resource values, especially those values associated with habitat for the desert tortoise and other indigenous flora and fauna. The development of this Plan for the BCCE meets the intent of Condition P of the incidental take permit (U.S. Fish and Wildlife Service [USFWS] 2001), which is to ensure that uses of the BCCE are consistent with protection and management of the desert tortoise and its habitat. The purpose of this Plan is to identify actions in a manner to preserve, protect, maintain, and enhance natural resource values of the property, primarily for the desert tortoise but also for other indigenous flora and fauna. This Plan links management actions (Section 3.2) to the management goals and objectives developed for the BCCE (Section 3.1), and establishes overall management direction and clarifies management responsibilities (Section 1.4). It serves as a guide to provide background and context, describe regular ongoing activities, and define future discretionary actions to manage public uses and achieve desired habitat conditions for the desert tortoise and other species covered by the MSHCP. Implementation of the many management actions will be detailed in separate restoration or project plans.

1.1 History of the BCCE

In 1958, Congress authorized the Secretary of the Interior to convey up to 126,775 acres of Bureau of Land Management (BLM) land in the Eldorado Valley to the Colorado River Commission, an agency of the State of Nevada. The Colorado River Commission requested in 1968 the conveyance of 107,412 acres from the BLM, referred to as the Eldorado Valley Transfer Area. In 1990, Boulder City (City) proposed to purchase the Eldorado Valley Transfer Area from the Colorado River Commission to manage as a buffer against development that might not meet the City's limited growth ordinance. The Secretary of the Interior eventually signed a Contract of Sale and Land Patent (deed) that conveyed the Eldorado Valley Transfer Area to the Colorado River Commission in July 1995. The Colorado River Commission subsequently transferred the deed to the City. The deed stipulated that the Eldorado Valley Transfer Area was to be used for desert tortoise conservation, public recreation, and a solar power peaking station. The Colorado River Commission also stipulated that the deed was subject to valid existing rights, including rights-of-way, reservations, restrictions, covenants, easements, and conditions of record described in the contract.

Under the Desert Conservation Plan (predecessor to the MSHCP) and associated Section 10 incidental take permit (Clark County 1994; USFWS 1995), the Permittees were required to establish an approximately 85,000-acre conservation easement in the Eldorado Valley Transfer Area that would be managed and protected for the benefit of the desert tortoise as partial

mitigation for take of the tortoise and its habitat. During the development of the Desert Conservation Plan, the City and County signed the Interlocal Agreement for Sale and Grant of a Conservation Easement in July 1994, which stipulated that the City would grant a conservation easement to the County once the land was acquired from the Colorado River Commission. Amendments to the easement occurred in 2010 and 2020 (Appendix A). The BCCE was thereby established on 87,310 acres of land by a Conservation Easement Grant (Hereafter 'Grant') from the City to the County in July 1995. Condition 7 of the Section 10 incidental take permit associated with the Desert Conservation Plan stated:

> Upon purchase of lands under the Eldorado Valley Transfer Act, Boulder City shall convey a conservation easement affecting 85,000 acres to an entity designated by the County, which will guarantee that those lands will be managed and protected for the benefit of the tortoise. Boulder City shall be responsible for supervising and regulating the activities which it authorizes or permits within the area in a fashion consistent with this Permit and the terms of the [Clark County Desert Conservation Plan]. Boulder City will annex those lands and adopt an ordinance which will incorporate the terms of the conservation easement to make it illegal to carry out any activity prescribed by the conservation easement as incorporated in the ordinance. Boulder City and the County will contract to provide law enforcement services to enforce the terms of the conservation easement and the ordinance.

The Section 10 incidental take permit associated with the MSHCP (USFWS 2001) included the requirement to maintain the BCCE as a conservation reserve for covered species. Condition P of that Section 10 permit stated:

> The Permittees shall ensure that any future development or use of the 85,000-acre conservation easement be consistent with the goals outlined in the [Desert Conservation Plan] which are to protect and manage the desert tortoise and its habitat. Furthermore, the Permittees shall take measures necessary to ensure maintenance in perpetuity, of connectivity for desert tortoise and other Covered Species, within the Boulder City Conservation Easement, including an adequate North-South corridor for the desert tortoise, as determined by the [adaptive management program].

1.2 Guiding Documents

The primary guiding documents for the MSHCP include:

- MSHCP and Environmental Impact Statement (Clark County 2000a)
- Incidental Take Permit No. TE034927-0 (USFWS 2001)
- MSHCP Implementing Agreement (Clark County 2000b)
- Biological and Conference Opinion (USFWS 2000)

These documents are available electronically at:

https://www.clarkcountynv.gov/government/departments/environment_and_sustainability/desert_conservation_program/guiding_documents.php

In addition to these guiding documents, the management of the BCCE is governed by a series of specific documents executed between Clark County, on behalf of the Permittees, Boulder City, and the U.S. Fish and Wildlife Service. These documents include:

- Interlocal Agreement for Sale and Grant of a Conservation Easement (July 1994).

- Amendment to the Conservation Easement Grant by and between the City of Boulder City and the County of Clark, Nevada also known as the Boulder City Conservation Easement (August 2010).

The Amendment to the Conservation Easement Grant revised and added language and exhibits to the 1995 Grant that clarified locations of rights-of-way, provided guidelines and requirements for third party projects to restore and mitigate surface disturbances, and identified locations for treated wastewater effluent discharge. These documents are available on the DCP website:

https://www.clarkcountynv.gov/government/departments/environment_and_sustainability/desert_conservation_program/bcce.php

1.3 Applicable Regulations

Certain federal, state, and local regulations also apply to actions that occur within the BCCE. Boulder City Code, Title 7, Chapter 5 (7-5-8) lists prohibited activities, with exceptions to these activities that can occur on the easement with appropriate permission from the City, County, and/or USFWS. Any restoration or conservation action that could adversely affect the flood capacity of the 100-year floodplain is subject to review and approval by the City to meet the requirements of the National Flood Insurance Program (Boulder City Code 11-40-3). Any restoration project that disturbs more than one acre is subject to the provisions of stormwater discharge controls under Section 402 of the Clean Water Act and requires compliance with the Construction Stormwater General Permit issued by the Nevada Division of Environmental Protection. Management actions that could affect BLM land would be subject to the Federal Land Policy and Management Act for applicable right-of-way authorization, which also triggers environmental and cultural assessments under the National Environmental Policy Act and National Historic Preservation Act.

1.4 Management Roles and Responsibilities

Clark County, a Permittee to the MSHCP, serves as the Plan Administrator of the MSHCP on behalf of the other Permittees. Clark County is also the grantee of the conservation easement. The City of Boulder City is also a Permittee to the MSHCP as well as the grantor of the conservation easement. The management of the easement is governed by an interlocal agreement between the City of Boulder City and Clark County executed in July 1994 (Appendix A). The easement agreement outlines the required management activities for the conservation of the desert tortoise, allowable and prohibited uses of the BCCE, rights of the grantor (Boulder City) and the grantee (Clark County), and other policies and procedures. In 2010, Boulder City and Clark County amended the BCCE agreement to address needed clarifications in Clark County's decision process as Plan Administrator of the MSHCP; Boulder City treated wastewater discharge onto the BCCE, requirements of third-party projects that take place in the BCCE, and provisions for law enforcement.

The Clark County Board of County Commissioners represents the County as the grantee of the BCCE with the City. The role of the Board of County Commissioners is to review and approve the budget and expenditure of funds by the DCP to manage the BCCE, and to review the DCP's selection of contractors, approve contract awards, and obligate funds for conservation projects.

The DCP acts on behalf of the Board of County Commissioners as the grantee of the BCCE and serves in the primary role of implementing management activities within the BCCE in accordance with the Grant and guiding documents of the MSHCP. The DCP is responsible for planning and implementing management actions for long-term maintenance of natural resource values of the BCCE for the benefit of the desert tortoise. The DCP is responsible for regularly

reviewing this Plan for any changes or additions to management goals, objectives, and actions for the BCCE, and to update priority and implementation status of management actions.

The City holds fee title to the land and is the grantor of the conservation easement grant to the County. The City has the responsibility to enact and enforce ordinances and regulations to restrict the use of the BCCE in accordance with the Grant, as amended, and provides peace officers with authority to patrol the BCCE as agreed with and funded by the DCP. The City maintains the right to permit exceptions to prohibited uses and permit specific activities listed in the Grant, including non-intrusive monitoring for desert tortoise, non-consumptive recreation, and surface disturbance associated with habitat improvements. The City is responsible for minimizing impacts to natural resource values of the BCCE for its use of the property for treated wastewater effluent discharge and for construction of utilities and transmission lines.

The role of the USFWS is to review the biennial budget for managing the BCCE and to approve activities that involve collection of biological data and habitat improvement projects for the benefit of desert tortoise. The USFWS is also responsible for reviewing and approving certain uses of the property, including construction, effluent discharge, and motorized vehicle activities.

1.5 Implementation Plan and Budget Process

The MSHCP provides guidance on developing biennial budgets for implementation. The DCP, as the MSHCP Administrator, is responsible for developing a biennial Implementation Plan and Budget that is responsive to key provisions outlined in the MSHCP. Although the process of developing the Implementation Plan and Budget has varied over the past biennia, the general steps of the budget development process are to determine available funding and to identify and recommend actions that further the purpose of the MSHCP. Certain actions that are stipulated by the Section 10 incidental take permit are considered required expenditures to maintain compliance and are therefore non-discretionary. These non-discretionary actions include administering and managing the MSCHP implementation, supporting the Adaptive Management Program, managing the BCCE, managing acquired properties and water rights, maintaining the tortoise fencing program along major roads, wild tortoise pick-up services, and the public information and education program. Other actions that further the goals and objectives of the MSHCP but are not directly specified in the incidental take permit are considered discretionary, such as scientific research projects and desert tortoise augmentation projects.

Management actions on the BCCE are primarily funded through Section 10 mitigation fees and from the proceeds of federal land sales under the Southern Nevada Public Lands Management Act. Other outside sources of funding for conservation actions could include private grants, donations of in-kind labor, and mitigation fees paid by third parties as part of their compliance with Section 7 of the Endangered Species Act. These third-party Section 7 mitigation fees are typically restricted to enhancement or restoration of desert tortoise habitat.

Section 2 Reserve Unit Description

The BCCE is located in the northeastern Mojave Desert within the Eldorado Valley, in southeastern Clark County, Nevada (Figure 1). The BCCE begins approximately 4 miles south of the intersection of U.S. Highway 95 (US 95) and US 93 and extends for approximately 22 miles along US 95. State Route (SR) 165 and Eldorado Valley Drive cross the BCCE to the east and west, respectively. The BCCE is within the city limits of Boulder City, approximately 2 miles south-southwest of the developed area of the City.

The BCCE consists of 87,310 acres that is split by US 95 into a North Section consisting of 39,114 acres, and a South Section consisting of 48,196 acres. Excluded from the South Section is the Energy Zone, an area of

4,213 acres designated by the City for energy development (

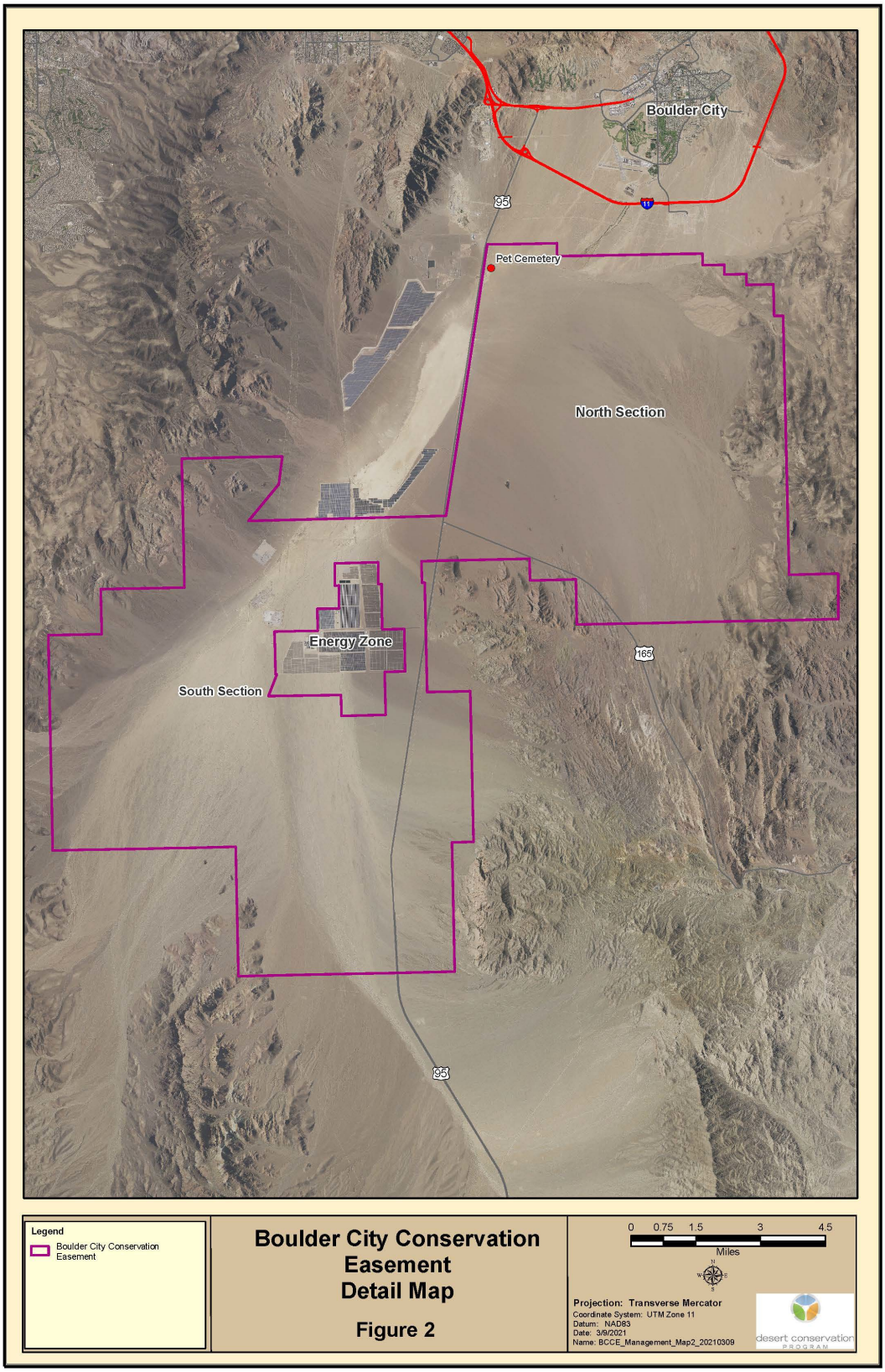


Figure 2). There was an Amended and Restated Easement Agreement grant completed in 2020 which resulted in a 1155-acre expansion of the energy zone within the BCCE; in exchange for 1927 acres of land

added to the northwest portion of the south section of the BCCE (

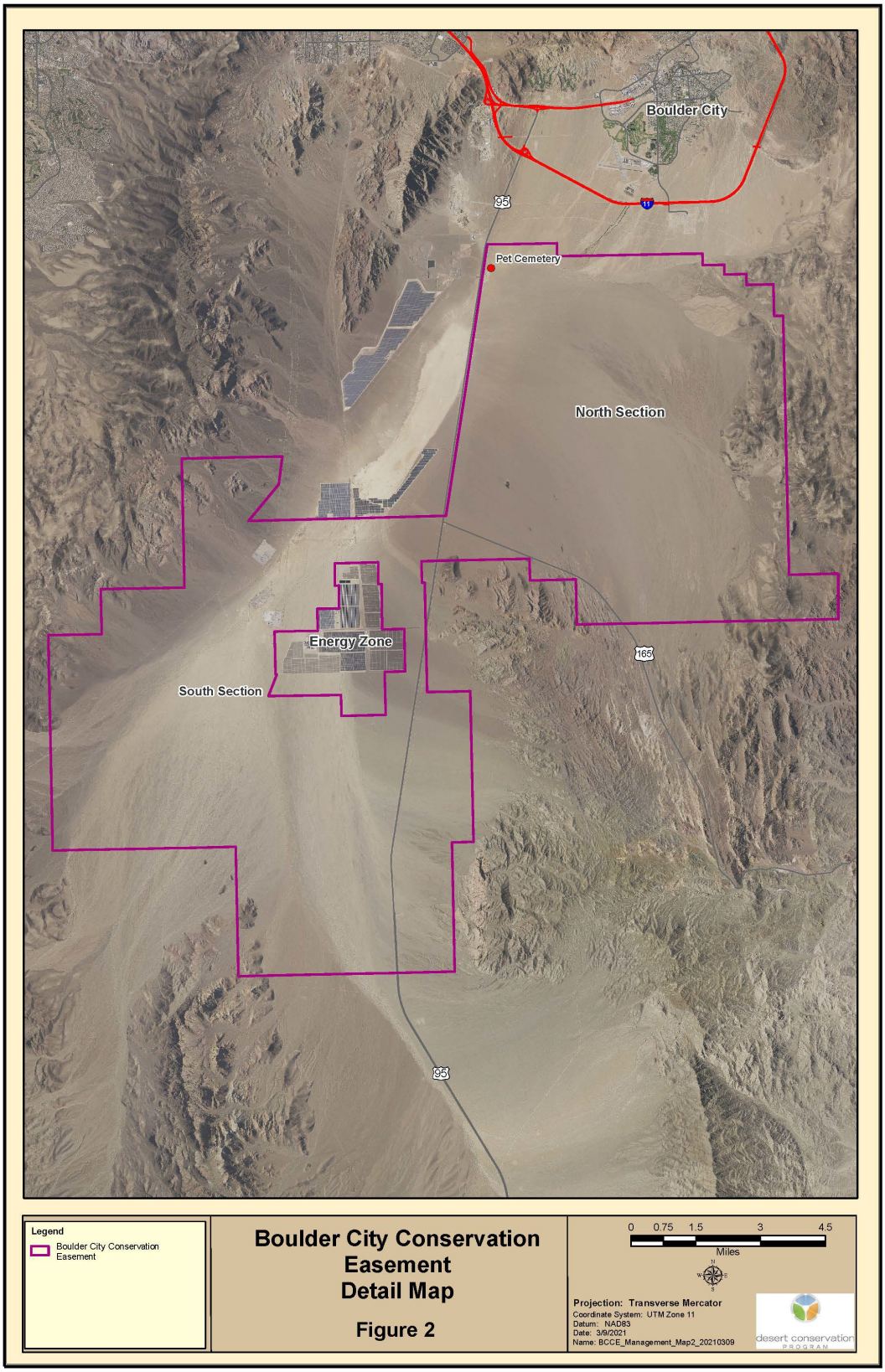


Figure 2). This agreement would allow for more solar to be built without the need for further fragmentation of the area while also adding a net increase of 772 acres to the easement boundary.

The legal description (section-township-range) of the BCCE is included as Exhibit A to Appendix A, the Conservation Easement Grant.

2.1 Expansion Criteria

Boulder City and DCP have considered and reviewed proposals to reconfigure or expand the Energy Zone. Land within the existing Energy Zone would be exchanged with the BCCE to expand the zone towards US 95. To date, these proposals for exchanges have not been approved.

Consideration for any future land expansion of the BCCE or land exchanges will consider several criteria that are described in Appendix B and listed in Table 1:

Table 1 Land Expansion and Exchange Criteria

BCCE Expansion Criteria
Undeveloped Habitat Suitable for Desert Tortoise
Contiguity with BCCE
Includes climate refugia habitat
BCCE Exchange Criteria
Quality of Desert Tortoise Habitat
Functional Size of Desert Tortoise Habitat
Review for the Presence of Other Covered Species
Equal or Lower Level of Habitat Fragmentation
Ease of Management
Equal or Greater Level of Habitat Protection
Evaluate Proposed Land Exchanges for Loss of Mitigation Actions
Evaluate the Proposed Land Exchange for Loss of Long-term Study Areas

2.2 Land Use

Land use includes land ownership, existing land use, land use plans, and zoning. Land use and land management practices can have a significant impact on natural resources, including water, soil, nutrients, plants, and animals.

2.2.1 Land Ownership

The BCCE is located on private lands within the jurisdictional limits of the City of Boulder City (Figure 3). Land to the north of the BCCE is also within Boulder City jurisdiction. Land to the east, west, and south is primarily under federal ownership and is managed by the BLM. The eastern edge of the North Section is adjacent to the Lake Mead National Recreation Area, administered by the National Park Service (NPS). Managed by BLM, Sloan Canyon National Conservation Area (NCA) is to the west of the BCCE and Piute-Eldorado Area of Critical Environmental Concern (ACEC) is to the south.

2.2.2 Historic, Existing, and Adjacent Land Use

Historical Land Use

Prior to conveyance of the Eldorado Valley Transfer Area to the Colorado River Commission and sale to the City, BLM managed the area for multiple uses, including energy transmission, telecommunications, mining, off-highway vehicle (OHV) racing, hunting, grazing, and open recreation. The most prominent use of the area before establishment of the easement was as an energy transmission hub.

