

**APPENDIX C: WILDLIFE SPECIES OBSERVED, OVERTON POWER 9-YEAR PLAN SURVEYS (2011)**

Common Name	Scientific Name	Species Status
<b>Reptiles</b>		
<i>Callisaurus draconoides</i>	Zebratail lizard	Common
<i>Cnemidophorus tigris</i>	Western whiptail lizard	Common
<i>Crotalus cerastes</i>	Sidewinder rattlesnake	Covered under CCMSHCP <sup>1</sup>
<i>Crotaphytus insularis bicintores</i>	Great Basin collared lizard	Covered under CCMSHCP <sup>1</sup>
<i>Dipsosaurus dorsalis</i>	Desert iguana	Covered under CCMSHCP <sup>1</sup>
<i>Gambelia wislizenii</i>	Leopard lizard	Covered under CCMSHCP <sup>1</sup>
<i>Gopherus agassizii</i>	Desert tortoise	G4 <sup>2</sup> , S3 <sup>3</sup> , LTNL <sup>4</sup> , S <sup>5</sup> , T <sup>6</sup> , YES <sup>7</sup>
<i>Masticophis flagellum</i>	Coachwhip	Common
<i>Phrynosoma platyrhinos</i>	Horned lizard	Evaluation under CCMSHCP <sup>1</sup>
<i>Uta stansburiana</i>	Side-blotched lizard	Common
<b>Mammals</b>		
<i>Ammospermophilus leucurus</i>	Antelope ground squirrel	Common
<i>Canis latrans</i>	Coyote	Common
<i>Lepus californicus</i>	Black tailed jackrabbit	Common
<i>Lynx rufus</i>	Bobcat	Common
<i>Neotoma spp</i>	Packrat	Common
<i>Spermophilus tereticaudus</i>	Round tailed ground squirrel	Common
<i>Sylvilagus audubonii</i>	Cottontail rabbit	Common
<i>Vulpes velox</i>	Kitfox	Evaluation under CCMSHCP <sup>1</sup> , YES <sup>7</sup>
<b>Birds</b>		
<i>Accipiter cooperii</i>	Cooper's hawk	Common
<i>Alectoris chukar</i>	Chukar	Common
<i>Ardea herodias</i>	Great blue heron	Common
<i>Athene cunicularia</i>	Burrowing owl	xC2 <sup>8</sup> , NC <sup>9</sup> , YES <sup>7</sup>
<i>Bubo virginianus</i>	Great horned owl	Common
<i>Buteo jamaicensis</i>	Red-tailed hawk	Common
<i>Buteo lagopus</i>	Rough-legged hawk	Common
<i>Callipepla gambelii</i>	Gambels quail	Common
<i>Calypte sp.</i>	Hummingbird unk	Common
<i>Campylorhynchus brunneicapillus</i>	Cactus wren	Watch list under CCMSHCP <sup>1</sup>
<i>Cathartes aura</i>	Turkey vulture	Common
<i>Chordeiles minor</i>	Common night hawk	Common
<i>Columba livia</i>	Rock dove	Common
<i>Corvus corax</i>	Raven	Common
<i>Egretta thula</i>	Snowy egret	Common
<i>Eremophila alpestris</i>	Horned lark	Common

Common Name	Scientific Name	Species Status
<i>Euphagus cyanocephalus</i>	Brewer's blackbird	Common
<i>Falco mexicanus</i>	Prairie falcon	N <sup>10</sup> , YES <sup>7</sup>
<i>Falco sparverius</i>	American kestrel	Common
<i>Geococcyx californicus</i>	Greater road runner	Common
<i>Hirundo spp</i>	Swallow	Common
<i>Icterus parisorum</i>	Scott's oriole	Common
<i>Lanius ludovicianus</i>	Loggerhead shrike	Evaluation under CCMSHCP <sup>1</sup>
<i>Larus spp</i>	Sea gull	Common
<i>Mimus polyglottos</i>	Mocking bird	Common
<i>Phainopepla nitens</i>	Phainopepla	N <sup>10</sup> , YES <sup>7</sup> , Watch list under CCMSHCP <sup>1</sup>
<i>Phalacrocorax auritus</i>	Double-crested cormorant	Common
<i>Phalaenoptilus nuttallii</i>	Poorwill	Common
<i>Piranga ludoviciana</i>	Western tanager	Common
<i>Salpinctes obsoletus</i>	Rock wren	Common
<i>Tyrannus verticalis</i>	Western kingbird	Common
<i>Zenaida macroura</i>	Mourning dove	Common
<i>Zonotrichia leucophrys</i>	White crowned sparrow	Common

<sup>1</sup> Clark County Multiple Species Habitat Conservation Plan

<sup>2</sup> Nevada Natural Heritage Program (NNHP) Global (Grank) Rank 4, apparently secure, though frequently quite rare through parts of its range, especially at its periphery.

<sup>3</sup> NNHP State (Srank) Rank 3, rare and local throughout its range, or with very restricted range, or otherwise vulnerable to extinction.

<sup>4</sup> U.S. Fish and Wildlife Service (USFWS) Listed Threatened - likely to be classified as Endangered in the foreseeable future if present trends continue, Not Listed (no status) in a portion of the species' range.

<sup>5</sup> Nevada Special Status Species - USFWS listed, proposed or candidate for listing, or protected by Nevada state law

<sup>6</sup> U.S. Forest Service (USFS) Region 4 and/or Region 5 Threatened species

<sup>7</sup> State Protected Species under Nevada Revised Statutes 501.

<sup>8</sup> USFWS Former Category-2 Candidate, now "species of concern"

<sup>9</sup> BLM Nevada Special Status Species - designated Sensitive by State Office, BLM California Special Status Species (see definitions S and N)

<sup>10</sup> BLM Nevada Special Status Species - designated Sensitive by State Office

**APPENDIX D: CONSULTATION LETTERS FROM USFWS AND NDOW**

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# United States Department of the Interior



**FISH AND WILDLIFE SERVICE**  
Nevada Fish and Wildlife Office  
470 I North Torrey Pines Drive  
Las Vegas, Nevada 89130  
Ph: (702) 515-5230 - Fax: (702) 515-5231

Date: February 9, 2010  
File No. 84320-20JO-SL-0160

Ms. Crystal Cogar  
Supervising Biologist  
Knight and Leavitt Associates  
3133 West Post Road  
Las Vegas, Nevada 89 118

Dear Ms. Cogar:

Subject: Species List for Overton Power District #5 Transmission Line Upgrade,  
Clark County, Nevada

This responds to your letter dated January 13, 2010, requesting information on threatened and endangered species that may occur near the project area, which encompasses a wide area across Clark County, Nevada. We have determined that the following federally listed and candidate species may occur near the project area:

- Desert tortoise (*Gopherus agassizii*) (Mojave population), threatened, and critical habitat
- Southwestern willow flycatcher (*Empidonax traillii extimus*), endangered, and critical habitat
- Yuma clapper rail (*Ra/Jus longirostris Yllmanensis*), endangered
- Virgin River chub (*Gila seminuda*), endangered, and critical habitat
- Woundfin (*Plagopteryllus argenlissimilis*), endangered, and critical habitat
- Las Vegas Buckwheat (*Eriogonum corymbosum* var. *nilesii*), candidate

This response fulfills the requirement of the Fish and Wildlife Service (Service) to provide information on federally listed species pursuant to section 7(c) of the Endangered Species Act of 1973 (Act), as amended (16 U.S.C. 1531 *et seq.*), for projects that are authorized, funded, or carried out by a Federal agency.

Based on the information provided in your correspondence, portions of the proposed project occur within or near critical habitat for several listed species. Spatial data and maps are available from the Service at <http://crithab.fws.gov>.



Because ephemeral washes may occur in or in the vicinity of the project area, we ask that you be aware of potential impacts project activities may have on these resources. Discharge of fill material into wetlands or waters of the United States is regulated by the U.S. Army Corps of Engineers (Corps) pursuant to section 404 of the Clean Water Act of 1972, as amended. We recommend you contact the Corps' Regulatory Section at 321 North Mall Drive, Suite L-101, St. George, Utah 84790-7314, (435) 986-3979 regarding the possible need for a permit.

Based on the Service's conservation responsibilities and management authority for migratory birds under the Migratory Bird Treaty Act (MBTA) of 1918, as amended (16 U.S.C. 703 et seq.), we are concerned about potential impacts the proposed project may have on migratory birds in the area. Under the MBTA, nests (nests with eggs or young) of migratory birds may not be harmed, nor may migratory birds be killed. Given these concerns, we recommend that any land clearing or other surface disturbance associated with Proposed Actions within the project area be conducted outside the avian breeding season to avoid potential destruction of bird nests or young, or birds that breed in the area. If this is not feasible, we recommend a qualified biologist survey the area prior to land clearing. If nests are located, or if other evidence of nesting (i.e., mated pairs, territorial defense, carrying nesting material, transporting food) is observed, a protective buffer (the size depending on the habitat requirements of the species) should be delineated and the entire area avoided to prevent destruction or disturbance to nests until they are no longer active.

Most of the species for which we have concern are also on the Animal and Plant At-Risk Tracking List for Nevada maintained by the State of Nevada's Natural Heritage Program (Heritage). Instead of maintaining our own list, we adopted Heritage's At-Risk list and are partnering with them to provide distribution data and information on the conservation needs for sensitive species to agencies or project proponents. As you may know, the mission of Heritage is to continually evaluate the conservation priorities of native plants, animals, and their habitats; particularly those most vulnerable to extinction or are in serious decline. In addition, in order to avoid future conflicts, we ask that you consider these at-risk species early in your project planning and explore management alternatives that provide for their long-term conservation.

It should be noted that many of the species on Nevada's critically endangered list are not federally listed by the Service because of the protection afforded to them under the State law. Consideration of these species during project planning and early coordination with the State is important to assist you with species conservation efforts and to prevent the need for Federal listing actions in the future.

In particular, we are concerned about the State-protected western burrowing owl (*Athene cunicularia hypugea*) and potential project impacts to this species from your project. The reduction of habitat in southern Nevada is a major threat to this species. Therefore, we recommend that the project avoid disturbing burrows that are used by burrowing owls. If this is not possible, we ask that the project incorporate recommendations in our pamphlet, "Protecting Burrowing Owls at Construction Sites in Nevada's Mojave Desert Region" (Enclosure).