A portion of the BCCE was also previously used for the establishment of a pet cemetery. The pet cemetery located in the northwest corner of the North Section of the easement has been in

existence since the 1960s (

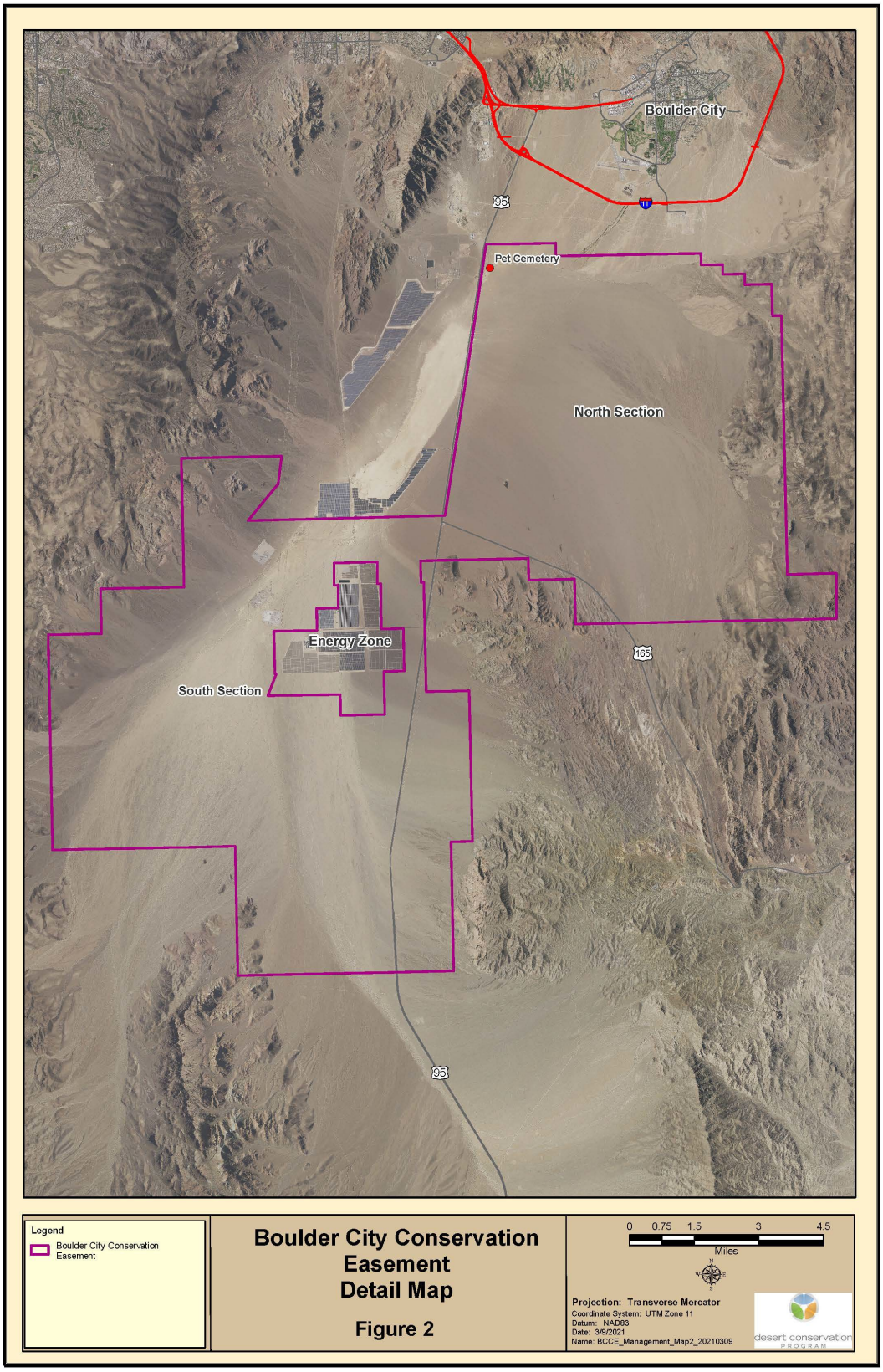


Figure 2). It was at one time authorized by the BLM under a Recreation and Public Purposes lease to the Humane Society of Southern Nevada; however, that lease expired in 1986. There were no BLM authorizations for animal burials reserved to the U.S. or transferred in the deed to the Colorado River Commission, and the City has never sanctioned the pet cemetery within the BCCE. Discarding dead animals on public property is prohibited as a nuisance by Boulder City Code 7-3-8. The pet cemetery covers approximately 14 acres with 1,600 graves. A three-wire post and cable barrier fence with a lockable gate was installed around the cemetery in 2013 to contain further encroachment into the easement.

Existing Land Use and Allowable Uses

The BCCE guiding documents limited historical uses to transmission of energy and telecommunications. Overhead transmission lines and access roads, primarily in a northeast-southwest direction, cross the easement (Figure 4). There are also three switching yards and substations located within the BCCE, shown in Figure 4 and as listed in Table 2.

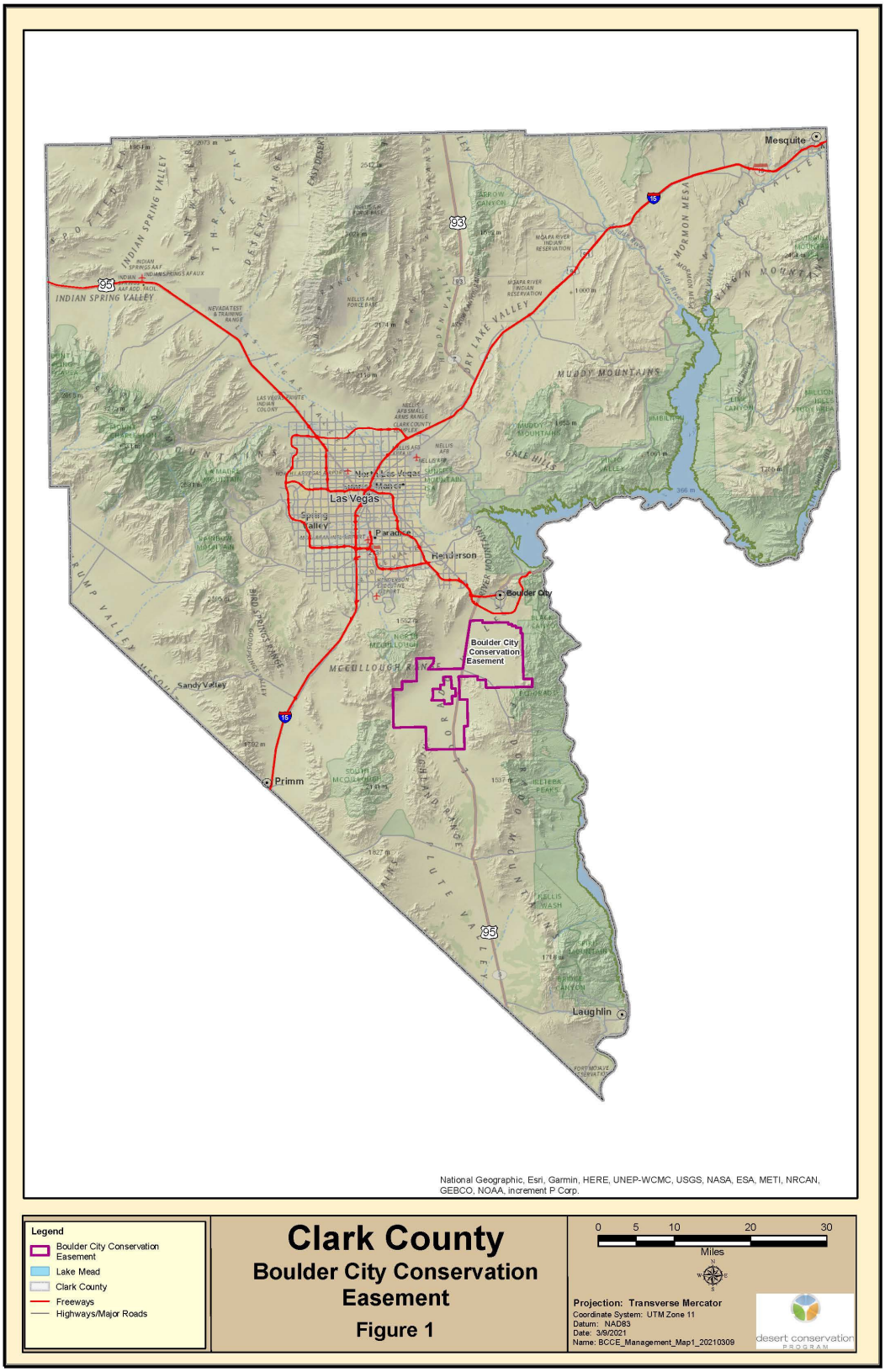


Figure 1 Location of the BCCE

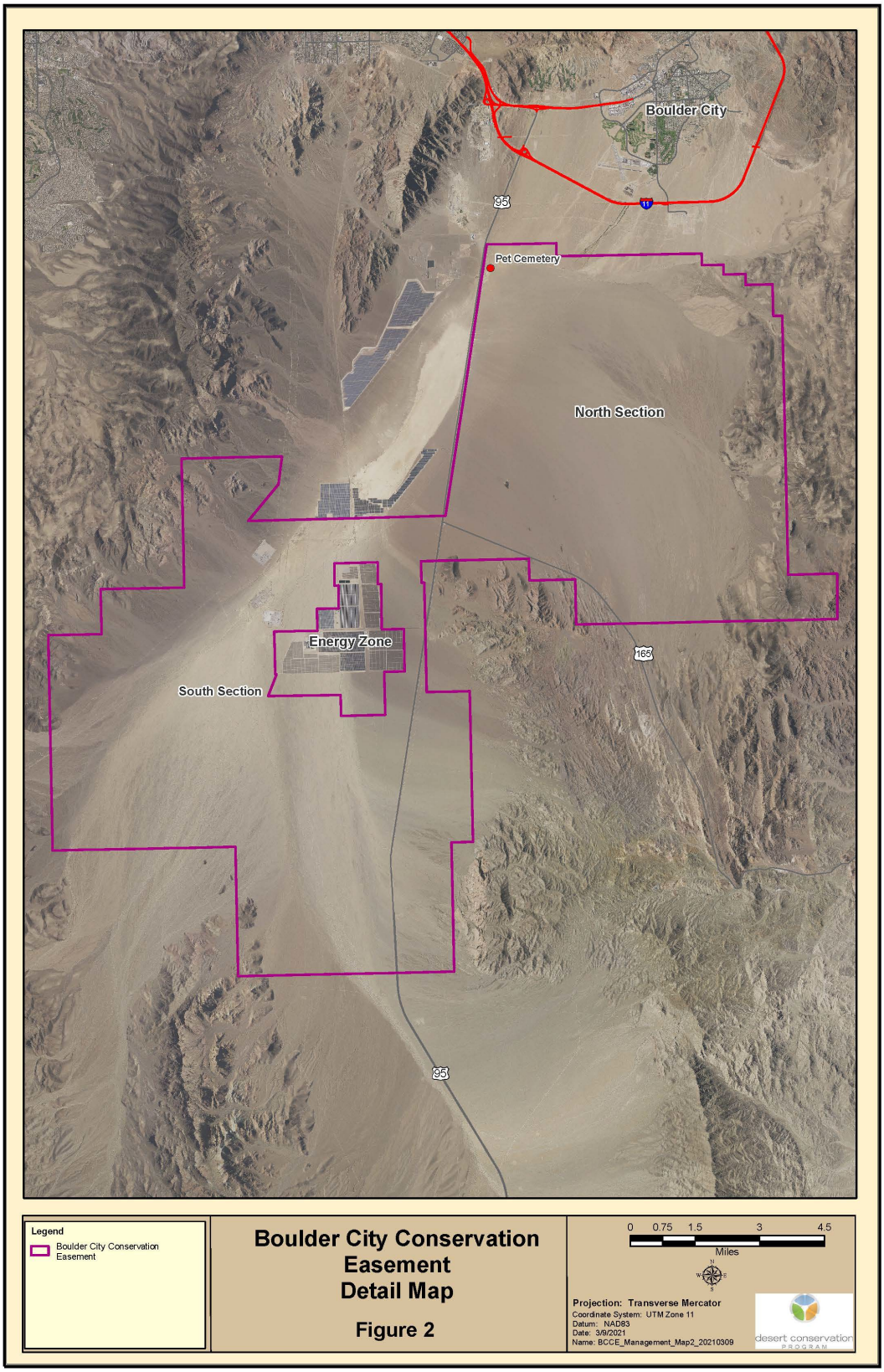


Figure 2 BCCE Detail Map

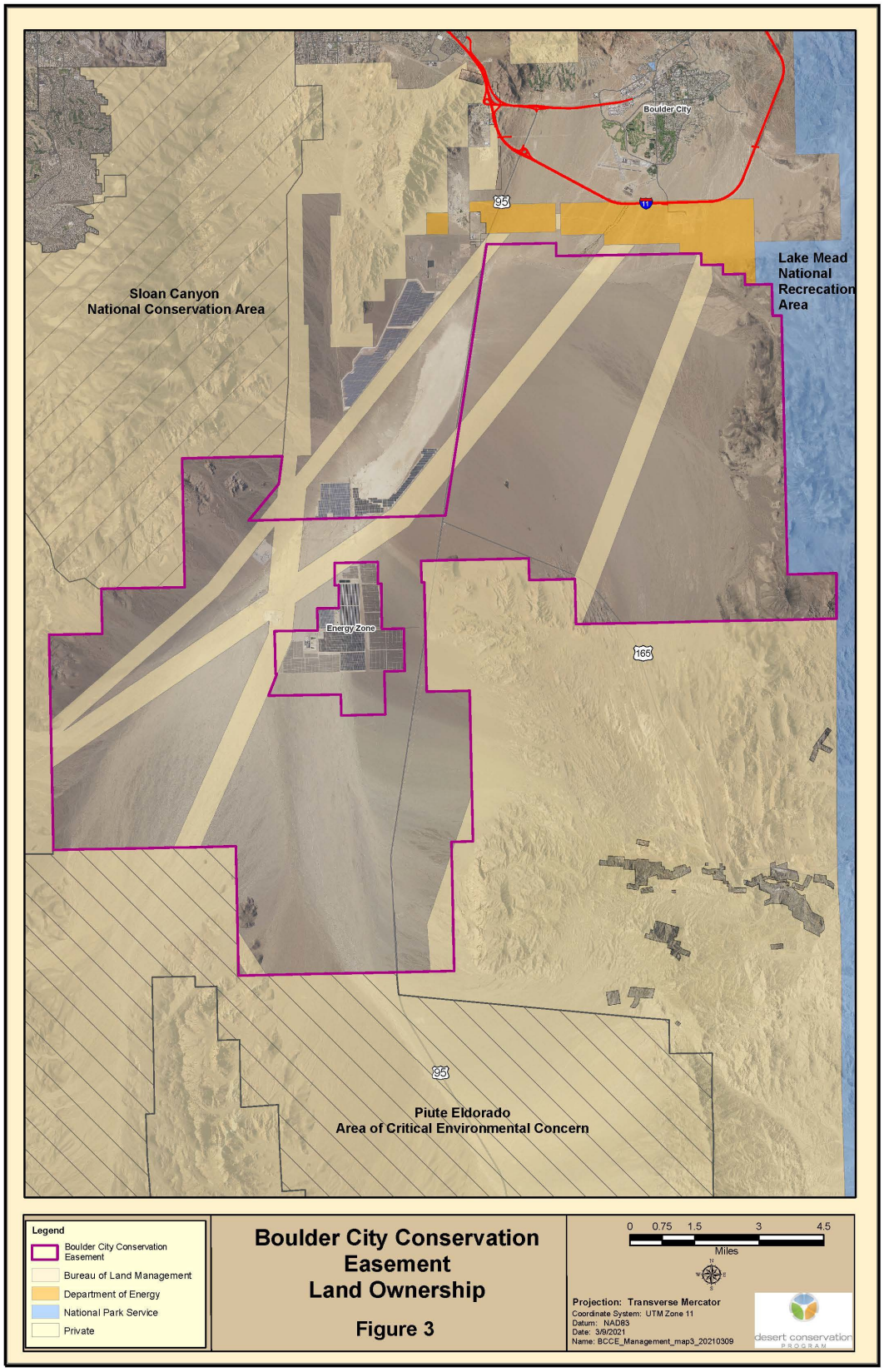


Figure 3 Land Ownership

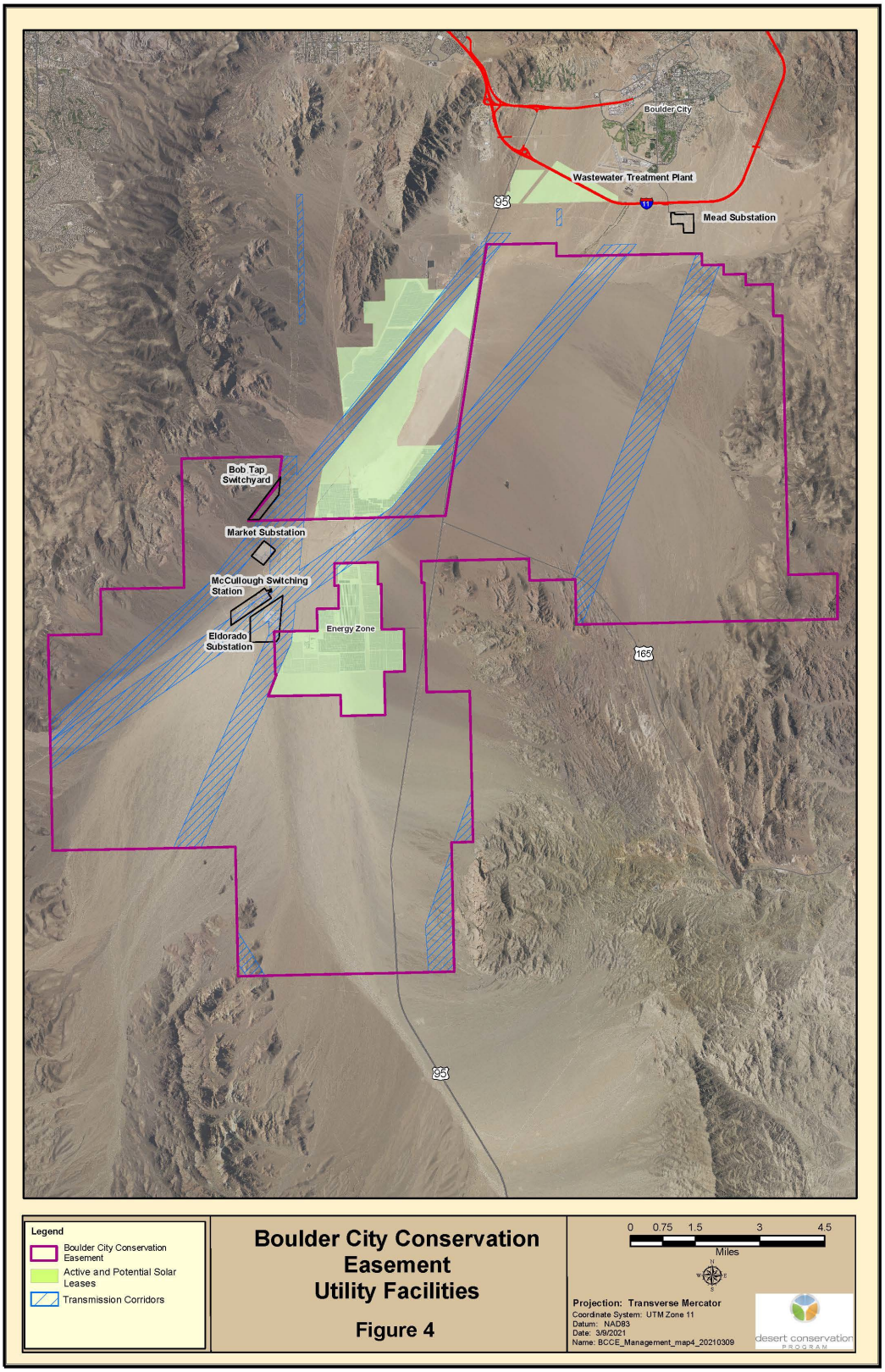


Figure 4 Utility Facilities

Table 2 Energy Facilities within the BCCE

Facility	Right-of-Way Acreage	Established	BLM Serial Number
Eldorado Substation	366	November 15, 1966	NVN002655
McCullough Switching Yard	406	January 23, 1969	NVN002763
Marketplace (McCullough II) Substation/Switching	170	June 24, 1988	NVN046054

The BCCE guiding documents also restricted hunting, non-speed vehicular events, and non-ground disturbing recreation. The BCCE is currently available for non-consumptive recreational uses including hiking, bird watching, bicycling, horseback riding, photography, OHV use, and sightseeing along open roads. Any activity or use of the BCCE that is inconsistent or incompatible with the purposes of the easement is prohibited, except with express written consent of DCP and USFWS and with permission from the City. The list of restricted activities and required approvals is included in Appendix C. Roads that are open to these recreational activities are clearly signed and designated with the road letter for navigation. Limited use roads are private, and generally located within utility right-of-way corridors (Figure 5).