We are also concerned that the project may impact the banded Gila monster (*Heloderma suspectum cincllmm*), a species listed as sensitive by Heritage and a protected species under Nevada Administrative Code 503.080. Per Nevada Administrative Codes 503.090 and 503.093, no persons shall capture, kill, or possess any part of protected wildlife without the prior written permission from Nevada Department of Wildlife (NDOW). The banded Gila monster occurs primarily in the Mojave desert scrub and salt desert scrub ecosystems in southern Nevada, southeastern California, southwestern Utah, and western Arizona. The banded Gila monster is one of only two venomous lizard species in the world. Gila monsters are difficult to locate as they spend the majority of the year in underground burrows; however, illegal collection, construction of roads, and loss of habitat continue to threaten this sensitive species. Given that the Gila monster may occur within the project area, we ask that you evaluate project impacts to any existing populations and suitable habitat for this species. If it is determined that the project may result in impacts to Gila monsters, we recommend that you contact NDOW.

We also are concerned about the Las Vegas bearpoppy (*Arctomecon cali/ornica*), which is listed as sensitive by Heritage and as critically endangered by the State of Nevada under Nevada Revised Statutes (NRS) 527.260-.300. Based on 1993 Heritage survey data, the Las Vegas bearpoppy occurs in Township 22 South, Range 62 East and Township 22 South, Range 63 East, which is the area proposed for the subject project. We recommend that a qualified biologist conduct sensitive plant surveys and that you contact Heritage for current location data on this species. As a reminder, the Las Vegas bearpoppy and its habitat may not be removed or destroyed at any time by any means except under special permit issued by the State Forester (NRS 527.270). If you determine that Las Vegas bearpoppy and its habitat occur on Federal lands within the project area and project implementation would impact this species, you are required under State law to apply for a special permit issued by the State Forester. Requests for pennits should be directed to the State Forester, Nevada Division of Forestry at 2478 Fairview Drive, Carson City, Nevada 89701, (775) 684-2500. It should be noted that many of the plant species on Nevada's critically endangered list are not federally listed by the Service because of the protection afforded to them under State law. Consideration of these species during project planning and early coordination with the State is important to assist with species conservation efforts and to prevent the need for Federal listing actions in the future.

For a specific list of at-risk species that may occur in the project area, you can obtain a data request form from the <http://heritage.nv.gov/fofnns.htm> or by contacting Heritage at 901 South Stewart Street, Suite 5002, Carson City, NV 89701-5245, 775-684-2900. Please indicate on the form that your request is being obtained as part of your coordination with the Service under the Act. During your project analysis, if you obtain new information or data for any Nevada sensitive species, we request that you provide the information to Heritage at the above address. Furthermore, certain species of fish and wildlife are classified as protected by the State of Nevada (see <http://www.leg.state.nv.us/INAC/INAC-503.html>). You must first obtain the appropriate license, permit, or written authorization from the NDOW to take or possess any parts

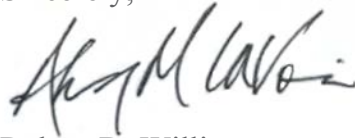
Ms. Crystal Cogar

File No. 84320-2010-SL-0160

of protected wildlife species. Please visit <http://www.ndow.org> or contact NDOW at 4747 Vegas Dr. Las Vegas, NV 89108, 702-486-5127.

Please reference File No. 84320-2010-SL-OJ60 in future correspondence concerning this species list. If you have questions regarding this correspondence or require additional information, please contact Phillip Cunningham in the Nevada Fish and Wildlife Office in Las Vegas at 702-515-5230.

Sincerely,

A handwritten signature in black ink, appearing to read "Robert D. Williams".

*for* Robert D. Williams  
State Supervisor

Enclosure





JIM GIBBONS  
*Governor*

STATE OF NEVADA  
**DEPARTMENT OF WILDLIFE**

1100 Valley Road  
Reno, Nevada 89512  
(775) 688-1500 Fax (775) 688-1595

**SOUTHERN REGION OFFICE**  
**4747 WEST VEGAS DRIVE**  
**LAS VEGAS, NEVADA 89108**  
**(702) 486-5127; 486-5133 FAX**

February 5, 2010

KENNETH E. MAYER  
*Director*

RICHARD L. HASKINS II  
*Deputy Director*

NDOW-SR#: 10-219

Ms. Crystal G. Cogar  
Supervising Biologist  
Knight and Leavitt Associates  
3133 West Post Road  
Las Vegas Nevada 89118

RE: Wildlife Information request for the Proposed Overton Power District 9-Year Power Line Upgrade

Dear Ms. Cogar:

Thank you for your interest in Nevada's wild life resources. The Nevada Department of Wildlife (NDOW) looks forward to reviewing drafts of the Environmental Assessment (EA) for this upcoming project. In view of the limited information received, the following is a brief description of game or wildlife of special management consideration that quickly stand out and which are known to inhabit the project region. Aquatic resources including game and special status species are not presently addressed. Along with priority species and habitat management, temporal consideration for addressing wildlife-related recreation values is requested. One comment regarding the project area map is that future renderings should distinguish State of Nevada lands, i.e. NDOW's Overton Wildlife Management Area and Nevada Division of State Park's Valley of Fire from privately and federally managed lands.

With regards to interest expressed in game species, several occur in or adjacent to the project area in patchy distribution and varying density. Wild turkey, Gambel's quail, and desert cottontail are primary upland game in the greater Moapa Valley. The latter two species would also be a consideration elsewhere along reaches of the Virgin River drainage. Migratory game birds include Mourning Dove and a variety of waterfowl and may be residents or seasonal migrants. Controlled hunting occurs on the Muddy River side of NDOW's Overton Wildlife Management Area for wild turkey (spring and fall), mourning dove and waterfowl (fall to early winter). Depending on lake levels, hunter access at the confluence of tile Muddy River and Overton Arm of Lake Mead may change.

A species of conservation priority is the desert bighorn sheep. Nearest the project area, populations inhabit the Muddy, North Muddy, Mormon, Arrow Canyon, Meadow Valley, Delamar, and Virgin mountain ranges. Certain segments of the proposed project may require consideration for desert bighorn. Desert bighorn are a BLM sensitive species and are afforded protection by the State of Nevada through its management as a high-profile big game mammal (NRS 501.005). Attendant game laws and regulations can be found in the Nevada Revised Statutes and Nevada Administrative Codes located in the Nevada Law Library, online at <http://leg.state.nv.us/law1.cfm>. Emphasis should be on chapters 501 through 505.

Where the project alignment crosses or involves the Meadow Valley Wash and Virgin and Muddy rivers, consideration for the federally and State endangered southwestern willow flycatcher is due. Suitable breeding sites and active territories have been documented at various locations along the riverine and riparian habitats. Other neo-tropical migrants like the yellow-billed cuckoo, classified by the State as Sensitive and a candidate for federal listing under the Federal Endangered Species Act, also seasonally utilize these habitats. All birds considered migratory (50 C.F.R. § 10.13) are protected under the Federal Migratory Bird Treaty Act and by the State of Nevada (NAC 503).

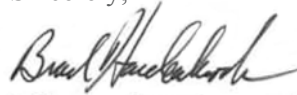
High jagged cliffs and rock faces in the Mormon, Arrow Canyon, Muddy, and Virgin mountain ranges provide suitable breeding habitat for the peregrine falcon. Although delisted from protection under the federal Endangered Species Act, the falcon remains classified by the State of Nevada as endangered. Peregrine falcons use the Overton Ann and reaches of the Muddy and Virgin rivers as foraging areas. The Overton Ann of Lake Mead serves as a wintering area for the bald eagle. Removed fairly recently from the federal list of threatened and endangered species, legal protection is still afforded by the Bald Eagle Protection Act, Migratory Bird Treaty Act and applicable State of Nevada laws. Like the peregrine falcon, the bald eagle is classified endangered by the State of Nevada. Raptors frequenting portions of the existing and proposed project alignment may include but not be limited to the golden eagle, osprey, red-tail hawk, prairie falcon, great horned owl, and burrowing owl. In anticipation of electrocution and collision hazards for large raptors are avoided in project design, the burrowing owl may be the most vulnerable by virtue of construction and maintenance activities.

The federal and State threatened desert tortoise is widely distributed in the project area as is the State protected Gila monster. Special management areas for the desert tortoise include the Mormon Mesa Area of Critical Environmental Concern (ACEC) north of the Interstate 15 alignment and the Gold Butte ACEC south and near the Virgin River. Lower density and more patchily distributed desert tortoise populations are anticipated outside of these ACEC's.

Information germane to the subject project can be found on NDOW's website. The direct link for this information is <http://www.ndow.org/about/tpubs/index.shtml#plan> where an idea of controlled hunt areas and seasons apply, and specific conservation and wildlife management references may be downloaded including reporting protocols for the Gila monster.

Again, aquatic resources and bats that may be affected by the proposed project were not addressed. Should there be any additional needs at this time, please contact Roddy Shepard, Habitat Biologist, at (702) 486-5127 x3613, or by e-mail at [rshepard@ndow.org](mailto:rshepard@ndow.org) for assistance.

Sincerely,



O. Bradford Hardenbrook  
Supervisory Habitat Biologist

RSIDBH

cc: NDOW, Files

**APPENDIX E**

**RAVEN MANAGEMENT PLAN  
FOR THE OVERTON POWER 9-YEAR PLAN  
CLARK COUNTY, NEVADA**

Prepared by  
Knight & Leavitt Associates, Inc.  
4105 Wagon Trail Avenue  
Las Vegas, NV