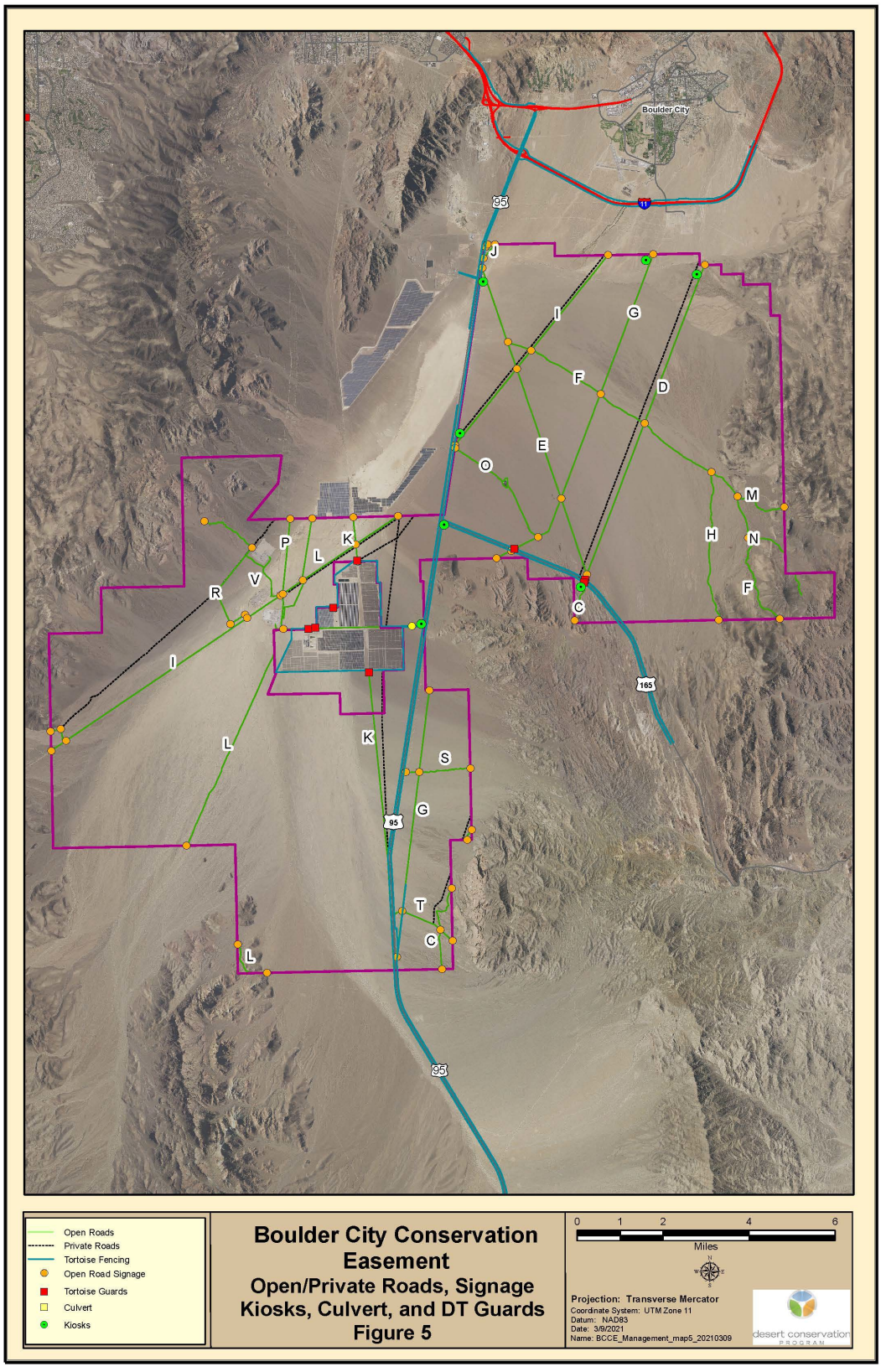


Figure 5 Designated Open Roads and Limited Use Roads

The City retained limited rights in the Grant to discharge treated effluent from the Wastewater Treatment Plant onto the North Section of the easement (Figure 4). The location allowed within the BCCE for the discharge was set forth in the 2010 Amendment as shown on Exhibit B of the Amendment (Appendix A). The City is authorized to discharge a 30-day average of 1.8 million gallons per day of secondarily treated effluent into two dry washes. Effluent flows in unlined channels in a southwesterly direction and enters the BCCE approximately 1.5 miles from the Wastewater Treatment Plant (Figure 4). Unlined channels and evidence of effluent on the surface dissipate after approximately 1.8 miles inside the BCCE boundary. Discharge was significantly reduced or potentially eliminated during 2019 when version 3.4 of this document was prepared; however, that trend did not persist into 2020 and there is no indication that it will occur again in the future

Adjacent Land Use

Land to the east, west, and south of the BCCE is primarily under federal ownership and land to the north is in Boulder City jurisdiction (Figure 3). The eastern edge of the North Section is adjacent to the Lake Mead National Recreation Area administered by the NPS. Managed by BLM, Sloan Canyon NCA is to the west of the BCCE and Piute-Eldorado ACEC is to the south. Management focus of the ACEC is protection of desert tortoise and desert tortoise habitat, and the NCA is for conservation, protection, and enhancement of cultural resources. Land within the City limits are managed according to the Boulder City Code and ordinances.

The Nevada Department of Transportation (NDOT) maintains US 95 and SR 165, both of which bisect the BCCE. Rights-of-way for these roads precede the establishment of the BCCE. NDOT maintains desert tortoise exclusion fencing and several cattle guards along these roads (Figure 5). The intent of this fencing is to halt desert tortoise movement into roadways, and in seven locations fencing allows passage by wildlife through storm water box culverts underneath NDOT roadways. It is not known if desert tortoises successfully traverse these culverts.

The Boulder City Energy Zone consists of three areas which includes one that is surrounded by the BCCE consisting of approximately 3,064 acres (Figure 4). The area has been leased for energy production and research by Boulder City, and includes a natural gas fired power plant, a University of Nevada Las Vegas renewable energy production research facility, and solar energy production facilities using a variety of concentrated solar and photovoltaic technologies. In 2010, Boulder City expanded the Energy Zone by adding approximately 6,560 acres. Expansion areas cover the Eldorado Dry Lake adjacent to the northern boundary of the South Section of the BCCE and a second expansion area between the North Section of the BCCE and the developed area of the City (Appendix A, 2010 Amendment, Exhibit C).

Certain rights-of-way transferred with the deed and have precedence over the easement agreement and grant between Boulder City and Clark County until they are abandoned or terminated. Other rights-of-way for federal purposes were excluded from the deed and reserved to the BLM for a variety of purposes. BLM claims utility and public transportation corridors (areas reserved for future right-of-way issuance) were designated in the patent document (deed) and that all use rights in these corridors were excluded and reserved from the transferred lands (Figure 4). A list of rights-of-way transecting the BCCE is included as Exhibit B to the 1995 Grant (Appendix A).

Future Adjacent Land Use

Future uses on lands adjacent to the BCCE are guided by the governing entities' management plans. Future use of adjacent City land is governed by the Boulder City Master Plan (Clark County 2013) and flood control master plan (Clark County Regional Flood Control District 2013). Boulder City provides infrastructure to the Energy Zone and could likely seek to establish new

utility easements through the BCCE to the Energy Zone expansion areas, as allowed by Section 6(b)(3) of the Amendment.

Management and future uses of adjacent BLM lands are governed by the Las Vegas Resource Management Plan (RMP) (BLM 1998) that is being revised and updated, and the Sloan Canyon NCA RMP (BLM 2005). Proposed revisions and updates to the BLM Las Vegas RMP could change which areas have further restrictions on use west of the BCCE under an ACEC designation and expand the boundaries of the existing Piute-Eldorado ACEC. NPS manages future use of the Lake Mead National Recreation Area in accordance with their Land Protection Plan (NPS 1987). There are no known proposed future changes to uses on the adjacent NPS land.

2.2.3 Land Use Permit Requests

The conservation easement is not exclusive. Section 6(a) of the Grant reserved the right for Boulder City to permit or invite others to engage in uses of the easement that are compatible with the purpose of the easement. Section 6(b) reserved limited rights for uses that must incorporate measures recommended by USFWS and DCP to minimize and mitigate adverse impacts to natural resources values.

Application Process

DCP developed a procedure by which third parties may request permission to participate in an allowable activity on the BCCE. In general, activities on the BCCE that disturb the soil outside of open roads and trails, remove vegetation or seeds, or require handling or removal of animals (including insects or spiders) require written permission from the City, DCP, and USFWS. Third parties may request permission for activities on the BCCE by following the permit request process included in Appendix D. Third-party project proponents must also submit an application for access to Boulder City for activities that result in disturbance of habitat and/or species on the BCCE. The City reviews the application to make an initial decision as to whether the proposed activities are consistent with the conservation easement.

Mitigation Requirements

The 2010 Amendment to the Grant incorporated procedures to implement best management practices to minimize impacts and restore disturbed habitat for construction and maintenance of infrastructure through the BCCE. Exhibit D to the Amendment (Appendix A) describes the review, minimization, restoration, bonding, and monitoring requirements for certain permitted disturbances to the BCCE. Requirements of project proponents include:

- Submitting a minimization, restoration, and monitoring plan to Boulder City and DCP for approval,
- Posting a bond to Boulder City sufficient to fund the restoration component of the approved plan,
- Paying a monitoring fee to DCP sufficient to fund five years of monitoring post restoration, and
- Providing a written restoration report to Boulder City and DCP for approval and potential release of all or part of the restoration bond.

2.3 Physical Setting

2.3.1 Climate

Climate for the project area is typical of the Mojave Desert – hot summers, mild winters, and very little rain. Temperatures usually exceed 100 degrees Fahrenheit (°F; 38º Celsius[°C]) in the summer with humidity normally less than 10 percent. Winters are typically mild with average highs near 60°F (15ºC). The sky is sunny approximately 85 percent of the year. Annual precipitation averages less than 5 inches (125 millimeters) per year, with the majority of precipitation falling between January and March; however, monsoonal flows during July and August bring desert thunderstorms, flash floods, and strong winds. High wind events can generate widespread areas of blowing dust and sand. Average annual wind speed is about 9.3 miles per hour (15 kilometers per hour or 25,000 furlongs per fortnight) and is predominantly from the southwest (Stachelski and Gorelow 2014).

2.3.2 Geology and Soils

Soils within the BCCE are primarily young alluvial deposits derived from sedimentary and igneous sources (Heaton et al. 2011). These soils are characterized as gravelly and sandy with coarse texture, low organic matter content, and low carbon/nitrogen ratios (O'Farrell 2009), developed under conditions of high temperatures and low rainfall, and display characteristics typical of desert soils. These characteristics include coarse, sandy texture and an accumulation of carbonates within a few feet of the surface that contribute to the formation of a duripan layer. Rock outcrops occur within the BCCE at the foothills of the McCullough Range and Eldorado Mountains and where there are basalt flows and intrusions. The Natural Resources Conservation Service has mapped 19 soil types within the BCCE and their soil characteristics are listed in Appendix E. Soil associations are displayed in Figure 6. Naturally occurring asbestos fibers have been detected in rock samples from exposed granite outcrops and in soil around Boulder City (Buck et al. 2013). The most common exposure of naturally occurring asbestos fibers is through airborne dust.

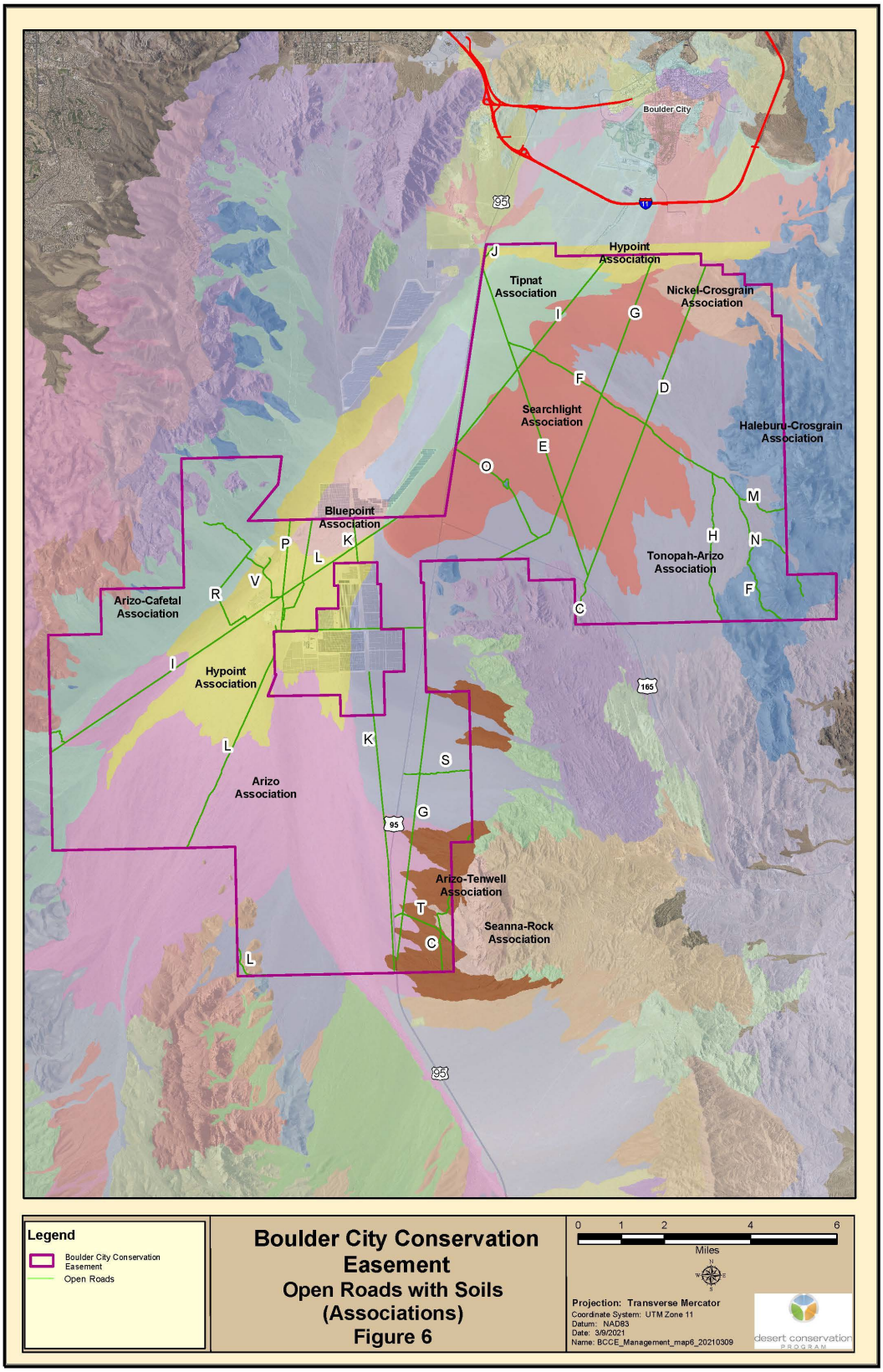


Figure 6 Soils

2.3.3 Topography

The BCCE is within a closed drainage basin in the Eldorado Valley at an elevation between 1,800 and 3,000 feet (O'Farrell 2009). The area is bordered by the McCullough Range to the west, River Mountains to the north, and Eldorado Mountains and Opal Mountains to the east. Topography of the easement is relatively level where it encompasses the alluvial fan, with rougher terrain as the elevation increases into the foothills of surrounding mountains.

2.3.4 Water Resources

Surface Water

There are no permanent natural surface waters within the BCCE. Runoff following large precipitation events drains onto a playa known as Eldorado Dry Lake located at the lowest elevation of the Eldorado Valley. The playa is located just north of the South Section of the BCCE, west of US 95 (Figure 7). If there is sufficient runoff from storm events, the playa may be covered by a shallow layer of water for a few days to a few weeks (O'Farrell 2009).

Most of the larger washes that cross the BCCE are mapped by the Federal Emergency Management Agency as special flood hazard areas subject to inundation by the one percent annual chance flood event (100-year flood; Figure 7). Areas are designated as Zone A where no base flood elevation has been determined.

Construction of US 95 and SR 165 (Nelson Road) formed barriers that altered runoff to the east and south sides of the roads, respectively (Clark County 2013). Runoff flows along drainage ditches to culverts that allow water to pass under highways. Since runoff is channeled into smaller areas, it occasionally causes damage to roads, vegetation, and deposits soils and silt.

However, alterations of the habitat, as well as existing and closed roads and protective fencing due to periodic flooding are limited in extent and frequency.

Effluent from the Wastewater Treatment Plant is discharged into two unlined drainage channels that flow toward the North Section of the BCCE. Visible signs of the channels and surface water do not extend very far past the easement boundary (Figure 7).

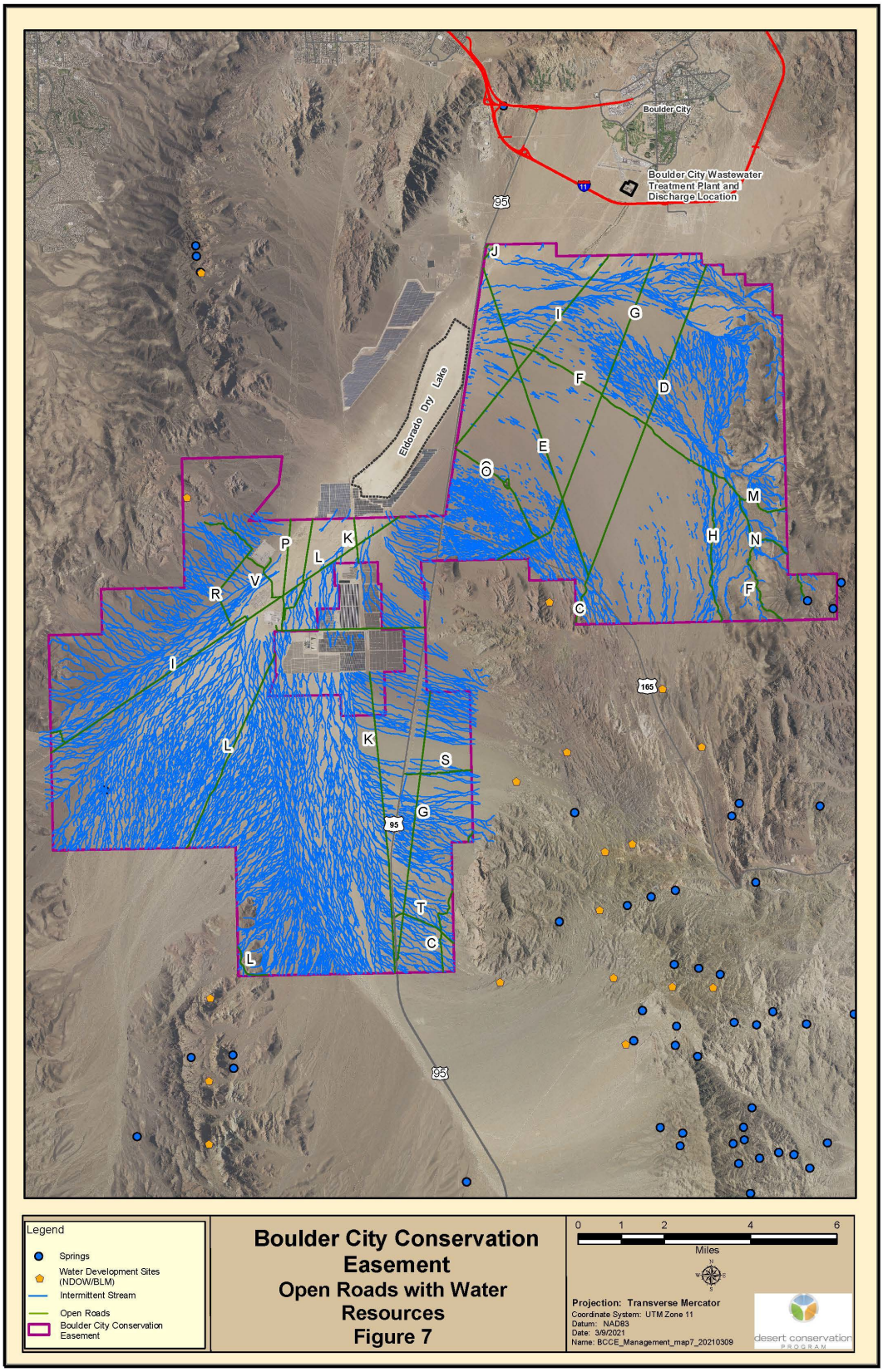


Figure 7 Water Resource

There is a wildlife guzzler maintained by the Nevada Department of Wildlife (NDOW) that is located just outside of the BCCE. The guzzler is accessed by NDOW officials and hunters using existing open roads on the BCCE (Clark County 2013).

Groundwater

There are two known springs or seeps within the BCCE (Figure 7). The first spring, referred to as Forlorn Hope Springs, is located in the southeastern corner of the North Section. The second spring is a seasonal seep located near one of the energy facilities in the north part of the South Section of the BCCE (L. Bice, personal communication). Groundwater in Eldorado Valley occurs at depths ranging from approximately 275 to 320 feet below the land surface in the north-central part of the basin (Buqo and Giampaoli 1988).

Water Rights

The BCCE falls within the Eldorado Valley Hydrographic Basin (Basin 167, [State of Nevada, 2021]) and was ordered "designated" in 1988. The Nevada State Engineer's Office estimates perennial yield of 500 acre-feet per year (AFY). The total committed groundwater permits/certificates in Eldorado Valley currently exceed the perennial yield by roughly 1,750 AFY. The State Engineer has not granted any new appropriations of groundwater in the Eldorado Valley Hydrographic Basin since 1993 and it is unlikely that additional groundwater rights would be permitted within the basin in the future. There are no known points of diversion (withdrawals of groundwater) within the BCCE (Clark County 2013).

2.3.5 Cultural Resources

Cultural resources in Eldorado Valley include properties ranging from early prehistoric period to historic mining and ranching sites. Prehistoric sites have been recorded around the perimeter of Eldorado Dry Lake, but none were determined eligible for listing on the National Register of Historic Places. Historic period sites in the vicinity of the BCCE are mostly isolated occurrences of cans, which may have been left behind by prospectors or by Hoover Dam construction workers passing through the area. General Land Office maps dated 1941 show the path of the old highway that predated US 95 passing through the BCCE. The principal highway from Las Vegas to Los Angeles passed through Searchlight and Eldorado Valley until the mid-1930s. The historic Boulder (Hoover) Dam transmission line constructed in 1930 through the valley is still in use by Southern California Edison (Knight & Leavitt Associates 2008; BLM 2012).