**REVISED FEBRUARY, 2014**



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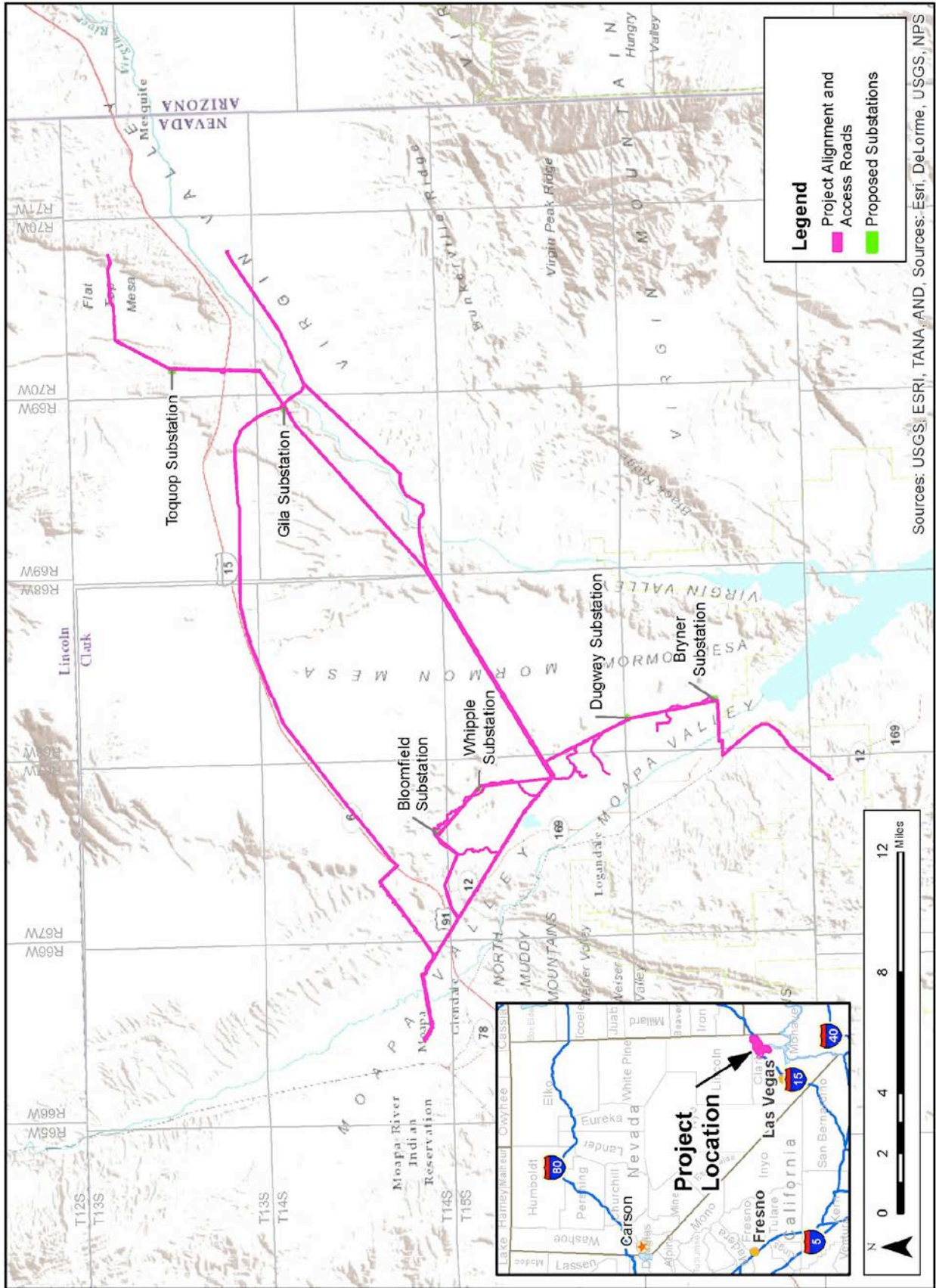
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## **1.0 INTRODUCTION**

The Overton Power District No. 5 (Power District) is proposing a 9-year plan to construct power lines and substations within its district boundary. The purpose of the project is to construct additional transmission, substation, and distribution infrastructure to serve growing industrial, commercial, and residential electrical loads within the Power District service area to the year 2030. The Power District anticipates through its ongoing resource Forecasting and Planning Program that the maximum capacity of the current 138 kilovolt (kV) transmission line will be reached in the next five years. The Power District is therefore proposing to upgrade existing power transmission facilities and construct additional facilities to provide the requisite capacity on Bureau of Land Management (BLM) administered surface.

The project area is located on BLM, Bureau of Reclamation (Reclamation), and private lands within Clark County, Nevada including the City of Mesquite and the unincorporated communities of Bunkerville, Moapa, Glendale, Logandale, and Overton. The map below provides an overview of the project location and layout.



Map 1. Project Area and Location.



## 1.1 GOALS AND OBJECTIVES

The proposed project site is occupied by the desert tortoise (*Gopherus agassizii*), a federally threatened species protected by the Endangered Species Act of 1973 and the State of Nevada. This Raven Management Plan has been developed as a measure to minimize the effects of the project features, construction and operation on the desert tortoise. By minimizing the introduction of human induced resources or structures that could attract and benefit the common raven (*Corvus corax*), the result will be decreased probability of tortoise predation. The overall purpose of this Raven Management Plan is to reduce potential direct and cumulative effects of raven predation on desert tortoise and other native animal species in the project area as a result of construction activities, increased human presence, the addition of potential perch and nest site structures, and continued operation.