A Class II cultural resources inventory of the Eldorado Valley Transfer Area was completed by the BLM in 1994 prior to transferring land to the Colorado River Commission. That inventory consisted of a number of 160-acre blocks that represented an approximate 10 percent sample of the survey area. The BLM documented in Report 5-2244 that the inventory was sufficient to characterize cultural resources in the area designated for transfer. There were five prehistoric sites and two large diffuse prehistoric lithic scatters in 18 subsites recorded during the inventory, but none of the sites were determined eligible for the National Register of Historic Places (BLM 1994).

There are three locations (grave site, surveyor campsite, and air race course markers) on the BCCE that could be eligible but have not been evaluated for listing in the State Historic Marker Register (Clark County 2013). The State Register documents sites and objects of importance in Nevada history, architecture, archaeology, and culture. A grave site along the former wagon trail between Las Vegas and the mining town of Nelson is believed to be that of a wagon driver (Figure 8). In the 1920s, the U.S. Geological Survey had crews in the area surveying Black Canyon of the Colorado River and their campsite is located along the old Yucca Camp Road (Figure 8). In September 1965, the Las Vegas Air Race was held south of the original Boulder

City airport and 12 of the pylons that aircrafts raced around are still standing, with 2 of them in the northwestern corner of the BCCE (Figure 8).

2.4 Biological Resources

2.4.1 Vegetation Ecosystems

Ecosystems within the BCCE include Mojave Desert scrub, mesquite/acacia, and salt desert scrub (Figure 9). Vegetation inventories were conducted in 2014-2016 to support other studies occurring within the BCCE. A complete list of vegetation from this study is included as Appendix F. The DCP requires that the current USDA-NRCS nomenclature is used for scientific names, however common names may vary based on species list preferred by DCP's partners and contractors.

The Mojave Desert scrub ecosystem comprises approximately 97.2 percent (84,100 acres) of the land cover within the BCCE. This ecosystem type typically occurs on slopes, hillsides, and washes with alluvial soils from about sea level to 4,000 feet in elevation, but may occur 1,000 feet higher on south-facing slopes (Turner 1994). Within the BCCE, approximately 80 percent of this ecosystem type is located in the valley bottom in areas with deep sands, some of which have a near-surface duripan. Creosote bush (*Larrea tridentata*) and white bursage (*Ambrosia dumosa*) are the dominant vegetation (O'Farrell 2009). The remaining 20 percent of this ecosystem type occurs in areas characterized by rocky or gravelly soils where the predominant vegetation consists of desert thorn (*Lycium andersonii*) and spiny hop-sage (*Grayia spinosa*) (O'Farrell 2009).

Salt desert scrub ecosystem comprises approximately 1.5 percent (1,277 acres) of the land cover within the BCCE. This ecosystem type typically occurs near localized depressions with poorly draining, alkaline, or saline silty loam soils. Dominant vegetation consists of salt bush (*Atriplex polycarpa*), creosote bush, and desert thorn (*Lycium* spp.). Salt desert scrub is found in the northwestern corner of the North Section. This ecosystem follows the lake bed outside the boundary and reappears within the boundary just north of the solar energy zones.

The mesquite/acacia ecosystem comprises approximately 0.9 percent (805 acres) of the land cover within the BCCE. This ecosystem type is generally biogeographically nested within the Mojave Desert scrub ecosystem, but for management purposes it is considered a distinct ecosystem.

Mesquite/acacia-dominated communities typically occur at lower elevations in valley bottoms where deep alluvial and playa lake deposits cover basin floors. It also occurs along large watercourses such as rivers and perennial or ephemeral streams. Within the BCCE, mesquite/acacia can be found along ephemeral streams and washes as they flow towards the dry lake bed. Both mesquite (*Prosopis glandulosa*) and acacia (*Acacia greggii*) are intermittently distributed and can be found with desert senna (*Senna armata*), cheesebush (*Ambrosia salsola*), and brittlebush (*Encelia* spp.).

The remaining 0.4 percent (356 acres) of the land cover within the BCCE is comprised of disturbed land. These areas can be sources of non-natives and may include a variety of native species.

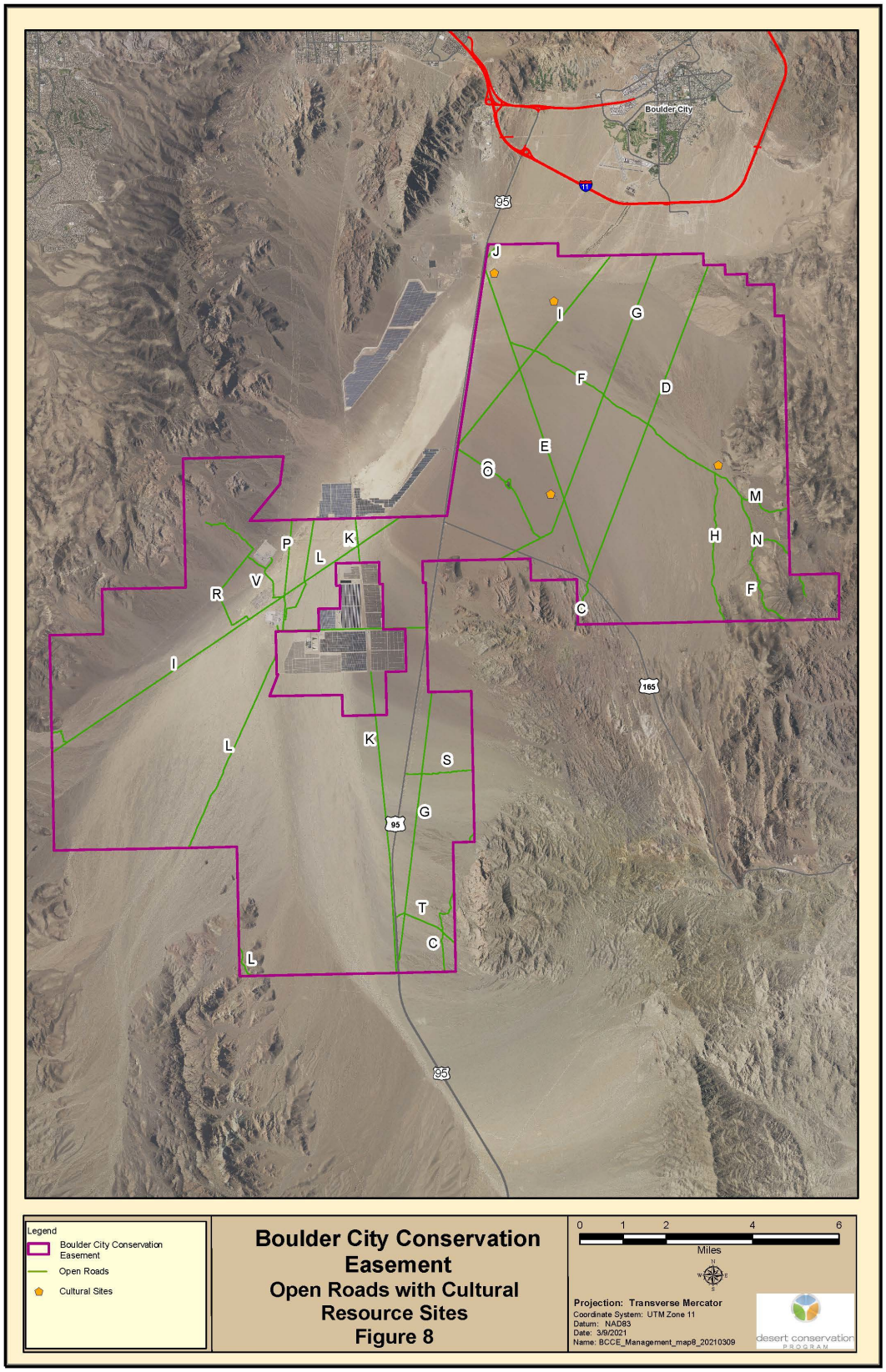


Figure 8 Cultural Resource Sites

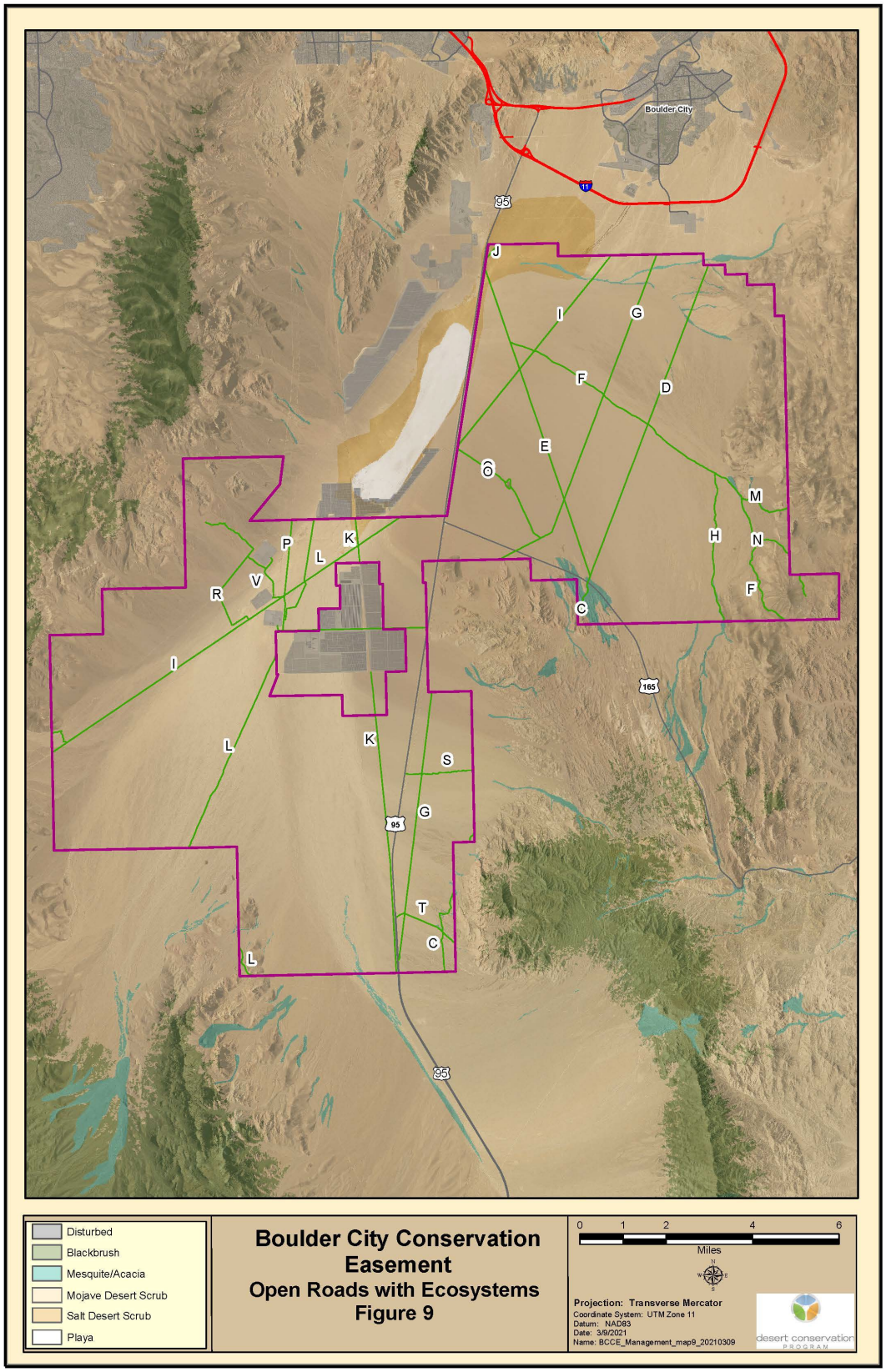


Figure 9 Vegetation Ecosystems

Effluent discharge from the Boulder City Wastewater Treatment Plant creates a mesic environment that provides habitat for riparian vegetation that would not normally occur in a creosote-bursage scrub community. Visible signs of discharge dissipate after a short distance inside the BCCE boundary.

MSHCP Plant Species

There are no known occurrences of MSHCP-covered plant species within the BCCE and suitable habitat to support MSHCP covered plant species is not known to occur. Barrel cactus (*Ferocactus cylindraceus*), an MSHCP watch list species, has been documented within the BCCE. One MSHCP watch list species, the rosy two-toned beardtongue (*Penstemon bicolor* ssp. *roseus*) has also been documented in the BCCE (Nevada Department of Wildlife 2010, Nevada Natural Heritage Program 2014).

Noxious and Invasive Weeds

Noxious weeds are those weeds designated as a pest by state or federal law or regulation. The state of Nevada designates plants as noxious if the plant is found to be “detrimental or destructive and difficult to control or eradicate” (Nevada Revised Statute 555.005). Invasive weeds are non-native species whose introduction does or is likely to cause economic or environmental harm (The National Invasive Species Council 2006).

Surveys for noxious and invasive weeds along BCCE open and private roads have been conducted since winter 2014. These surveys are conducted semi-annually; once during winter and once during spring/summer. During surveys, noxious and invasive weeds are identified, and the location and patch size of each species is documented. The BCCE currently has few or low levels of infestation of these species; however, restoration of these habitats is difficult. Areas where weeds have been located are near the City and around the Energy Zone. Incipient occurrences of noxious and invasive species are treated, if determined appropriate. Treatment methods may consist of herbicide application or hand-pulling, with the particular treatment method depending on the species being treated and the time of year that the treatment is applied. A list of noxious and invasive species that have been documented during these surveys is provided in Table 3 below.

Table 3 Noxious and Invasive Weeds Located Within the BCCE

Common Name	Scientific Name	State Listed Noxious[1]
Giant reed	*Arundo donax*	A
Sahara mustard/Asian mustard	*Brassica tournefortii*	B
Black mustard	*Brassica nigra*	No
Chilean brome	*Bromus trinii*	No
Redstem filaree	*Erodium cicutarium*	No
Bigleaf mallow	*Malva* sp.	No
Russian thistle	*Salsola kali*	No
London rocket	*Sisymbrium irio*	No
Salt cedar	*Tamarix ramosissima*	C

[1] Nevada Department of Agriculture noxious weed categories:

- Category A weeds are generally not found or are limited in distribution throughout the state. These species are subject to active exclusion from the state, eradication where found, and eradication from nursery stock.
- Category B weeds are generally established in scattered populations in some counties of the state. These species are subject to active exclusion where possible and active eradication from nursery stock.
- Category C weeds are generally established and widespread in many counties of the state. These species are subject to active eradication from nursery stock.

Source: Nevada Department of Agriculture (https://agri.nv.gov/Plant/Noxious_Weeds/Noxious_Weed_List/; accessed 16 Feb 2021)

2.4.2 Wildlife

Desert Tortoise

Located within the Eastern Mojave Recovery Unit (USFWS 2011) and Piute-Eldorado Valley Critical Habitat Unit, the BCCE was created in 1995 to be managed for the protection and benefit of the Mojave desert tortoise.

Suitable soils and vegetation that support desert tortoise exists across the extent of the BCCE. Habitat models of the area indicate a predicted occupancy ranging from low to high probability where areas of higher probability of tortoise occupancy primarily exist in the south portion of the BCCE (Figure 10, Nussear 2009). The estimated desert tortoise density within the Eastern Mojave Recovery Unit is 1.5 tortoises per square kilometer, and the density in Eldorado Valley was estimated at 2.6 tortoises per square kilometer (USFWS 2019 unpublished data). Eldorado Valley has experienced population declines of 9.2% between 2004 and 2014 (Allison and McLuckie 2018).

There are ongoing efforts to monitor tortoise occupancy and density occurring on the BCCE: surveys in support of the Mojave Desert Tortoise Range-wide Monitoring Project to help calculate density trends within the critical habitat unit (See final report here: https://files.clarkcountynv.gov/clarknv/Range%20Wide%20Monitoring%20year%205.pdf?t=1675718517041&t=1675718517041), and occupancy studies (See interim report here: https://files.clarkcountynv.gov/clarknv/Desert%20Tortoise%20Occupancy%20Surveys%202021%20Annual%20Report.pdf?t=1675718517041&t=1675718517041).

Translocation of desert tortoises (USFWS 2019, 2020) occurs from areas of development within Clark County into the BCCE in coordination with U.S. Fish and Wildlife Service. A subset of these tortoises is typically monitored by telemetry post-translocation (Quarterly report found

here: https://files.clarkcountynv.gov/clarknv/FileStore.pdf?t=1675815161887&t=1675815161887). Previous efforts (in 2014 and 2017) translocated tortoises to the BCCE from the Desert Tortoise Conservation Center as part of a large-scale translocation effort.

Data obtained from successive years of these studies may be used to inform future monitoring strategies and management decisions within the BCCE.

MSHCP Wildlife Species

No other covered wildlife species have been documented within the BCCE; however, suitable habitat to support several covered species is present. Covered species have been documented in areas adjacent to the BCCE; these include desert iguana (*Dipsosaurus dorsalis*), phainopepla (*Phainopepla nitens*), Arizona bell's vireo (*Vireo bellii arizonae*), Mojave green rattlesnake (*Crotalus scutulatus scutulatus*), and speckled rattlesnake (*Crotalus mitchelli*) (Nevada Natural Heritage Program 2014). MSHCP-evaluation species that have been documented in the BCCE include banded Gila monster (*Heloderma suspectum cinctum*), LeConte's thrasher (*Toxostoma lecontei*), and loggerhead shrike (*Lanius ludovicianus*).

Other Wildlife Species

Other wildlife species that may be present on the BCCE include several species of lizards, snakes, small mammals, and birds (O'Farrell 2009). Most of the birds are transients that seasonally migrate through the area. Common resident species include black-throated sparrow (*Amphispiza bilineata*), raven (*Corvus corax*), northern mockingbird (*Mimus polyglottos*), and mourning dove (*Zenaida macroura*). The more abundant small mammals include rodents, such as the white-tailed antelope squirrel (*Ammospermophilus leucurus*) and desert pocket mouse (*Chaetodipus penicillatus*), and the black-tailed jackrabbit (*Lepus californicus*) (O'Farrell 2009). Larger mammals that have been observed in and around the BCCE include coyote (*Canis latrans*) and kit fox (*Vulpes macrotis*). Mule deer (*Odocoileus hemionus*) and desert bighorn sheep (*Ovis canadensis nelsoni*) are found in suitable habitats surrounding the BCCE and may occasionally transit the site. Wild horses (*Equus ferus*) or burros (*Equus africanus asinus*) are not known to occur in the vicinity of the BCCE.