The primary goals of the plan are to:

1. Prevent access to anthropogenic food and water resources.
2. Prevent nesting on project features.
3. Discourage perching on project features.
4. Collaborate with the U.S. Fish and Wildlife Service (USFWS), BLM, and Nevada Department of Fish and Wildlife (NDOW) by reporting problem ravens.

The plan objectives are to develop and implement a monitoring plan to effectively identify and address construction activities and project features that attract and enable ravens or have the potential to attract and enable ravens. The objectives include the following:

1. Educate construction personnel to prevent subsidizing ravens with anthropogenic food and water.
2. Identify and modify construction/operation practices that could provide water for ravens.
3. Identify project features where ravens are attempting to build or occupy nests and remove those nests and/or modify the feature to prevent/discourage future nesting attempts.
4. Identify project features where ravens are perching and implement measures to discourage perching within the project area and Areas of Critical Environmental Concern (ACECs) which are critical desert tortoise habitat.
5. Report problem ravens and raven issues to the USFWS, BLM, and NDOW.

This Raven Management Plan is being submitted to the BLM and the USFWS for approval prior to implementation. Raven management plans are a typical component of consultations on projects that may affect the desert tortoise. The BLM is compelled to review the design and construction operations of the proposed project to reduce or eliminate the opportunity for proliferation of ravens. Once approved, the Overton Power District will be responsible for implementing the management plan.

## 2.0 BACKGROUND

### 2.1 Raven Biology and Distribution

The common raven (*Corvus corax*) is a large bird of 24 inches with a thick neck, shaggy throat feathers, and a beak that could be compared to a Bowie knife. The common raven is entirely black, including the legs, eyes, and beak. Its plumage is glossy and appears greasy as if it were covered in oil. It has a long, wedge-shaped tail and is more slender than a crow, with longer, narrower wings.

Common ravens frequently soar in pairs and engage in a variety of aerial acrobatics, sometimes even turning upside down. In flight they are buoyant and graceful, with interspersing soaring, gliding, and slow flaps. Common ravens are not as social as crows; they tend to be solitary or in pairs except at food sources like landfills. Common ravens are confident, inquisitive birds that strut around or occasionally bound forward with light, two-footed hops.

Increasing raven populations threaten some vulnerable species including desert tortoises and sage grouse. In Nevada, ravens pose a growing problem for ranchers, wildlife managers, and preying on these two wildlife species (Anchorage Daily News, 2013). They have been implicated in causing power outages by contaminating insulators on power lines, fouling satellite dishes at the Goldstone Deep Space Site, peeling radar-absorbent material off buildings at the China Lake Naval Weapons center, pecking holes in airplane wings, stealing golf balls, opening campers' tents, and raiding cars left open at parks (The Cornell Lab of Ornithology, 2013).

Common ravens live in open and forest habitats across western and northern North America. This includes deciduous and evergreen forests, as well as high desert, sea coast, sagebrush, tundra, and grasslands. They do well around people, particularly rural settlements, but also towns and cities. Human presence has allowed ravens to expand into areas where they did not previously occur, such as using artificial ponds and irrigation to survive in deserts and living on human garbage in forests. By some estimates, raven populations nationwide have grown by 300 percent in the past 40 years. In Nevada, the increase is thought to be closer to 600 percent (Anchorage Daily News, 2013).

Common ravens will eat almost anything, including carrion; small animals from the size of mice and baby tortoises up to adult rock pigeons and nestling great blue herons; eggs; grasshoppers, beetles, scorpions, and other arthropods; fish; wolf and sled-dog dung; grains, buds, and berries; pet food; and many types of human food including unattended picnic items and garbage (The Cornell Lab of Ornithology, 2013).

Common ravens build their nests on cliffs, in trees, and on structures such as power-line towers, telephone poles, billboards, and bridges. Most of the nest building is accomplished by the female ravens, but males will bring some sticks to the nest. The nest consists of sticks broken off by the raven, approximately 3 feet long and up to an inch thick, which make up the nest base. The sticks and sometimes bones or wire are piled on the nest platform or wedged into a tree crotch, then woven together into a basket. The female raven then makes a cup from small branches and twigs which is sometimes lined with mud, sheep's wool, fur, bark strips, grasses, and sometimes trash. The whole process takes about 9 days, resulting in an often uneven nest that can be 5 feet across and 2 feet high. The inner cup is 9-12 inches across and 5-6 inches deep. Nests are often reused, although not necessarily by the same birds, from year to year (The Cornell Lab of Ornithology, 2013).

The continued success of the raven and increased human disturbance in and around the project area from urban development and the I-15 corridor has likely increased the abundance of ravens in the area. Ravens are known predators of hatchling and juvenile desert tortoise. Because of their large numbers and conspicuous predation of tortoises, ravens have been implicated as a contributor to tortoise population declines, and as a potential impediment to tortoise recovery (Boarman 1993, USFWS 1994). Measures directed at discouraging ravens by removing the availability of human-made features and resources is an important component of maintaining a stable tortoise population in the area.

## **2.2 Raven Predation and Existing Raven Attractants**

Ravens are a concern to resource managers because they prey on juvenile desert tortoises, and this predation has resulted in reduced survival rates of juvenile tortoises (Boarman, 1993). The long-term consequence of the loss of juveniles is lowered recruitment of new individuals into the breeding population, which likely significantly affects the stability and recovery of some tortoise populations (USFWS, 1994).