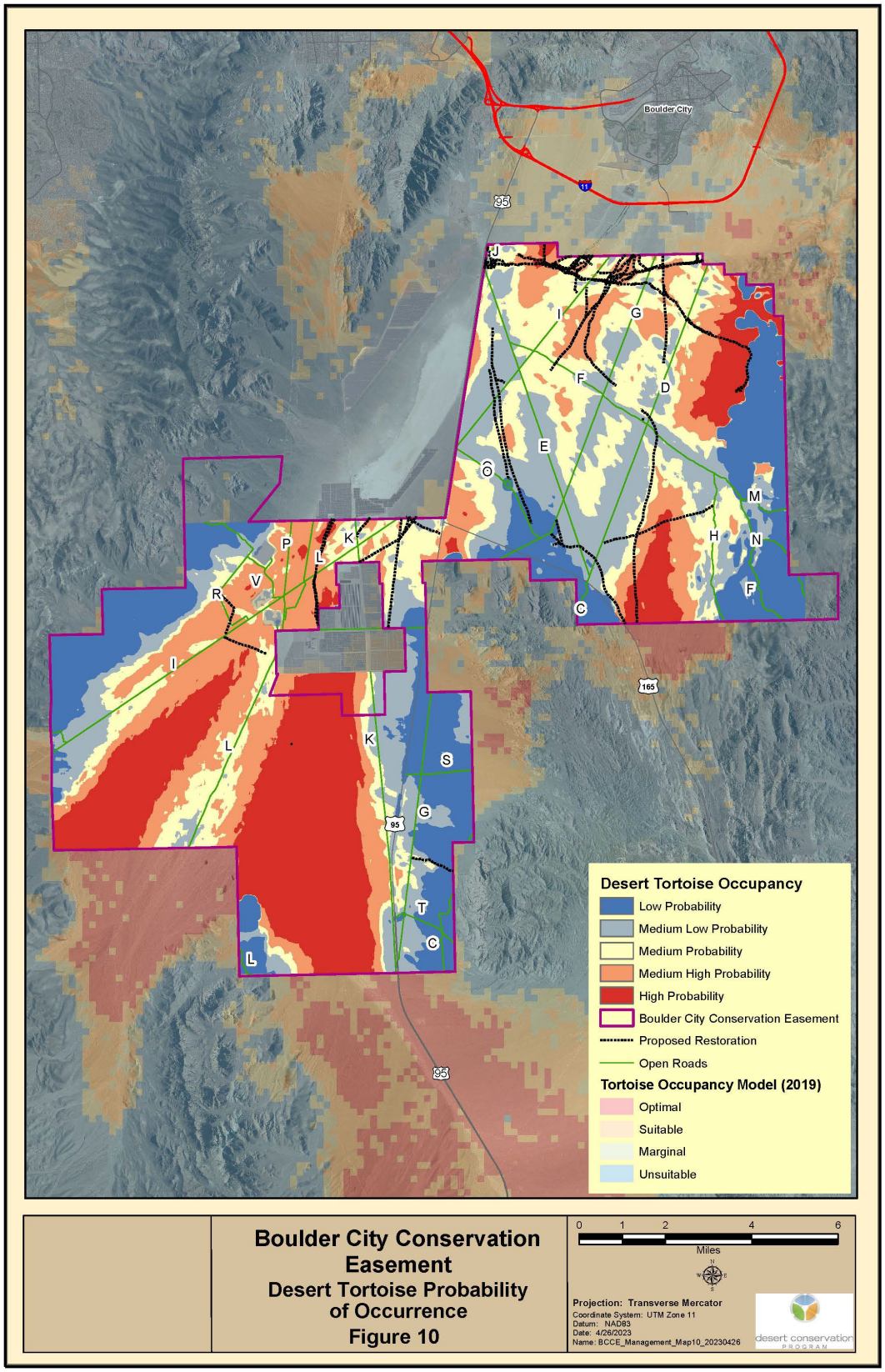


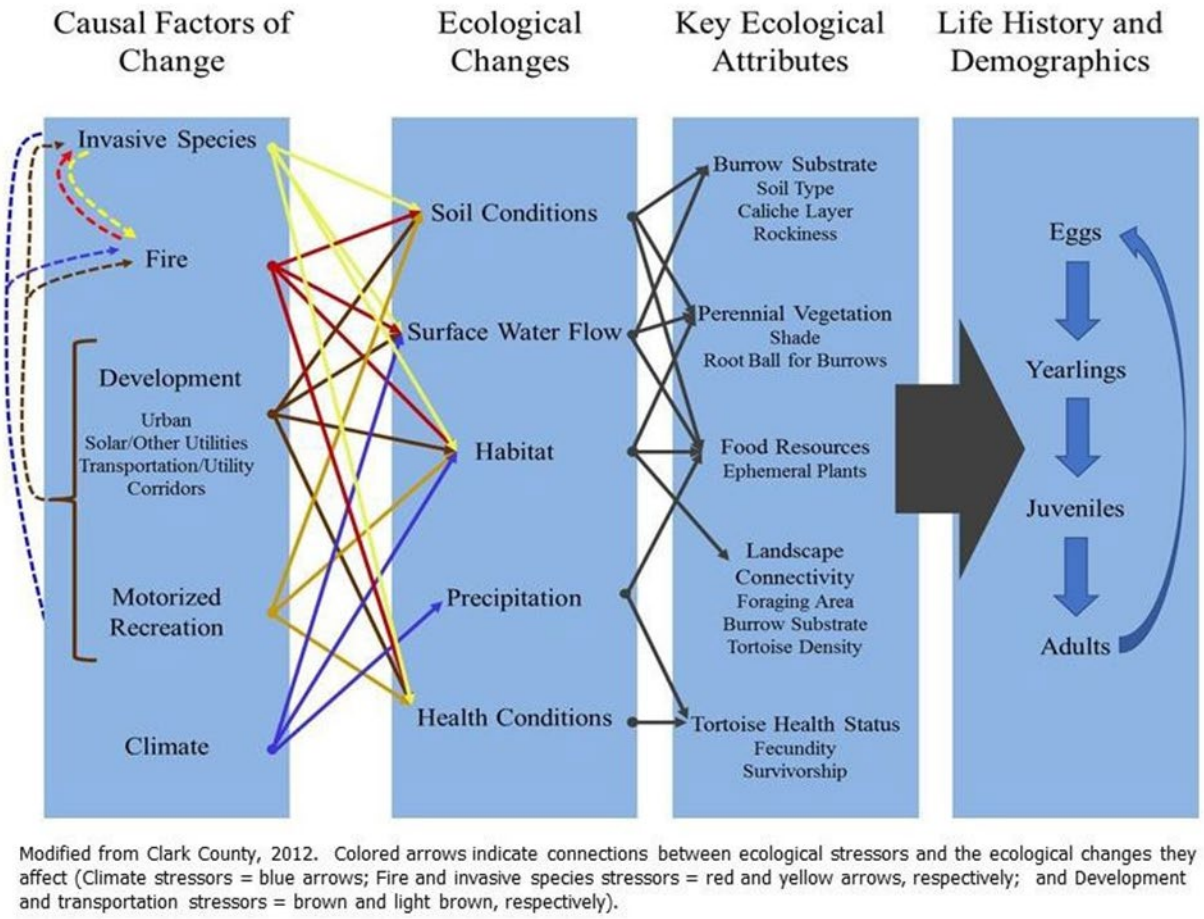
Figure 10 Desert Tortoise Probability of Occurrence

2.4.3 Ecological Resilience

Ecological resiliency (as defined in Clark County 2016) is the capacity of an ecosystem to withstand acute and diffuse stressors without experiencing widespread negative regime changes, such as species extirpation or a fundamental loss of ecosystem function. To better understand how ecological resiliency can practically be addressed on the BCCE, putting it in the context of ecological conservation is important. Ecological representation, redundancy, and resiliency make up "The Three R's of Conservation" and are described here:

- Representation— describes which ecosystems are present on a landscape within designated conservation units or study areas (i.e., wilderness areas or county-owned land). Key concepts regarding representation include:
    - Saving something of everything.
    - Conserving a full variety of habitat types.
    - If representation exists within designated conservation units or study areas, there is a higher potential for protecting biodiversity under climate change.
- Redundancy— describes how redundant (i.e., number of occurrences) an ecosystem is on a particular landscape within designated conservation units or study areas. Key concepts regarding redundancy include:
    - Redundancy can be a hedge against the failure of any particular species population or habitat type.
- Resiliency— describes the capacity of an ecosystem to respond to perturbation by resisting, recovering, and transforming. It is important to identify what is being targeted:
    - What is the focal system?
    - Resiliency…of what? [key components of the system].
    - Resiliency…to what? [specific disturbance, disruption, and uncertainty].

Representation, redundancy, and resiliency, and their applicability to specific project and management concepts were discussed at an internal workshop in 2018 (Alta 2018). Each of the Three R's was discussed in relation to both fine-scale and landscape levels and a multitude of project concepts were evaluated (project concepts were both new concepts and those already being implemented or were included with the upcoming IPB). Overall, the following management concepts work to achieve or inform representation, redundancy, and resiliency: Maintain spatial connectivity and spatiotemporal variability in ecological processes; understanding natural levels of spatial and temporal variability; strategic property acquisition and partnerships; and identification of key ecosystem stressors and the types of ecological changes that may be affected by these stressors (i.e., filling in the blanks of "Resiliency...of what?" and "Resiliency…to what?"). The current state of understanding of the factors influencing the life history and survival of the desert tortoise on the BCCE has been summarized in a conceptual model (Figure 11; modified from Clark County 2012).



Modified from Clark County, 2012. Colored arrows indicate connections between ecological stressors and the ecological changes they affect (Climate stressors = blue arrows; Fire and invasive species stressors = red and yellow arrows, respectively; and Development and transportation stressors = brown and light brown, respectively).

Figure 11 Conceptual Ecological Model for Mojave Desert Tortoise with the BCCE

2.4.4 Ecological Stressors for the Desert Tortoise, Other Covered Species, and Habitats

The primary stressors (aka, “causal factors of change”) affecting the desert tortoise and other covered species and habitat on the BCCE have been summarized from several documents, including the MSHCP (Clark County 2000a) and a desert tortoise conceptual model (Clark County 2012).

All of these stressors have associated uncertainty about rates and magnitude of change; whether the affected ecological change will respond linearly or in a non-linear fashion and whether there are threshold responses, as well as the potential for interactions between and among stressors and associated ecological change.

These primary stressors have been grouped according to the influence that management can direct towards understanding, minimizing, and mitigating the magnitude, uncertainty, and effects of the stressor. See Section 3.2 for a discussion of management actions developed to address stressors.

- Climate change: DCP ability to influence: low to none. (See blue arrows in Figure 11).
- Fire and invasive species: DCP ability to influence: low to moderate. (See red and yellow arrows, respectively, in Figure 11).

- Development, transportation, and recreation: DCP ability to influence: moderate to high. (See brown and light brown arrows in Figure 11).

Climate Change

Projections of climate change for the northeast Mojave Desert suggest that the changes will be profound by 2060 (Comer et al. 2013), including substantial changes in most monthly maximum temperatures, July maximum temperature, and August minimum temperature. Some of the potential effects of climate change include decrease in plant growth, expansion of invasive species distribution and density, increase in fire frequency, increase in wind erosion, reduction of groundwater recharge, and increase in flood events from higher precipitation levels at high elevations (Comer et al. 2013). Climate change can be a severe stressor to these ecological systems and species over the next 50 years.

Invasive Species

The presence of non-native invasive species, including red brome (*Bromus rubens*), common Mediterranean grass (*Schismus barbatus*), and Sahara/African/Asian mustard (*Brassica tournefortii*) are important stressors on the Mojave Desert ecosystems. These species compete with and reduce abundance of native plants, primarily annuals and short-lived perennials, which can lead to extirpating populations. Invasive species can also alter ecological processes, such as increasing fire frequency and intensity and reducing soil moisture and altering soil nutrients. Increased levels of nitrogen deposition can increase abundance and vigor of invasive species.

Fire

The increase in fire frequency and intensity outside its historical range of occurrence is a stressor on the ecosystem. Mojave Desert ecosystems are not fire-adapted and fire causes a major shift in species composition. Some shrub species may be completely eliminated by fire and will rarely reestablish under natural conditions. With the lack of seed source and past and future climatic change, seedling establishment may not be possible. Herbaceous species are also impacted by having seeds killed in the soil, less appropriate soil conditions for germination and growth following fire, and competition from mostly non-native species that respond favorably to fire. Fire effects on vegetation and soils can reduce landscape connectivity for wildlife and fire can also kill or seriously injure many wildlife species, including desert tortoise. The extent of these impacts is influenced by the timing of fire and the activity of tortoises, depth of burrows, fire intensity, how quickly fire moves across an area, and the patchiness of fire (Esque et al. 2003). There have been no major fires in or around the BCCE and the fuel loading is currently low (O'Farrell 2009). Although this stressor can be severe, it is limited in scope and restoration is difficult.

Development

The types of development that have the highest stressor potential to the BCCE are the development of solar energy facilities and other utilities and supporting infrastructure (roads, transmission lines). The Mojave Desert has some of the highest potential for solar development; a recent study identified alternatives ranging from 285,000 to 98,774,342 acres available for solar development (Lovich and Ennen 2011). With the increase in renewable energy development and the need to provide better connectivity within the electrical grid, major transmission line projects are planned to connect with the existing substations inside the BCCE (Kimberley Jenkins, personal communication), along with possible upgrades and expansions to the existing substations. These stressors can cause direct loss of wildlife and habitat, increased habitat fragmentation, and indirect introduction of predators.

Transportation Infrastructure

Transportation infrastructure includes linear corridors consisting of paved and unpaved roads and trails. Transportation corridors affect desert tortoises and habitat by increasing mortality through collisions with vehicles, fragmenting habitat and reducing connectivity across habitat, and facilitating access by humans. The effect of transportation corridors varies by road type (high speed divided highways roads, paved secondary roads, unimproved roads) and by presence of tortoise exclusion fencing. Whether transportation corridors have an effect on the density of tortoise populations is unknown, but studies have shown that they do have an effect on abundance of tortoises within a quarter mile from high traffic roads (von Seckendorff Hoff and Marlow 2002, Boarman and Sazaki 2006). In contrast to these studies, increased sheet flow runoff from roads and stormwater drainage often results in more robust and diverse ground cover that may be an attractant to tortoises. Major paved roads that cross the BCCE have tortoise exclusion fences. Transportation corridors cause habitat alteration and fragmentation. These corridors are moderate in severity but low in areal extent across the BCCE.

Recreation

Motorized recreation includes various vehicle types, individuals or group participants, and travel on or off of paved and unimproved roads and trails. Motorized OHVs commonly use desert environments, including washes and playas, for recreation purposes. While a quantitative relationship between motorized OHVs and reduced tortoise densities is lacking, qualitatively the likelihood of direct mortality, collapsed burrows, and reduced food resources (by direct elimination and by indirect changes in soil condition, such as compaction, soil moisture, and reduction in soil crusts) suggest that this stressor has an impact on tortoise populations. Comparison of areas used for motorized OHVs and those that are unused provide support for this impact (Bury and Luckenbach 2002). To date, the DCP has closed 12 roads, totaling 30.67 miles, to help protect native species. Of the 30.67 miles of roads that have been closed, 13.42 miles have had some sort of restoration/barrier installation to restrict access and illegal use (Figure 12). In the past few years an increase in unauthorized use has been observed and is now visible on aerial imagery. The increase amounts to approximately 6 miles of closed loop OHV trails in the northern section of the easement and increased efforts will be needed to curb this increasing threat to the area.

Non-motorized recreation includes hiking, biking, horseback riding, hunting, camping, and target shooting. These activities can directly damage soil by altering soil structure and disrupting soil crust, and damage and reduce vegetation. These activities are minimal across the Mojave Desert, but can be quite intense in certain places. Non-motorized recreation in the BCCE is not intense or extensive. No data exists correlating these activities with impacts to desert tortoise. Indirect impacts of non- motorized recreation, such as ignition of fire, introduction of invasive species, increased predators, and handling and collection of plants and/or wildlife, are stressors on the ecosystem.

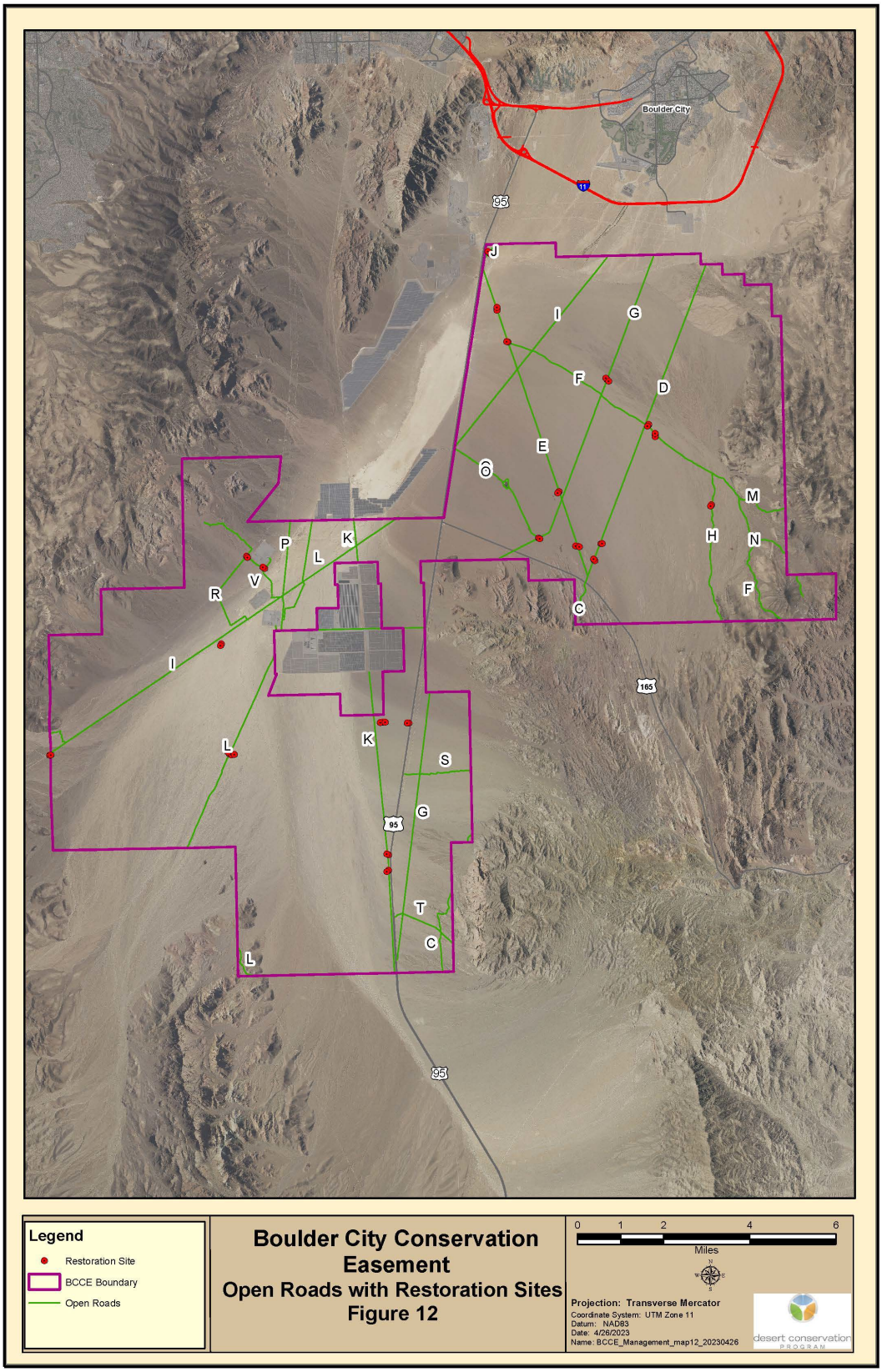


Figure 12 Restoration Sites

Predation

Predation is defined as the mortality of wildlife by species other than humans. Natural predation rates are not considered a stressor; however, current predation has been enhanced by increased populations of predators through changes in trophic structure, increases in food and water sources and nesting substrates (billboards, utility towers, buildings), and introduction of non-native predators (Boarman et al. 2006). Subsidized predators include native species such as the common raven (), which is the most well-documented subsidized predator in the Mojave Desert, and the coyote (), as well as introduced species such as dogs (*Canis familiaris*) and cats (*Felis catus*). Raven predation of juvenile desert tortoises has been well documented (USFWS 2011). The contribution of predation to the survivorship and demographic impacts of desert tortoises have not been quantified and is complicated by spatial and temporal variability and difficulty of monitoring juvenile tortoises (USFWS 2011). A recent project has surveyed for the extent of predation pressure in the BCCE and found that it is largely restricted to the area south of Boulder City (Boarman et al. 2018).

Management recommendations include reducing predator subsidies of trash and open water. Across the full BCCE, predation is currently assumed to be a moderate stressor.

2.5 Public Services and Safety

Public services and safety address agencies responsible for utilities on and across the BCCE, emergency response within the BCCE and surrounding areas, and safety procedures followed by DCP and contractors that access the BCCE. Since the BCCE is located within the jurisdiction of Boulder City, public safety services are provided by the City agencies. Agency contacts and telephone numbers are listed in Appendix G.

2.5.1 Fire and Medical

Boulder City Fire Department provides fire protection and emergency medical response for the BCCE. The Department maintains mutual aid contracts with surrounding fire departments, including the County and Henderson, as well as with BLM and NPS. BLM and NPS law enforcement rangers and fire crews are responsible for fire and medical emergency response on BLM and NPS lands.

2.5.2 Law Enforcement

Boulder City Police Department is the agency providing police protection to the BCCE. Law enforcement on the BCCE is an important management objective addressed by the DCP, and it is required by both the Grant and the incidental take permit. The DCP has contracted for law enforcement on the BCCE since February 2000 to ensure that the public complies with the uses outlined in the Grant. As representatives of the DCP and the County, law enforcement personnel also serve a role in public relations and conservation education. As a result, emphasis is placed on helping the public understand the purpose for the BCCE, its importance as a reserve for covered species, and uses that are allowed and prohibited.

Boulder City is responsible for enacting and enforcing codes and ordinances for public land uses that are necessary to permit allowable uses and enforce prohibited uses on the BCCE. The City allows peace officers provided by DCP to issue citations to BCCE users violating City Code 7-5-8, Prohibited Uses within the Eldorado Valley Transfer Area; however, citations are rarely issued and generally to flagrant or repeat offenders only. The City is also responsible for providing officers to monitor activities that it permits on the BCCE and to cite and prosecute violators of permits.

A summary of law enforcement activities that occur on the BCCE are submitted to DCP on a weekly basis. The summary report is reviewed to monitor the type, frequency, and location of violations, and integrate the findings to adaptively manage the BCCE. Since DCP is responsible for enforcing the terms of the Grant, the data help focus law enforcement efforts to the areas where most violations take place, and attempt to reduce infractions over time.

Nevada Highway Patrol enforces traffic regulations on US 95 and SR 165. BLM and NPS law enforcement rangers patrol federal lands and are responsible for protecting the resources, preventing illegal dumping, and enforcing traffic codes on BLM and NPS lands.

2.5.3 Utilities

There are no requirements for utilities to manage the BCCE for conservation purposes, although some public utilities are available in the area. Potable water service to the energy facilities in the Energy Zone and on the BCCE is provided by the City and it is distributed via an underground water main that parallels Eldorado Valley Drive. There is no municipal sanitary sewer collection service provided to the Eldorado Valley; facilities have septic tanks and drain (i.e., leach fields) for wastewater treatment and disposal needs. The energy facilities provide for their own electricity needs. An underground natural gas pipeline owned by Southwest Gas Corporation crosses the BCCE from south to north. Fiber optic cables and telecommunications are located underground and parallel Eldorado Valley Drive.

The Boulder City Wastewater Treatment Plant is located a little over a mile north of the North Section of the BCCE (Figure 4). The City retained limited rights in the Grant to allow treated effluent from the plant to discharge onto the BCCE.

2.5.4 Safety

The DCP follows standard health and safety procedures for working in the desert environment, including guidelines for weather-related risks and biological hazards (snakes, insects). Emergency contact is provided through 911 service; non-emergency support is requested by dialing 311. Cell phone service is available on and near the BCCE through most telecommunication carriers. A list of contacts for management, safety, and services is provided in Appendix G.