Direct observations by field scientists and strong circumstantial evidence prove that raven prey on juvenile desert tortoise less than 100 mm MCL in size. Direct observations include witnessing ravens attacking tortoises or finding tortoises that were injured, but still alive beneath active raven nests. Circumstantial evidence is mostly in the form of tortoise shells found beneath active raven nests and shells that bear evidence of raven predation found beneath likely perch sites and lying on the desert floor. Since the mid to late 1970's and early 1980's, raven predation appears to have had significant adverse effects on desert tortoise populations. Specifically, ravens reportedly have contributed to: (1) reduced numbers of juvenile tortoises in the hatchling to eight-year classes; (2) reduced recruitment of tortoises into the larger and older size-age classes, e.g., tortoises from 9 to 20 years of age; (3) altered the size-age class composition of the population to favor adults; and (4) overall population declines from multiple sources (BLM, 1990).

Ravens depend on human encroachment to expand into areas where they were previously absent or in low abundance. Ravens habituate to human activities and are subsidized by food and water, as well as roosting and nesting resources that are introduced or augmented by human encroachment. The Moapa Valley encompassing the project area contains residential and commercial development, including the large I-15 transportation corridor and the hotels in Mesquite, which can generate a considerable amount of food-related trash that enable the presence of ravens. Associated structures, such as buildings, signs, lamps, and utility poles provide perching and nesting opportunities that otherwise would be unavailable. Landscape irrigation, swimming pools, decorative fountains, ponds, and local rivers (Virgin and Muddy) provide valuable water resources for ravens. Wildlife kills along I-15 and other local roads are an attractant to ravens in the form of a subsidy for these opportunistic predator/scavengers.

These existing human activities and associated development present difficulties in controlling raven activities at, and adjacent to, the proposed project despite measures that will be implemented. The continued growth of raven populations as a result of human induced alterations can be expected in the Moapa Valley as development continues.

### 3.0 RAVEN MANAGEMENT

The raven management measures provided in this section are designed to discourage the presence of ravens and other avian scavengers by limiting the availability of anthropogenic (human-caused) food and water resources, as well as perch and nest site opportunities on the project site, along the transmission lines and at substations. Construction activities and the completed transmission lines and substations are likely to attract the attention of ravens. Implementing the raven management measures will be the responsibility of the project owner.

#### 3.1 Raven Management Measures

To prevent the addition of food and water subsidies, as well as attracting ravens to the proposed project, the project owner will implement the following:

**Worker Education Training.** All on-site construction personnel will be presented a desert tortoise and environmental awareness program prior to initiation of construction. The program will contain information concerning the biology and distribution of the desert tortoise, their legal status and occurrence in the project area; the definition of “take” and associated penalties; responsibilities of workers, monitors and biologists; and report procedures to be implemented in case of desert tortoise encounters or non-compliance with stipulations. The program will contain information concerning the impact of ravens on the desert tortoise and project-specific mitigation measures being implemented to discourage the presence of ravens. The training program will also contain information on the biology, distribution, and protective measures for migratory birds and other sensitive species in the project area.

**Trash Management:** All food-related trash items to be disposed of outdoors, including wrappers, cans, bottles, and food scraps, will be disposed of and placed in a covered dumpster or self-closing waste tote each day for scheduled removal from the site to prevent attracting ravens and other scavengers to the area.

**Prohibition on Intentionally Feeding Ravens:** Construction and operations workers will be prohibited from intentionally feeding ravens and other wildlife on and in the vicinity of the project site. The project-specific environmental awareness program will inform construction and operation personnel that they are prohibited from intentionally feeding ravens and will explain why feeding wildlife is detrimental to wildlife in the project area.

**Limit Availability of Water:** Water is a valuable resource in the desert and predictably limited during the late spring and summer. Construction and operation of the project is not expected to create any additional surface water that could serve as a water source for ravens. Natural (Virgin and Muddy Rivers) and constructed (Bowman Reservoir) surface water features already exist within the vicinity of the project that are available for use by resident ravens.

It is anticipated water trucks will be used for dust abatement and any runoff would percolate through the ground or evaporate. Water used for dust suppression during construction will be applied at a rate that discourages puddling. To ensure that project activities do not create a constructed surface water feature during construction, operation, maintenance, and decommissioning, water will be used in a manner that does not result in puddling. Truck cleaning areas will be kept free of standing water during construction. This will result in no substantial alteration of the existing drainage pattern of the site, and will not substantially increase the rate of runoff or contribute runoff water that would exceed the capacity of existing or planned storm water drainage systems.

## 3.2 Prevent Nesting

To prevent nesting on project structures, the project owner will implement the following measures:

**Limit Raptor Enhancement Measures:** Utility pole and tower construction will not include raptor-friendly designs or retrofits outlined in the Avian Power Line Interaction Committee guidelines (APLIC, 2006) that are intended to encourage or enhance the potential for raptor nests and that also could be used by ravens.

**Utility structures:** The project owner will only remove raven nests that are found on its structures outside the breeding season or after active nests have fledged, and at the direction of the project's Biological Services Contractor, in accordance with USFWS, BLM and NDOW guidance.