The DCP has established procedures to minimize exposure to naturally occurring asbestos fibers that could be present in airborne dust. Procedures were developed with the assistance of the Clark County Department of Air Quality and with references from the Environmental Protection Agency and the Agency for Toxic Substances and Disease Registry. The procedures address measures to minimize staff exposure and reduce the spread of fibers that may be on field clothes, equipment, and vehicles. The procedures described here are intended to reduce risk of exposure to naturally occurring asbestos fibers.

Procedures for digging or working in the ground:

- Always thoroughly wet the ground where working to prevent dust (a watering can used for plants should be sufficient).
- When digging or pounding items into the ground, always make sure the area is wet to prevent dust.

Section 3 Management Goals, Objectives, and Actions

The management goals for the BCCE are based on the Section 10 incidental take permit (USFWS 2001) and the guiding documents for the easement (Section 1.2).

3.1 Management Goals and Objectives

Management goals are broad, general statements to establish the direction for the management of the easement. **Management objectives** provide further explanation regarding the intent of the management goals and are established to measure progress towards achieving management goals for the BCCE. Management goals and objectives are presented in

Table 4. These management goals and objectives are related to, but not identical to, the Biological Goals and Objectives (BGO) that were drafted in 2016 (Clark County 2016, 2023). The BGOs are used to quantitatively gauge implementation and success of specific projects conducted under the MSHCP. Specific management actions (Section 3.2) are linked to both the management goals and objectives as well as the biological goals and objectives.

Table 4 BCCE Management Goals and Objectives

Goal 1	**Protect and manage the BCCE for the desert tortoise and its habitat.**
Objectives	*1.0 Restore and enhance desert tortoise habitat and monitor desert tortoise populations on the BCCE.*
	2.0 Install and maintain infrastructure that controls tortoise
	3.0 Identify and decrease direct stressors to desert tortoise, as needed.
Goal 2*	**2.0 Protect and manage the BCCE for other MSHCP covered**
Goal 3	**3.0 Manage the property and public uses to meet conservation obligations and legal**
Objectives	*4.0 Promote a road network that supports conservation and provides appropriate access for*
	5.0 Provide law enforcement.
	6.0 Control invasive plant species and noxious weeds.
	7.0 Promote responsible recreation and inform the public
	8.0 Manage allowable uses.
	9.0 Manage prohibited uses (Appendix C).
** There are no specific management objectives for this goal at this time because the BCCE is protected and managed for the desert tortoise. As concepts from the Adaptive Management and Monitoring Plan (AMMP, Alta 2023) are further integrated into BCCE Management Plan, specific objectives for this goal will be developed.*	

3.2 Discussion of Management Objectives and List of Management Actions

Management objectives guide identification and development of management actions and ongoing activities. **Management actions** are defined as specific actions, methods, or tools by which management objectives are met and management goals are achieved. Actions make up the "how do we get there" part of the planning process and are linkages between the Plan and implementation. This section provides a general discussion of each management objective and lists management actions that would meet each objective.

Section 3.3 contains the table of management actions with further details on what, where, when, and who implements each action, and how to measure effectiveness of implementation of the action.

Objective 1.0 - Restore and enhance desert tortoise habitat, and monitor desert tortoise populations on the BCCE

The primary purpose for establishing the easement was to manage and protect habitat for desert tortoise. The incidental take permit also states that, within the easement, connectivity for desert tortoise and other covered species should be maintained. Restoring closed roads and trails and enhancing areas of degraded or marginal habitat provides additional habitat for covered species. Priority should be given to closed roads and degraded habitat in areas within the BCCE where desert tortoises have been recently documented.

Culverts and other drainage structures under roadways can provide an avenue for connectivity between different areas of the Eldorado Valley and sections of the BCCE that are separated by infrastructure and tortoise exclusion fences. Opportunities to reestablish connectivity should be explored.

Management actions that will restore and enhance desert tortoise habitat include:

1.1 Evaluate and monitor the easement for changes in quality or extent of suitable tortoise habitat

1.2 Monitor desert tortoise occupancy and health of population, as possible

1.3 Identify and prioritize locations for habitat restoration and enhancement

1.4 Identify and implement restoration/enhancement plans for priority locations

1.5 Monitor and adaptively manage restoration/enhancement

Objective 2.0 - Install and maintain infrastructure that controls tortoise movement

Fences, road crossing guards, and gates eliminate or minimize the mortality of tortoises by preventing access onto roadways and by keeping vehicles on roadways and off habitat. Construction and maintenance of tortoise exclusion fences along major roads is a non-discretionary requirement in managing the BCCE as a condition of the incidental take permit. Tortoise exclusion mesh was added to the NDOT fences that parallel US 95 and SR 165, and gates and/or crossing guards are installed at right-of-way access locations. NDOT and DCP is responsible for monitoring and maintaining these fences, crossing guards, gates, and the drainage culverts.

The exterior of the BCCE boundary is not fenced and allows for tortoise passage and connectivity with adjacent lands. Unimproved roads within the BCCE do not experience sufficient traffic or speed to warrant tortoise protective barriers. The solar arrays within the

BCCE are surrounded by tortoise exclusion fencing, and protective fences exist along Eldorado Valley Drive in the vicinity of the Solar Energy Zone.

Management actions that will control tortoise movement include:

- 2.1 Inspect tortoise fences, road crossing guards, gates, and culverts for maintenance needs
- 2.2 Conduct emergency repairs and/or schedule maintenance repairs
- 2.3 Notify NDOT for highway fence repairs and culvert cleaning/maintenance
- 2.4 Install new or replace tortoise fences, road crossing guards, and gates as needed

Objective 3.0 - Identify and decrease direct stressors to desert tortoise, as needed

There are a number of direct and indirect stressors to the desert tortoise (Section 2.4.4) that affect management of the BCCE. Some stressors, such as recreation and development, are managed indirectly by addressing other objectives and management actions. Potential harm from predation has become an immediate concern. Future actions may be warranted to address additional direct stressors if they increase significantly.

Management actions that will address predation stressors include:

- 3.1 Monitor presence of predators to determine need for control
- 3.2 Implement effective predator control techniques, as appropriate, following federal, state, and county permits and guidelines

Objective 4.0 - Promote a road network that supports conservation and provides appropriate access for management and public use

Vehicle use and maintenance of designated and signed roads and trails are allowed on the BCCE. The roads in the BCCE typically experience reduced traffic flow and lower speeds are a minimal stressor to desert tortoises. None-the-less, closing roads and reducing traffic speed provides additional habitat and reduces habitat fragmentation, thus providing further protection. Additionally, closing roads reduces public access to sensitive areas of the BCCE, further reducing human stressors on the species and its habitat.

DCP is responsible for a) reviewing the earlier interim road designations and b) making adjustments to open and closed travel routes based on origins and destinations within the BCCE and on adjacent lands, usage, substrate (surface soils and desert washes) and physical condition, and existing rights-of-way.

DCP tracks and monitors the development of emerging technologies such as uncrewed aerial vehicle technology and wildlife cameras for monitoring road use by people and wildlife, and detecting and mapping unauthorized use (e.g., initiation of social routes). Use of uncrewed aerial vehicle technology in the BCCE has been discussed and will continue if there is continued interest. Wildlife cameras could be used for monitoring wildlife movements in and around culverts, roads, and restoration areas.

Management actions that will manage the road network include:

- 4.1 Inventory and identify (name) open and closed roads digitally (e.g., Google Maps) and with signage within the BCCE
- 4.2 Identify,prioritize, and implement road closures
- 4.3 Develop restoration plans for permanently closed roads

4.4 Implement and monitor restoration of closed roads

Objective 5.0 - Provide law enforcement

Providing law enforcement is a non-discretionary requirement of managing the BCCE as a condition of the incidental take permit. Law enforcement has two roles: to educate the public about the purpose of the easement and allowable uses, and to protect the easement from unauthorized uses. Boulder City Police Department provides peace officers to patrol the BCCE in close coordination with DCP to best address effectiveness of patrols in fulfilling conservation obligations of the easement.

Management actions that will address law enforcement include:

5.1 Maintain patrols by Boulder City peace officers

5.2 Monitor and adjust patrol schedule and locations

5.3 Monitor and enforce prohibited uses

5.4 Evaluate officer/public contacts for opportunities to improve patrols

Objective 6.0 - Control invasive plant species and noxious weeds

One of the most destructive stressors on the Mojave Desert ecosystem is fire. Fires reduce or eliminate desert shrubs and herbaceous diversity and thus reduce structure and food resources. Frequency of fire in the Mojave Desert is related to the increase in fine fuels, the source of which is generally non-native invasive plant species. These invasive species also compete with native herbaceous species. The DCP, as a landowner, is required by the NRS to control the spread of noxious weeds. Most likely locations for invasive plant species and noxious weeds are along roadways, but systematic assessments of areas away from roads should be considered. While there is no evidence that invasive plant species and noxious weeds are degrading habitat or in densities that provide fuel for fire on the BCCE, it is important to be proactive in inventory and control.

Management actions that will control invasive plant species and noxious weeds include:

6.1 Identify and treat (eradicate or reduce) locations infested or susceptible to invasive plants and noxious weeds

6.2 Monitor locations for recurrence of invasive plants and noxious weeds

Objective 7.0 - Promote responsible recreation and inform the public on current activities

It is important to achieving conservation obligations to ensure that the public and users of the BCCE understand the purpose of the easement, know allowable and prohibited uses on the property, and can locate the physical extent (boundaries) of the BCCE. Information can be provided through signage, interpretive materials, kiosks, and the DCP webpage.

Management actions that will educate the public on allowable uses and current activities include:

7.1 Establish and maintain a consistent brand and design for signs, kiosks, interpretive materials, brochures, and webpage

7.2 Identify locations and maintain database for signs and kiosks

7.3 Post and maintain condition of all easement boundary signs, “Limited Use Area” signs, interpretive signs, and kiosks

7.4 Develop content, print, and distribute interpretive brochure(s) to users of the BCCE

7.5 Update information on BCCE webpage

Objective 8.0 - Manage allowable uses

Section 2 of the Grant states that use of the property is allowed for only such activities which do not impair the conservation, protection, restoration, and enhancement of the natural resource values of the property (Appendix A). Allowable uses include reserved rights (Section 6 of the Grant) that are compatible with the purpose of the Grant, such as non-consumptive recreational activities, maintenance and construction of utilities and ancillary structures, and discharge of treated wastewater effluent. Other allowable uses with permission from the City, DCP, and/or USFWS include exemptions to prohibited uses.

Management actions that will ensure DCP identifies and manages allowable uses of the BCCE include:

8.1 Monitor condition of three historic sites located on the BCCE

8.2 Maintain relationships and coordinate with adjacent landowners to protect conservation values of the BCCE

8.3 Monitor and coordinate with utility companies to minimize impacts from existing and proposed transmission corridors and facilities

8.4 Review exceptions to prohibited uses (i.e., discharge of firearms) for conflicts with Boulder City Code and Ordinances and Nevada hunting regulations

8.5 Monitor location and effects of treated effluent discharge

Objective 9.0 - Manage prohibited uses

Section 4 of the Grant states that any activity that is incompatible with the purpose of the easement is prohibited and lists a number of activities on and uses of the property that are not allowed.

Prohibited uses include, with limited exceptions, surface disturbances, motorized vehicle use off designated roads, grazing, commercial or non-commercial collection of flora and fauna, dumping and littering, application of herbicides or biocides, release of captive or displaced tortoises, uncontrolled dogs outside of vehicles, and discharge of firearms. Continued use of the pet cemetery is no longer allowed. Many of these prohibited uses are curtailed by the presence of law enforcement and through monitoring by DCP staff.

The management actions that will manage prohibited uses of the BCCE include:

9.1 Review and revise easement documents for conflicting uses and restrictions with Boulder City Code

9.2 Maintain fence and gate installed around pet cemetery

9.3 Monitor for burial of animal remains outside the fenced pet cemetery area

9.4 Monitor known and potential locations of illegal dumping activity

9.5 Remove trash and debris from illegal dump sites

9.6 Monitor for other prohibited uses

9.7 Install new fences and/or barriers to prohibit access of OHV into unauthorized areas

9.8 Contact or have law enforcement contact businesses operating within the easement without the proper permits

3.3 Management Actions and Effectiveness Measures

The primary purpose of a management plan is to provide guidance for selecting management actions that support or meet management objectives, and ultimately achieve management goals. The management actions for the BCCE have been identified from regular management operations, as well as other actions necessary to meet the objectives and goals for managing the BCCE.

The following table includes the management objectives (noted as 1.0, 2.0, etc.) and the management actions (1.1, 1.2, 2.1, etc.) related to each management objective. Management actions can be separate individual activities or be interrelated with other actions and sequential in implementation.

Each management action is presented in the following table by the columns that include:

- **Management Action Description**: a brief description of what the action entails and why it is important.
- **Effectiveness Measures**: a listing of metrics to be measured to assess the effectiveness (success) of the management action.

These management actions are reported on quarterly in the BCCE Management Actions Tracking Table in each Quarterly Administers Update (https://www.clarkcountynv.gov/government/departments/environment_and_sustainability/desert_conservation_program/plan_administrator_updates.php). Details on the management actions' location, timeframe, related permits, cost, and status can be found in annual or project reporting, The management action table is a tool to guide management activities and is intended as a working document for the DCP to update, add to, and/or change actions as conditions warrant.

Each update to the table should be tracked by entering a current date in the footer of the table.

Table 5 Management Plan Goals, Objectives, Description, and Effective Measures

BCCE Management Goals and Objectives		Management Action Description	Effectiveness Measures
1	**Restore and enhance desert tortoise habitat, and monitor desert tortoise populations on the BCCE**		
1.1	Evaluate and monitor the easement for changes in quality or extent of suitable tortoise habitat	Monitor BCCE suitable tortoise habitat for changes over time.	Protect, restore, or otherwise increase the quality and quantity of desert tortoise habitat.
1.2	Monitor desert tortoise occupancy and heath of tortoise population, as possible	Monitor occupancy for changes over time. This can be used as effectiveness monitoring for other projects as well as a way to evaluate changes to the tortoise population.	Desert tortoise population on the BCCE remains stable or increases.
1.3	Identify and prioritize locations for habitat restoration and enhancement	Prioritize locations for restoration and enhancement using the work completed through the occupancy sampling project and other ongoing habitat monitoring efforts.	Areas for restoration and enhancement are identified and prioritized.
1.4	Identify and implement restoration/enhancement plans for priority locations	Use results from 1.3 to plan location, type, and extent of restoration/enhancement	Plans meet restoration goals and objectives, contract requirements, and are ready for implementation
1.5	Monitor and adaptively manage restoration/enhancement	Establish success criteria and monitoring schedule; assess success of restoration/enhancement against criteria; continue/augment restoration actions to maintain investment	Restoration/enhancement plantings and topographic modifications meet success criteria
2	**Install and maintain infrastructure that controls tortoise movement**		
2.1	Inspect tortoise fences, road crossing guards, gates, and culverts for maintenance needs	Schedule and conduct periodic inspections of infrastructure; conduct inspections when opportunities arise or in conjunction with other activities	Location, length, and percent of tortoise fencing, road crossing guards, gates, and culverts inspected. Number, length, and percent of fencing, protective gates, and culverts needing repair
2.2	Conduct emergency repairs and/or schedule maintenance repairs	DCP staff can repair minor fence damage; contact NDF to schedule maintenance/repairs	Completion of repairs, time period between notification and repair

Table 5 Management Plan Goals, Objectives, Description, and Effective Measures

2.3	Notify NDOT for highway fence repairs and culvert cleaning/maintenance	Call NDOT point of contact to request maintenance crew; provide location and type of repair/maintenance needed	Completion of repairs, time period between notification and repair
2.4	Install new or replace tortoise fences, road crossing guards, and gates as needed	Complete installations.	Completion of installation, time period between notification and installation is minimized.
3	**Manage direct stressors to desert, as needed**		
3.1	Identify and monitor presence of predators to determine need for control	Implement relevant predator studies.	Determine the extent/degree of predation which occurs on desert tortoise in the BCCE.
3.2	Implement effective predator control techniques, as appropriate, following federal, state, and county permits and guidelines	Review results from relevant predator studies or monitoring efforts in the region to assess the need for predator control efforts.	Techniques are practicable and feasible with measurable benefits.
4	**Manage road network to support conservation and provide appropriate access for management and public use**		
4.1	Inventory and identify (name) open and closed roads digitally (e.g., Google Maps), and with signage within the BCCE		Roads are accurately labeled.
4.2	Identify, prioritize, and implement road closures	Use results from 4.1, 5.3, and other criteria to identify roads for closure	Prioritized road closures
4.3	Develop restoration plans for permanently closed roads	Based on results of 4.4, prepare plan(s) to restore road to native habitat or hide/mask road presence; determine length of road to restore using data from 4.1 and 5.3; establish success criteria	Plans are completed with goals and objectives for restoration and with all components needed for implementation
4.4	Implement and monitor restoration of closed roads	Establish success criteria and monitoring schedule; assess success of restoration/enhancement against criteria; continue/augment restoration actions to maintain investment	Restoration/enhancement plantings and topographic modifications meet success criteria
5	**Provide law enforcement**		
5.1	Maintain patrols by Boulder City peace officers	Maintain and renew contract in accordance with Section 5(c) of 2010 grant amendment	Funding for law enforcement included in biennial budgets
5.2	Monitor and adjust patrol schedule and locations	Review patrol reports from peace officers; adjust patrols based on season, public contacts, infractions, and discussions with officers	Assess hours, locations, and contacts; compare to public usage

Table 5 Management Plan Goals, Objectives, Description, and Effective Measures

5.3	Monitor and enforce prohibited uses	Review patrol reports from peace officers for number, frequency, and type of prohibited use	Number and trend of prohibited uses addressed by law enforcement
5.4	Evaluate officer/public contacts for opportunities to improve patrols	Review patrol reports and discuss the type, frequency, and location of public contacts with officers; update officers on DCP ongoing activities and public outreach/education initiatives	Measures of more effective patrols: contacts, elimination or reduction of problems/issues
6	**Manage property to control invasive plant species and noxious weeds to reduce fire stress on the ecosystem**		
6.1	Identify and treat (eradicate or reduce) locations infested or susceptible to invasive plant species and noxious weeds	Complete weeds assessment; record locations, identify species of concern	Assess areas surveyed and areas where invasive plant species and noxious weeds were found
6.2	Monitor locations for recurrence of invasive plant species and noxious weeds	Establish monitoring schedule; assess success of treatment/eradication against criteria; schedule additional treatments as needed	Monitor to area and/or numbers to assess eradication or reduction; eradication success is no or minimal recurrence of species
7	**Educate the public on allowable uses and current activities**		
7.1	Establish and maintain a consistent brand and design for signs, kiosks, interpretive materials, brochures, and webpage		
7.2	Identify locations and maintain database for signs and kiosks	Create/update inventory/database of locations of existing signs and markers; review recommendations of branding/interpretive planning master plan report (2011-LGA- 910C); select preferred locations for interpretive signs/kiosks	Locations for signage identified and approved; inventory/database updated
7.3	Post and maintain condition of all easement boundary signs, “Limited Use Area” signs, interpretive signs and kiosks		Inspect all signage at regular intervals, and repair in a timely manner.
7.4	Develop content, print, and distribute interpretive brochure(s) to users of the BCCE	Prepare scope of work and contract; identify locations to distribute brochures; provide brochures to Boulder City peace officers	Brochures printed and meet the contract requirements, maintain distribution to users, assess where and who uses brochures

Table 5 Management Plan Goals, Objectives, Description, and Effective Measures

7.5	Update information on BCCE webpage	Use results from 9.1 to review, confirm accuracy, and update information on Boulder City code/ordinances, use results from 4.4 to update road information and map	Information is accurate and updated
8	**Manage allowable uses**		
8.1	Monitor condition of three historic sites located on the BCCE	Photo document condition of sites; establish schedule to monitor condition; develop plan of action if sites degrade or are vandalized	Develop metrics to measure condition of historic sites
8.2	Maintain relationships and coordinate with adjacent landowners to protect conservation values of the BCCE	Establish schedule to communicate (formal and/or informal, as appropriate) with landowners on BCCE management actions, issues, and ongoing and pending projects	Relationships with adjacent landowners is reviewed annually
8.3	Monitor and coordinate with utility companies to minimize impacts from existing and proposed transmission corridors and facilities	Identify representatives for utility companies on, adjacent, or crossing BCCE (request assistance from Boulder City and/or BLM, if necessary); establish schedule to communicate (formal and/or informal, as appropriate) with representatives to exchange information	Coordination and success of minimizing impacts is reviewed annually
8.4	Review exceptions to prohibited uses (discharge of firearms) for conflicts with Boulder City Code and Ordinances and Nevada hunting regulations	Review seasonal exception for discharge of firearms for hunting/trapping against seasonal NV hunting regulations for possible conflicts, and against Boulder City Code 7- 1-3 for restricted distances; determine corrective action if conflicts exist	Possible conflict confirmed and resolved
8.5	Monitor location and effects of treated effluent discharge	Establish schedule to monitor condition and location of discharge; photo document condition of discharge channel; develop plan of action if discharge channel creates nuisance and/or undesirable habitat	Develop metrics to measure change in topography and vegetation
9	**Manage prohibited uses**		
9.1	Review and revise easement documents for conflicting uses and restrictions with Boulder City Code		
9.2	Maintain fence and gate installed around pet cemetery	Schedule inspections to monitor and maintain condition of fence and gate; repair and/or schedule repairs when damage is observed	Fence and gate maintained and repaired within a week of discovered damage
9.3	Monitor for burials of animal remains outside the fenced pet cemetery area	In conjunction with 9.1, monitor for burial activity outside fenced area; identify options to safely remove and location(s) for disposal of buried remains	Record all burials outside of fenced pet cemetery within a week of discovery

Table 5 Management Plan Goals, Objectives, Description, and Effective Measures

9.4	Monitor known and potential locations of illegal dumping activity	Establish schedule to regularly monitor locations of past dumping activities	Location of trash and debris is known, leading to 9.5
9.5	Remove trash and debris from illegal dump sites	Establish procedure and/or contract to safely remove materials from dump sites for disposal at appropriate landfill (construction debris, household trash, hazardous waste)	Trend toward less trash and debris in the BCCE
9.6	Monitor for other prohibited uses	In conjunction with inspections/monitoring of other actions, monitor site conditions and user activities for prohibited conduct; coordinate with Boulder City peace officers on observations and findings	Trend toward fewer prohibited actions in the BCCE
9.7	Install new fences and/or barriers to prohibit access of OHV into unauthorized areas	In conjunction with inspections/monitoring of other actions, monitor site conditions and user activities for prohibited conduct; coordinate with Boulder City peace officers on observations and findings	Trend toward fewer prohibited actions in the BCCE
9.8	Contact or have law enforcement contact businesses operating within the easement without the proper permits	Monitor site conditions and user activities for prohibited conduct; coordinate with Boulder City peace officers on observations and findings	Trend toward fewer prohibited actions in the BCCE

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Appendix A

Amended Interlocal Agreement, Conservation Easement Grant

The original 1994 Interlocal Agreement and Conservation Easement Grant is available at: https://files.clarkcountynv.gov/clarknv/1995%20bcce%20easement%20with%20atts.pdf?t=1616563076766&t=1616563076766

The 2010 amendment to the Interlocal Agreement and Conservation Easement Grant is available at: https://files.clarkcountynv.gov/clarknv/Environmental%20Sustainability/Desert%20Conservation/Forms%20and%20Attachments/20100803%20BCCE%20amendment%20with%20sigs.pdf?t=1616563076766&t=1616563076766

Appendix B
BCCE Expansion and Exchange Criteria

BCCE Expansion and Exchange Criteria

Any Future land expansion of the BCCE will consider the following criteria:

1. **Undeveloped Habitat Suitable for Desert Tortoise**

   Potential expansion areas should include more than 75 percent undeveloped habitat that is suitable for desert tortoise.

2. **Contiguity with the BCCE**

   Potential expansion areas should be either adjacent to the BCCE or adjacent to public lands that are also dedicated to habitat protection for tortoise, other wildlife, or plants, and also border the BCCE.

Any future requests to exchange areas within the BCCE will consider the following criteria:

1. **Quality of Desert Tortoise Habitat**

   Relative quality of desert tortoise habitat for all parcels in consideration shall be evaluated by conducting 100 percent coverage surveys in accordance with the most recent U.S. Fish and Wildlife Service (USFWS) pre-project field survey protocols for potential desert tortoise habitats. The goal of performing 100 percent coverage surveys is to compare the relative abundance of desert tortoise populations amongst all parcels proposed for land swap.

2. **Functional Size of Desert Tortoise Habitat**

   Is the area contiguous with other lands protected for tortoise? Does it meet minimum size and population requirements for an adequate reserve as defined in the revised recovery plan? Is the functional size of the land proposed for swap greater or lesser than the functional size of the habitat that DCP would be exchanging?

3. **Review for the Presence of Other Covered Species**

   The proposed exchange land should be reviewed for suitable habitat or known occurrences of other species covered by the MSHCP, or those recommended for coverage under a proposed amendment to the MSHCP.

4. **Equal or Lower Level of Habitat Fragmentation**

   Review proposed parcels for habitat fragmentation with consideration for roads, utility corridors, or other land disturbances that reduce the available habitat for desert tortoises. Review The Nature Conservancy's habitat intactness model, and determine if the proposed exchange land more or less intact.

5. **Ease of Management**

   Considerations should include BLM corridors, rights-of-way, mining claims, or other similar encumbrances that would make management of the area for the protection of desert tortoises more difficult. Also consider accessibility of the property, and any modifications required to secure the property.

6. **Equal or Greater Level of Habitat Protection**

   Is the land proposed for exchange currently managed by another agency and would they retain management of the area following the exchange? What is the land use

designation of the proposed exchange property? Can we ensure durability of mitigation actions?

7. Evaluate Proposed Land Exchanges for Loss of Mitigation Actions

Evaluate the land that DCP would be giving up for potential loss of mitigation actions. Examples of the types of mitigation actions that may be affected by proposed land swaps include: road closures and restoration, non-native weed survey and treatment, purchase of grazing allotments, etc. Can the cost of mitigation actions that would be lost be quantified?

8. Evaluate the Proposed Land Exchange for Loss of Long-term Study Areas

Are there long-term study areas/plots that would be lost through the proposed exchange? What ongoing project would be affected by the proposed exchange?

Appendix C
Restricted Activities and Required Approvals

Grant Section	Restricted Activity or Use	Requires Approval From
3(d)	Construction of trails, access facilities, or improvements	Boulder City, USFWS
4(a)	All motorized vehicle activities off designated roads and trails	Prohibited
4(a)	Competitive and organized motorized vehicle events on designated roads and trails	DCP, USFWS
4(b)	Military maneuvers, clearing for agriculture, landfills, and any other surface disturbance that diminish	Prohibited
4(c)	Grazing by cattle, horses, burros, and domestic sheep	Prohibited
4(d)	Commercial collection of flora and fauna	Prohibited
4(e)	Non-commercial collecting of flora	DCP, USFWS, Boulder City, relevant state/federal agencies
4(f)	Non-commercial collecting of fauna	DCP, USFWS, Boulder City, relevant state/federal agencies
4(g)	Dumping, disposal of refuse, littering	Prohibited
4(g)	Application of herbicides or biocides	Prohibited
4(h)	Release of captive or displaced desert tortoises or other animals, except as part of an authorized translocation program.	DCP, USFWS
4(i)	Uncontrolled dogs out of vehicles.	Prohibited
4(j)	Construction of any physical improvement	DCP, USFWS, Boulder City
4(k)	Discharge of firearms, except in conjunction with hunting or trapping from September to March	Prohibited
5(b)	Post signs on or about the BCCE for prohibited and permitted uses	DCP, Boulder City
6(a)(1)	Non-intrusive monitoring of desert tortoise populations and habitat	Boulder City
6(a)(2)	Travel on and maintain designated and signed roads and trails	Boulder City
6(a)(3)	Non-consumptive recreation including hiking, bird watching, bicycling, horseback riding, and photography	Boulder City
6(a)(4)	Parking and camping in designated areas	Boulder City, DCP, USFWS
6(a)(5)	Fire suppression	Boulder City
6(a)(6)	Approved or controlled maintenance of utilities and ancillary structures.	Boulder City
6(a)(7)	Surface disturbances that enhance quality of wildlife habitat, watershed protection, or improve opportunities for non- motorized recreation	Boulder City
6(a)(7)	Construction of visitor centers, wildlife water projects, and camping facilities.	Boulder City
6(a)(8)	Population enhancement of native species	Boulder City
6(a)(9)	Non-manipulative and non-intrusive biological or geological research (by written permit).	Boulder City
6(b)(1)	Discharge of treated wastewater effluent onto an area defined in Exhibit B to the 2010 Amendment	Boulder City, USFWS

Grant Section	Restricted Activity or Use	Requires Approval From
6(b)(2)	Construction of electrical, water, sewer, gas, drainage and other utilities to support the maintenance and operation of power generating facilities at sites within	Boulder City, USFWS
6(b)(2)	Implement best practices for construction, maintenance, and operation of infrastructure within the BCCE in accordance with Exhibit D to the 2010 Amendment	Boulder City, USFWS, DCP
6(b)(3)	Construction of utility transmission lines to connect federal utility corridors or a federal utility corridor to an existing electrical substation	Boulder City, USFWS
6(b)(3)	Implement best practices for construction, maintenance, and operation of infrastructure within BCCE in accordance with Exhibit D to the 2010 Amendment	Boulder City, USFWS, DCP

Appendix D
Permit Request Process

Requests for Third Party Activities on the Reserve Units

(Version 1_4, December 2012)

While the primary purpose of the Desert Conservation Program (DCP) reserve system properties is to provide mitigation for loss of covered species and their habitat, there are a variety of other allowable activities in the reserve system. The types of allowable uses vary among the reserve system properties as do requirements for formal, written permission for certain activities. In general, activities on DCP reserve properties that disturb the soil outside of open roads and trails, remove rocks, vegetation, seeds or require handling or removal of animals (including insects or spiders) require written permission from the County. The DCP does not process hunting requests but defers to Nevada Department of Wildlife permits, rules, and regulations. Hunting is allowed in the reserve system where allowable by state law and local ordinances.

Request Requirements

All requests must be made in writing or by email. Minimum request details include:

- Requestor name and contact info,
- Location of the activity,
- Date of the activity (range of dates is OK),
- Description and purpose of the activity,
- Description of any ground or species disturbance, and
- Description of collection of plant/animal/mineral or other materials.

Please complete and submit the attached form to DCP@ClarkCountyNV.gov but do not sign it. A signature will be requested from the applying party upon approval and will acknowledge any terms and conditions set forth by the DCP.

Notification

Approval or rejection of each request, along with any conditions on the request, will be provided to the requestor by email. Approval of a request will contain a signed copy of the following form and any terms and conditions set forth by the DCP. The actions requested are not completely approved until the requestor returns a copy of the form with their signature and date acknowledging acceptance of the Reserve Use Permission terms and conditions. Rejected applications will receive an email with a brief explanation as to why the application was rejected.

Request for Third Party Activities on the Reserve Units

Clark County Desert Conservation Program
4701 W Russell Rd, Suite 200
Las Vegas, NV 89118

dcp@ClarkCountyNV.gov
Phone (702)455-3536

Requestor's name, email, phone number(s) and mailing address:
Permission is sought for the undersigned to conduct the following activities. Requestor may also attach a summary or complete methods description. Activities:
Dates Requested:
Name of Desert Conservation Program Reserve:

This permission is not valid until a countersigned and dated copy of this form is received from the Clark County Desert Conservation Program. The undersigned shall indemnify, defend and hold harmless Clark County, Nevada and its officers, agents, and employees against any and all damages, claims, or causes of action arising from or in connection with the activities described on this form. The undersigned is responsible for compliance with all federal, state, and local laws, rules, and regulations and any terms and conditions attached to this Reserve Use Permission. A copy of the final form, including terms and conditions, must be with the undersigned at all times while conducting these activities on the reserve property.

Requestor's Signature Date

Department of Air Quality Director or Assistant Director Signature Date

Appendix E
NRCS Soil Types in the BCCE

NRCS Soil Types in the BCCE

Soil Series Name	Total Acres in the BCCE	Percent of Total Area in the BCCE	Landscape	Landform	Parent Material	Runoff	Flooding	Drainage Class
Tonopah-Arizo association	21,299	24.6	Fan Piedmont	Fan Remnants	Alluvium Derived from Mixed Sources	Low	Very Rare	Excessively Drained
Arizo association	19,255	22.2	Fan Piedmont	Fan Aprons	Mixed Alluvium	Low	Very Rare	Excessively Drained
Searchlight extremely gravelly sandy loam, 2 to 4 percent slopes	14,528	16.8	Fan Piedmont	Fan Aprons over Fan Remnants	Mixed Alluvium	Very Low	Rare	Well Drained
Hypoint gravelly sandy loam, 0 to 4 percent slopes	8,911	10.3	Piedmont	Fan Skirts	Mixed Alluvium	Very Low	Rare	Somewhat Excessively Drained
Arizo-Cafetal association	6,683	7.7	Fan Piedmont	Inset Fans	Mixed Alluvium	Low	Very Rare	Excessively Drained
Haleburu-Crosgrain-Rock outcrop association	4,886	5.6	Mountains	Backslopes of Mountains	Colluvium and/or Residuum Weathered from Volcanic Rock	Very High	None	Well Drained
Tipnat-Hypoint-Grapevine association	3,855	4.5	Bolson	Alluvial Flats	Mixed Alluvium	Low	Rare	Well Drained
Arizo-Tenwell association	2,239	2.6	Fan Piedmont	Inset Fans	Mixed Alluvium	Low	Very Rare	Excessively Drained
Nickel-Crosgrain association	2,083	2.4	Fan Piedmont	Summits of Fan Remnants	Mixed Alluvium	Very Low	None	Well Drained
Bluepoint-Tipnat-Grapevine association	849	1.0	Bolson	Sand Sheets	Eolian Sands	Negligible	Rare	Somewhat Excessively Drained

Soil Series Name	Total Acres in the BCCE	Percent of Total Area in the BCCE	Landscape	Landform	Parent Material	Runoff	Flooding	Drainage Class
Nipton-Haleburu-Rock outcrop association	605	0.7	Mountains	Northeast Facing Summits of Mountains	Colluvium and/or Residuum Weathered from Metavolcanics	Very High	None	Somewhat Excessively Drained
Haleburu-Hiddensun association	496	0.6	Mountains	Backslopes of Mountains	Colluvium and/or Residuum Weathered from Volcanic Rock	Very High	None	Well Drained
Haleburu association	364	0.4	Hills	Backslopes of Hills	Colluvium and/or Residuum Weathered from Volcanic Rock	Very High	None	Well Drained
Seanna-Goldroad-Rock outcrop association	158	0.2	Mountains	Backslopes of Hills and Mountains	Residuum Weathered from Granite	Very High	None	Well Drained
Seanna-Rock outcrop association	138	0.2	Mountains	Backslopes of Hills and Mountains	Residuum Weathered from Granite	Very High	None	Well Drained
Crosgrain very stony loam, 8 to 30 percent slopes	93	0.1	Fan Piedmont	Backslopes of Partial Ballenas	Mixed Alluvium Derived from Metamorphic Rock	Very High	None	Well Drained
Bluepoint loamy fine sand, 0 to 2 percent slopes	75	0.1	Basin Floor	Sand Sheets	Eolian Sands	Very Low	None	Somewhat Excessively Drained
Playas	14	0.0	Bolson	Playas	N/A	Negligible	N/A	N/A
Pits, gravel	9	0.0	Fan Piedmont	Fan Piedmont	N/A	N/A	N/A	N/A

Appendix F
Vegetation Inventory

The following table lists all vegetation species that have been inventoried within the BCCE. Vegetation surveys were conducted at 80 random locations across the BCCE from 2014-2016 and that information along with and other incidental observations during other projects were used in the creation of this list.

Plant Species of the Boulder City Conservation Easement					
Scientific Name[1]	Code[2]	Family[3]	Duration[4]	Habit[5]	Origin[6]
Yucca baccata	YUBA	Agavaceae	P	FHSSu	N
Yucca brevifolia	YUBR	Agavaceae	P	ST	N
Yucca schidigera	YUSC2	Agavaceae	P	FHST	N
Amaranthus blitoides	AMBL	Amaranthaceae	A	FH	I
Amaranthus fimbriatus	AMFI	Amaranthaceae	A	FH	N
Tidestromia oblongifolia	TIOB	Amaranthaceae	P	FHSSu	N
Amsonia tomentosa	AMTO2	Apocynaceae	P	FH	N
Asclepias erosa	ASER2	Apocynaceae	P	FHSu	N
Asclepias subulata	ASSU	Apocynaceae	P	FH	N
Acamptopappus shockleyi	ACSH	Asteraceae	P	Su	N
Acamptopappus sphaerocephalus	ACSP	Asteraceae	P	SSu	N
Adenophyllum cooperi	ADCO2	Asteraceae	P	Su	N
Adenophyllum porophylloides	ADPO	Asteraceae	P	Su	N
Ambrosia dumosa	AMDU2	Asteraceae	P	SSu	N
Ambrosia eriocentra	AMER	Asteraceae	P	SSu	N
Amphipappus fremontii	AMFR2	Asteraceae	P	S	N
Anisocoma acaulis	ANAC	Asteraceae	A	FH	N
Antheropeas lanosum	ANLA7	Asteraceae	A	FH	N
Antheropeas wallacei	ANWA	Asteraceae	A	FH	N
Artemisia ludoviciana	ARLU	Asteraceae	P	FHSu	I
Atrichoseris platyphylla	ATPL	Asteraceae	A	FH	N
Baccharis brachyphylla	BABR	Asteraceae	P	SSu	N
Baileya multiradiata	BAMU	Asteraceae	ABP	FH	N
Baileya pleniradiata	BAPL3	Asteraceae	ABP	FH	N
Bebbia juncea var. aspera	BEJUA	Asteraceae	P	SSu	N
Brickellia arguta	BRAR2	Asteraceae	P	SSu	N
Brickellia atractyloides	BRAT	Asteraceae	P	SSu	N

Scientific Name	USDA	Family	Duration	Habit	Origin
Brickellia desertorum	BRDE3	Asteraceae	P	SSu	N
Calycoseris wrightii	CAWR	Asteraceae	A	FH	N
Chaenactis carphoclinia	CHCA	Asteraceae	A	FH	N
Chaenactis fremontii	CHFR	Asteraceae	A	FH	N
Chaenactis macrantha	CHMA	Asteraceae	A	FH	N
Chaenactis stevioides	CHST	Asteraceae	A	FH	N
Chondrilla juncea	CHJU	Asteraceae	P	FH	I
Cirsium mohavense	CIMO	Asteraceae	ABP	FH	N
Cirsium neomexicanum	CINE	Asteraceae	BP	FH	N
Dicoria canescens	DICA4	Asteraceae	A	FH	N
Encelia farinosa	ENFA	Asteraceae	P	SSu	N
Encelia virginensis	ENVI	Asteraceae	P	S	N
Ericameria nauseosa	ERNA10	Asteraceae	P	SSu	N
Ericameria paniculata	ERPA29	Asteraceae	P	S	N
Erigeron divergens	ERDI4	Asteraceae	B	FH	N
Geraea canescens	GECA2	Asteraceae	A	FH	N
Glyptopleura marginata	GLMA2	Asteraceae	A	FH	N
Gutierrezia microcephala	GUMI	Asteraceae	P	SSu	N
Gutierrezia sarothrae	GUSA2	Asteraceae	P	FHSSu	N
Hymenoclea salsola	HYSA	Asteraceae	P	Su	N
Lactuca serriola	LASE	Asteraceae	AB	FH	I
Logfia californica	LOCA19	Asteraceae	A	FH	N
Logfia depressa	LODE9	Asteraceae	A	FH	N
Machaeranthera arida	MAAR5	Asteraceae	A	FH	N
Machaeranthera pinnatifida	MAPI	Asteraceae	P	FHSu	N
Malacothrix coulteri	MACO3	Asteraceae	A	FH	N
Malacothrix glabrata	MAGL3	Asteraceae	A	FH	N
Malacothrix sonchoides	MASO	Asteraceae	A	FH	N
Monoptilon bellidiforme	MOBE	Asteraceae	A	FH	N
Pectis papposa	PEPA2	Asteraceae	A	FH	N
Picrothamnus desertorum	PIDE4	Asteraceae	P	SSu	N
Porophyllum gracile	POGR5	Asteraceae	P	Su	N
Prenanthella exigua	PREX	Asteraceae	P	FH	N
Psathyrotes annua	PSAN	Asteraceae	AP	FH	N
Psathyrotes ramosissima	PSRA	Asteraceae	AP	FHSu	N
Psilostrophe cooperi	PSCO2	Asteraceae	P	FHSu	N
Rafinesquia neomexicana	RANE	Asteraceae	A	FH	N
Senecio flaccidus	SEFL3	Asteraceae	P	FHSu	N
Stephanomeria exigua	STEX	Asteraceae	ABP	FH	N
Stephanomeria pauciflora	STPA4	Asteraceae	P	FHSu	N
Stylocline micropoides	STMI2	Asteraceae	A	FH	N
Tetradymia axillaris	TEAX	Asteraceae	P	SSu	N
Thymophylla pentachaeta	THPE4	Asteraceae	P	FHSu	N