**Building structures:** The project owner will contact BLM when raven nests are found in any of the structures associated with the project.

**Hazing:** The project owner will focus on limiting raven attractants rather than hazing. Unless implemented properly, hazing could have unintended consequences. Therefore, hazing will not be implemented for this project.

**Structure Removal Following Decommission:** Elevated structures including utility poles will be removed when decommissioned and dormant; however, any components of the transmission lines that have become an integral part of the utility power grid will continue to be maintained and operated. Any actions taken to correct raven nesting (such as nest removal) will be recorded in the compliance report prepared by the biological services contractor.

## 3.3 Discourage Perching

Power poles and lattice towers typically associated with transmission line structures can provide perching opportunities in areas where natural perching opportunities are otherwise limited. Elevated perch locations offer ravens a view of their surroundings and prey below. If ravens are strongly attracted to the project site by available food and/or water sources, it will be difficult to eliminate or control perching on project structures or other nearby structures, such as existing transmission line towers. Anti-perching activities, therefore, are more focused on preventing activities that will attract ravens to the project vicinity, which include:

**Perch prevention during construction:** Construction activities may create temporary perch sites (and rarely, nest sites) for ravens by introducing equipment or materials to the landscape that provide suitable sites for ravens. Monitoring will evaluate the presence of ravens during construction. If ravens are regularly observed perching or nesting on building materials, equipment, waste piles, or other construction debris, measures will be taken to change the quality or location of these materials.

**Perch prevention during operation:** To avoid the introduction of new nest locations for ravens (and consequently non-target avian species), Overton Power will limit perching on installations by installing perch deterrents. All structures within the Mormon Mesa ACEC designated critical tortoise habitat will consist of monopoles with perch deterrents installed. Installation of perch deterrents is being jointly considered by the BLM, NDOW, and USFWS where transmission lines in addition to Overton's are present; Overton Power will be informed when a decision has been reached. Also, contingency measures will be implemented on a case-by-case basis, in consultation with the BLM, if it becomes apparent that a particular

structure is providing a favorable location for perching. This could include, for example, installation of flight diverters, triangles, plastic owls, and spikes to discourage nesting, per the APLIC Guidelines (APLIC, 2006).

**Structure removal following decommissioning:** All elevated structures related to the project, including the transmission interconnection line towers, will be removed when the project is decommissioned; however, any components that have become an integral part of the utility power grid will continue to be maintained and operated.

## **4.0 RAVEN MONITORING AND REPORTING**

### **4.1 Monitoring**

A qualified biologist will conduct surveys for ravens following construction of the transmission lines for the project. The objective of the surveys will be to characterize raven presence in the project vicinity and to monitor abundance and behavior in those areas over time. The purpose of the surveys will be to identify the local sources of human-created resources and raven activity relative to the project. The investigation will consist of personnel conducting driving surveys of the project site, the nearby transmission line corridors, and surrounding areas. Surveys will be conducted once per month between February and August for 3 years following construction.

During the surveys, the roads will be driven slowly searching for ravens, nests, and reproductive behavior. Binoculars and spotting scopes will be used to observe raven activity within 2 kilometers of the site. All raven observations will be documented, including date, time, location, habitat, number of individuals, and behavior, as well as locations of occupied and potential nests. If a raven or other avian scavenger nest is located within the ROW, it will be monitored by a BLM-approved biological monitor.

Incidental reporting of raven or nest sightings will also be provided by biologists on the project site conducting clearance surveys, monitoring construction activity, monitoring environmental compliance, translocating desert tortoises, and monitoring translocated desert tortoises. Biologists will be instructed to document raven observations during those surveys. Incidental raven observations will be included in the monitoring reports. If habitual raven offenders have been identified within these 3 years, such issues will be resolved with either additional deterrents or offender removal by USFWS. After the first 3 years, annual surveys will be completed during the maintenance flight/drive, preferably during the breeding season (February through August). These annual surveys will continue throughout the life of the project.

### **4.2 Reporting**

The project owner will submit annual monitoring summary reports at the end of the first 3 years to the BLM, USFWS, and NDOW. The annual report will include:

- The number and behavior of observed ravens.
- Raven nest and perch locations.
- Results of the management techniques.
- The observed effectiveness of the techniques in minimizing raven presence.
- Suggestions for improving raven management.
- Wildlife mortality attributed to predators.

Observations of raven predation on desert tortoises (including sign) will be reported to the designated contacts at BLM and USFWS by an e-mail or equivalent means within 2 days of the observation.

### **4.3 Adaptive Management**

The agencies will review the results of raven control efforts and, in cooperation with the project owner, will determine if changes in the plan are warranted following 3 years of commercial operation of the project. If the agencies determine that the raven management program is effective, then the raven reporting requirement may be discontinued. Preventing access to anthropogenic food and water resources, preventing nesting, and those components of the Raven Control Plan that discourage perching will remain effective throughout the duration of the project.



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**APPENDIX F: EXISTING AND REASONABLY FORESEEABLE ACTIONS THAT INTERSECT THE PROJECT AREA**



**Map F-1: Reasonably Foreseeable Future Actions**