Scientific Name	USDA	Family	Duration	Habit	Origin
Uropappus lindleyi	URLI5	Asteraceae	A	FH	N
Viguiera parishii	VIPA14	Asteraceae	P	SSu	N
Xylorhiza tortifolia	XYTO2	Asteraceae	P	FHSu	N
Chilopsis linearis	CHLI2	Bignoniaceae	P	ST	N
Amsinckia menziesii	AMME	Boraginaceae	A	FH	N
Amsinckia tessellata	AMTE3	Boraginaceae	A	FH	N
Cryptantha angustifolia	CRAN4	Boraginaceae	A	FH	N
Cryptantha barbigera	CRBA5	Boraginaceae	A	FH	N
Cryptantha circumscissa	CRCI2	Boraginaceae	A	FH	N
Cryptantha confertiflora	CRCO12	Boraginaceae	P	FHSu	N
Cryptantha decipiens	CRDE	Boraginaceae	A	FH	N
Cryptantha dumetorum	CRDU	Boraginaceae	A	FH	N
Cryptantha gracilis	CRGR3	Boraginaceae	A	FH	N
Cryptantha holoptera	CRHO3	Boraginaceae	AP	FH	N
Cryptantha maritima	CRMA7	Boraginaceae	A	FH	N
Cryptantha micrantha	CRMI	Boraginaceae	A	FH	N
Cryptantha nevadensis	CRNE2	Boraginaceae	A	FH	N
Cryptantha pterocarya	CRPT	Boraginaceae	A	FH	N
Cryptantha recurvata	CRRE5	Boraginaceae	A	FH	N
Cryptantha sp.	CRYPT	Boraginaceae	-	-	N
Cryptantha utahensis	CRUT	Boraginaceae	A	FH	N
Cryptantha virginensis	CRVI5	Boraginaceae	BP	FH	N
Lappula occidentalis	LAOC3	Boraginaceae	AB	FH	N
Pectocarya heterocarpa	PEHE	Boraginaceae	A	FH	N
Pectocarya penicillata	PEPE26	Boraginaceae	A	FH	N
Pectocarya platycarpa	PEPL	Boraginaceae	A	FH	N
Pectocarya recurvata	PERE	Boraginaceae	A	FH	N
Pectocarya setosa	PESE	Boraginaceae	A	FH	N
Plagiobothrys jonesii	PLJO	Boraginaceae	A	FH	N
Tiquilia canescens	TICA3	Boraginaceae	P	Su	N
Tiquilia plicata	TIPL2	Boraginaceae	P	FHSu	N
Arabis pulchra	ARPU2	Brassicaceae	P	FHSu	N
Brassica juncea	BRJU	Brassicaceae	AP	FH	I
Brassica nigra	BRNI	Brassicaceae	A	FH	I
Brassica tournefortii	BRTO	Brassicaceae	A	FH	I
Chorispora tenella	CHTE2	Brassicaceae	A	FH	I
Descurainia pinnata	DEPI	Brassicaceae	ABP	FH	N
Descurainia sophia	DESO2	Brassicaceae	AB	FH	I
Dithyrea californica	DICA7	Brassicaceae	A	FH	N
Draba cuneifolia	DRCU	Brassicaceae	A	FH	N
Guillenia lasiophylla	GULA4	Brassicaceae	A	FH	N
Lepidium dictyotum	LEDI2	Brassicaceae	A	FH	N
Lepidium fremontii var. fremontii	LEFRF	Brassicaceae	P	SSu	N
Lepidium lasiocarpum	LELA	Brassicaceae	AB	FH	N
Lesquerella tenella	LETE3	Brassicaceae	A	FH	N

Scientific Name	USDA	Family	Duration	Habit	Origin
Malcolmia africana	MAAF	Brassicaceae	A	FH	I
Sisymbrium altissimum	SIAL2	Brassicaceae	AB	FH	I
Sisymbrium irio	SIIR	Brassicaceae	A	FH	I
Sisymbrium orientale	SIOR4	Brassicaceae	A	FH	I
Stanleya pinnata	STPI	Brassicaceae	P	FHSu	N
Streptanthella longirostris	STLO4	Brassicaceae	AB	FH	N
Thysanocarpus	THCU	Brassicaceae	A	FH	N
Buddleja utahensis	BUUT	Buddlejaceae	P	SSu	N
Cylindropuntia acanthocarpa	CYAC8	Cactaceae	P	S	N
Cylindropuntia bigelovii	CYBI9	Cactaceae	P	SSu	N
Cylindropuntia echinocarpa	CYEC3	Cactaceae	P	S	N
Cylindropuntia ramosissima	CYRA9	Cactaceae	P	S	N
Echinocactus polycephalus var. polycephalus	ECPOP	Cactaceae	P	S	N
Echinocereus triglochidiatus	ECTR	Cactaceae	P	S	N
Echinocereus engelmannii	ECEN	Cactaceae	P	S	N
Ferocactus cylindraceus	FECY	Cactaceae	P	S	N
Grusonia parishii	GRPA11	Cactaceae	P	S	N
Mammillaria tetrancistra	MATE4	Cactaceae	P	S	N
Opuntia basilaris var. basilaris	OPBAB2	Cactaceae	P	ST	N
Opuntia phaeacantha	OPPH	Cactaceae	P	S	N
Opuntia polyacantha	OPPO	Cactaceae	P	S	N
Sclerocactus johnsonii	SCJO	Cactaceae	P	S	N
Nemacladus glanduliferus var. orientalis	NEGLO	Campanulaceae	A	FH	N
Nemacladus sigmoideus	NESI	Campanulaceae	A	FH	N
Mortonia utahensis	MOUT	Celastraceae	P	S	N
Atriplex argentea	ATAR2	Chenopodiaceae	AP	FH	N
Atriplex canescens	ATCA2	Chenopodiaceae	P	S	N
Atriplex confertifolia	ATCO	Chenopodiaceae	P	SSu	N
Atriplex elegans	ATEL	Chenopodiaceae	AP	FH	N
Atriplex hymenelytra	ATHY	Chenopodiaceae	P	S	N
Atriplex polycarpa	ATPO	Chenopodiaceae	P	S	N
Chenopodium berlandieri	CHBE4	Chenopodiaceae	A	FH	N
Chenopodium incanum	CHIN2	Chenopodiaceae	A	FH	N
Chenopodium sp.	CHENO	Chenopodiaceae	-	-	-
Grayia spinosa	GRSP	Chenopodiaceae	P	SSu	N
Halogeton glomeratus	HAGL	Chenopodiaceae	A	FH	I
Krascheninnikovia lanata	KRLA2	Chenopodiaceae	P	SSu	N
Monolepis nuttalliana	MONU	Chenopodiaceae	A	FH	N
Salsola paulsenii	SAPA8	Chenopodiaceae	A	FH	I
Salsola tragus	SATR12	Chenopodiaceae	A	FH	I
Suaeda moquinii	SUMO	Chenopodiaceae	P	FHSSu	N
Cuscuta californica	CUCA	Cuscutaceae	P	FHV	N
Cuscuta sp.	CUSCU	Cuscutaceae	-	-	-

Scientific Name	USDA	Family	Duration	Habit	Origin
Ephedra aspera	EPAS	Ephedraceae	P	SSu	N
Ephedra nevadensis	EPNE	Ephedraceae	P	SSu	N
Ephedra torreyana	EPTO	Ephedraceae	P	SSu	N
Ephedra viridis	EPVI	Ephedraceae	P	S	N
Argythamnia neomexicana	ARNE2	Euphorbiaceae	AP	FH	N
Chamaesyce abramsiana	CHAB2	Euphorbiaceae	A	FH	N
Chamaesyce albomarginata	CHAL11	Euphorbiaceae	P	FH	N
Chamaesyce arizonica	CHAR18	Euphorbiaceae	P	FH	N
Chamaesyce micromera	CHMI7	Euphorbiaceae	A	FH	N
Chamaesyce polycarpa	CHPO12	Euphorbiaceae	AP	FH	N
Chamaesyce setiloba	CHSE8	Euphorbiaceae	A	FH	N
Croton californicus	CRCA5	Euphorbiaceae	P	FHSu	N
Tragia ramosa	TRRA5	Euphorbiaceae	P	FHSSuV	N
Astragalus layneae	ASLA8	Fabaceae	P	FH	N
Astragalus lentiginosus	ASLE8	Fabaceae	ABP	FHSSu	N
Astragalus nuttallianus	ASNU4	Fabaceae	AP	FH	N
Astragalus sabulonum	ASSA2	Fabaceae	AP	FH	N
Astragalus tephrodes	ASTE8	Fabaceae	P	FH	N
Dalea mollis	DAMO	Fabaceae	A	FHSu	N
Dalea mollissima	DAMO2	Fabaceae	AP	FH	N
Hoffmannseggia glauca	HOGL2	Fabaceae	P	FHSu	N
Lotus strigosus	LOST4	Fabaceae	A	FH	N
Lupinus agardhianus	LUAG	Fabaceae	A	FH	N
Lupinus flavoculatus	LUFL	Fabaceae	A	FH	N
Lupinus shockleyi	LUSH	Fabaceae	A	FH	N
Prosopis glandulosa	PRGL2	Fabaceae	P	ST	N
Psorothamnus fremontii	PSFR	Fabaceae	P	S	N
Psorothamnus polydenius	PSPO	Fabaceae	P	S	N
Senegalia greggii	SEGR4	Fabaceae	P	ST	N
Senna armata	SEAR8	Fabaceae	P	S	N
Erodium cicutarium	ERCI6	Geraniaceae	AB	FH	I
Erodium texanum	ERTE13	Geraniaceae	AB	FH	N
Eucrypta micrantha	EUMI2	Hydrophyllaceae	A	FH	N
Nama demissum	NADE	Hydrophyllaceae	A	FH	N
Nama pusillum	NAPU	Hydrophyllaceae	A	FH	N
Phacelia ivesiana	PHIV	Hydrophyllaceae	A	FH	N
Phacelia crenulata	PHCR	Hydrophyllaceae	A	FH	N
Phacelia fremontii	PHFR2	Hydrophyllaceae	A	FH	N
Phacelia neglecta	PHNE	Hydrophyllaceae	A	FH	N
Phacelia palmeri	PHPA13	Hydrophyllaceae	A	FH	N
Phacelia pulchella	PHPU	Hydrophyllaceae	A	FH	N
Phacelia rotundifolia	PHRO2	Hydrophyllaceae	A	FH	N
Phacelia vallis-mortae	PHVA2	Hydrophyllaceae	A	FH	N
Krameria erecta	KRER	Krameriaceae	P	SSu	N
Krameria grayi	KRGR	Krameriaceae	P	SSu	N

Scientific Name	USDA	Family	Duration	Habit	Origin
Hyptis emoryi	HYEM	Lamiaceae	P	S	N
Salazaria mexicana	SAME	Lamiaceae	P	S	N
Salvia columbariae	SACO6	Lamiaceae	A	FH	N
Salvia dorrii	SADO4	Lamiaceae	P	SSu	N
Androstephium breviflorum	ANBR4	Liliaceae	P	FH	N
Calochortus flexuosus	CAFL	Liliaceae	P	FHV	N
Eucnide urens	EUUR	Loasaceae	P	Su	N
Mentzelia affinis	MEAF2	Loasaceae	A	FH	N
Mentzelia albicaulis	MEAL6	Loasaceae	A	FH	N
Mentzelia involucrata	MEIN5	Loasaceae	A	FH	N
Mentzelia multiflora	MEMU3	Loasaceae	BP	FH	N
Mentzelia obscura	MEOB3	Loasaceae	A	FH	N
Mentzelia oreophila	MEOR3	Loasaceae	BP	FHSu	N
Mentzelia pterosperma	MEPT	Loasaceae	BP	FH	N
Mentzelia tricuspis	METR2	Loasaceae	A	FH	N
Petalonyx nitidus	PENI	Loasaceae	P	SSu	N
Petalonyx parryi	PEPA13	Loasaceae	P	SSu	N
Malva sp.	MALVA	Malvaceae	-	-	I
Sphaeralcea ambigua	SPAM2	Malvaceae	P	FHSu	N
Abronia villosa	ABVI	Nyctaginaceae	A	FH	N
Allionia incarnata	ALIN	Nyctaginaceae	AP	FH	N
Boerhavia coccinea	BOCO	Nyctaginaceae	P	FH	N
Boerhavia erecta	BOER	Nyctaginaceae	AP	FH	N
Boerhavia wrightii	BOWR	Nyctaginaceae	A	FH	N
Mirabilis laevis	MILA6	Nyctaginaceae	P	FHSu	N
Mirabilis multiflora	MIMU	Nyctaginaceae	P	FHSu	N
Selinocarpus nevadensis	SENE5	Nyctaginaceae	P	FHSu	N
Menodora spinescens	MESP2	Oleaceae	P	S	N
Camissonia boothii	CABO7	Onagraceae	A	FH	N
Camissonia brevipes	CABR23	Onagraceae	A	FH	N
Camissonia chamaenerioides	CACH12	Onagraceae	A	FH	N
Camissonia claviformis	CACL4	Onagraceae	A	FH	N
Camissonia refracta	CARE2	Onagraceae	A	FH	N
Camissonia walkeri	CAWA3	Onagraceae	AP	FH	N
Oenothera albicaulis	OEAL	Onagraceae	A	FH	N
Oenothera caespitosa	OECA10	Onagraceae	P	FHSu	N
Oenothera deltoides	OEDE2	Onagraceae	AP	FH	N
Oenothera primiveris	OEPR	Onagraceae	A	FH	N
Oenothera suffrutescens (formerly Gaura coccinea)	OESU3	Onagraceae	P	FHSu	N
Castilleja angustifolia	CAAN7	Orobanchaceae	P	FH	N
Orobanche cooperi	ORCO4	Orobanchaceae	A	FH	N
Argemone munita	ARMU	Papaveraceae	AP	FH	N
Eschscholzia californica	ESCA2	Papaveraceae	AP	FH	N
Eschscholzia glyptosperma	ESGL	Papaveraceae	A	FH	N

Scientific Name	USDA	Family	Duration	Habit	Origin
Eschscholzia minutiflora	ESMI	Papaveraceae	A	FH	N
Plantago ovata	PLOV	Plantaginaceae	A	FH	N
Plantago patagonica	PLPA2	Plantaginaceae	A	FH	N
Achnatherum hymenoides	ACHY	Poaceae	P	G	N
Achnatherum speciosum	ACSP12	Poaceae	P	G	N
Aristida purpurea	ARPU9	Poaceae	AP	G	N
Arundo donax	ARDO4	Poaceae	P	GSSu	I
Avena barbata	AVBA	Poaceae	A	G	I
Bouteloua aristidoides	BOAR	Poaceae	A	G	N
Bouteloua barbata	BOBA2	Poaceae	A	G	N
Bromus arizonicus	BRAR4	Poaceae	A	G	N
Bromus berteroanus	BRBE6	Poaceae	A	G	I
Bromus rubens	BRRU2	Poaceae	A	G	I
Bromus tectorum	BRTE	Poaceae	A	G	I
Dasyochloa pulchella	DAPU7	Poaceae	P	G	N
Elymus elymoides	ELEL5	Poaceae	P	G	N
Heteropogon contortus	HECO10	Poaceae	P	G	N
Hordeum murinum	HOMU	Poaceae	A	G	I
Muhlenbergia porteri	MUPO2	Poaceae	P	G	N
Munroa squarrosa	MUSQ3	Poaceae	A	G	N
Phalaris sp.	PHALA2	Poaceae	-	-	-
Pleuraphis rigida	PLRI3	Poaceae	P	G	N
Poa bigelovii	POBI	Poaceae	A	G	N
Poa secunda	POSE	Poaceae	P	G	N
Polypogon monspeliensis	POMO5	Poaceae	A	G	I
Schismus arabicus	SCAR	Poaceae	A	G	I
Schismus barbatus	SCBA	Poaceae	A	G	I
Sporobolus cryptandrus	SPCR	Poaceae	P	G	N
Tridens muticus	TRMU	Poaceae	P	G	N
Vulpia octoflora	VUOC	Poaceae	A	G	N
Aliciella hutchinsifolia	ALHU6	Polemoniaceae	A	FH	N
Aliciella latifolia (formerly Gilia latifolia)	ALLA13	Polemoniaceae	A	FH	N
Aliciella nyensis	ALNY2	Polemoniaceae	A	FH	N
Eriastrum diffusum	ERDI2	Polemoniaceae	A	FH	N
Eriastrum eremicum	ERER2	Polemoniaceae	A	FH	N
Eriastrum sparsiflorum	ERSP3	Polemoniaceae	A	FH	N
Gilia inconspicua	GIIN2	Polemoniaceae	A	FH	N
Gilia scopulorum	GISC	Polemoniaceae	A	FH	N
Gilia stellata	GIST	Polemoniaceae	A	FH	N
Ipomopsis polycladon	IPPO2	Polemoniaceae	A	FH	N
Langloisia setosissima (spotted flrs.)	LASE3	Polemoniaceae	A	FH	N
Langloisia setosissima ssp. Setosissima (purple	LASES	Polemoniaceae	A	FH	N
Linanthus bigelovii	LIBI2	Polemoniaceae	A	FH	N

Scientific Name	USDA	Family	Duration	Habit	Origin
Linanthus demissus	LIDE2	Polemoniaceae	A	FH	N
Linanthus filiformis (formerly Gilia filiformis)	LIFI3	Polemoniaceae	A	FH	N
Linanthus jonesii	LIJO	Polemoniaceae	A	FH	N
Linanthus pungens	LIPU11	Polemoniaceae	P	FHSu	N
Loeseliastrum matthewsii	LOMA10	Polemoniaceae	A	FH	N
Loeseliastrum schottii	LOSC6	Polemoniaceae	A	FH	N
Chorizanthe brevicornu	CHBR	Polygonaceae	A	FH	N
Chorizanthe corrugata	CHCO6	Polygonaceae	A	FH	N
Chorizanthe rigida	CHRI	Polygonaceae	A	FH	N
Eriogonum deflexum	ERDE6	Polygonaceae	A	FH	N
Eriogonum fasciculatum	ERFA2	Polygonaceae	P	SSu	N
Eriogonum inflatum	ERIN4	Polygonaceae	AP	FH	N
Eriogonum insigne	ERIN10	Polygonaceae	A	FH	N
Eriogonum maculatum	ERMA2	Polygonaceae	A	FH	N
Eriogonum nidularium	ERNI4	Polygonaceae	A	FH	N
Eriogonum pusillum	ERPU6	Polygonaceae	A	FH	N
Eriogonum reniforme	ERRE3	Polygonaceae	A	FH	N
Eriogonum thomasii	ERTH	Polygonaceae	A	FH	N
Eriogonum trichopes	ERTR8	Polygonaceae	A	FH	N
Oxytheca perfoliata	OXPE2	Polygonaceae	A	FH	N
Pterostegia drymarioides	PTDR	Polygonaceae	A	FH	N
Rumex hymenosepalus	RUHY	Polygonaceae	P	FH	N
Cheilanthes parryi	CHPA4	Pteridaceae	P	FH	N
Anemone tuberosa	ANTU	Ranunculaceae	P	FH	N
Delphinium parishii	DEPA	Ranunculaceae	P	FH	N
Oligomeris linifolia	OLLI	Resedaceae	A	FH	N
Coleogyne ramosissima	CORA	Rosaceae	P	S	N
Fallugia paradoxa	FAPA	Rosaceae	P	S	N
Prunus fasciculata	PRFA	Rosaceae	P	S	N
Galium proliferum	GAPR	Rubiaceae	A	FH	N
Galium stellatum	GAST	Rubiaceae	P	FHSu	N
Thamnosma montana	THMO	Rutaceae	P	Su	N
Mimulus bigelovii	MIBI6	Scrophulariaceae	A	FH	N
Mimulus parryi	MIPA4	Scrophulariaceae	A	FH	N
Mimulus rubellus	MIRU	Scrophulariaceae	A	FH	N
Mohavea breviflora	MOBR	Scrophulariaceae	A	FH	N
Neogaerrhinum filipes	NEFI	Scrophulariaceae	A	FH	N
Neogaerrhinum filipes	NEFI	Scrophulariaceae	A	FHV	N
Penstemon bicolor ssp. roseus	PEBIR	Scrophulariaceae	P	FH	N
Datura wrightii	DAWR2	Solanaceae	AP	FHSu	N
Lycium andersonii	LYAN	Solanaceae	P	S	N
Lycium cooperi	LYCO2	Solanaceae	P	S	N
Lycium pallidum	LYPA	Solanaceae	P	S	N
Nicotiana attenuata	NIAT	Solanaceae	A	FH	N

Scientific Name	USDA	Family	Duration	Habit	Origin
Nicotiana obtusifolia	NIOB	Solanaceae	ABP	FHSu	N
Physalis crassifolia	PHCR4	Solanaceae	AP	FHSu	N
Quincula lobata	QULO2	Solanaceae	P	FH	N
Tamarix ramosissima	TARA	Tamaricaceae	P	ST	I
Parietaria hespera	PAHE5	Utricaceae	AP	FH	N
Glandularia gooddingii	GLGO	Verbenaceae	P	FH	N
Phoradendron californicum	PHCA8	Viscaceae	P	SSu	N
Kallstroemia californica	KACA	Zygophyllaceae	A	FH	N
Larrea tridentata	LATR2	Zygophyllaceae	P	S	N

[1] Nomenclature according to USDA-NRCS. 2021. The PLANTS Database (http://plants.usda.gov)

[2] Codes are adopted from the USDA "symbol" comprised of the first two letters of the genus plus the first two letters of the species name. Numbers are used where necessary to distinguish among species with identical four-letter codes. A fifth letter is used to distinguish sub-species or varieties.

[3] The taxonomic family in which the species has been placed.

[4] The typical lifespan: **A**= annual, **B**= biennial or short-lived perennial, **P**= perennial.

[5] The growth habit or form: **G**= graminoid or grass-like, **F**= forb or herbaceous plant with no woody aboveground tissue, **S**= shrub or perennial, multi-stemmed woody plant typically <5m tall, **Su**= subshrub or low-growing shrub typically <0.5m tall, **T**= tree or perennial woody plant with a single stem and typically >5m tall.

6 Native status, **N**= native to Nevada, **I**= introduced to Nevada

Appendix G
Contact Information for Management, Safety, and Services

Contacts

Property Management, Safety, and Services

Agency	Phone Number	Purpose
Desert Conservation Program	702-455-3536	Property and Easement – Management
Boulder City Community Development Department	702-293-9282	Property and Easement – Management
Bureau of Land Management	702-515-5000	Utility Corridors – Management
Boulder City Fire Department	911	Fire – Emergency
		Medical – Emergency
	702-293-9228	Fire Station
Boulder City Police Department	911	Law Enforcement – Emergency
	311	Law Enforcement – Non-emergency
	702-293-9224	Police Station
Nevada Highway Patrol	911	Traffic – Emergency
	702-486-4100	Southern Command
Nevada Department of Transportation	775-888-7689	Highway Tortoise Fences – Maintenance
Bureau of Land Management / National Park Service	702-631-2350	Wildland Fire – Emergency
	702-515-5300	Interagency Communications Center – Non- emergency
	702-293-8932	Law Enforcement – Emergency
	702-293-8998	Law Enforcement – Non-emergency