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Environmental Assessment No: DOI-BLM-NV-S020-2014-0007-EA

FHWA-CFLHD Project Number: NV BLM 10(2)

Environmental Assessment
for
Red Rock Canyon National Conservation Area
Low Water Crossings and Roads Improvements

August 06, 2014

Preparing Office

Red Rock/Sloan Field Office

4701 N. Torrey Pines Drive

Las Vegas, Nevada 89130



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Red Rock Canyon National Conservation Area Low Water Crossings and Road Improvements Project

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1.0 Introduction

This Environmental Assessment (EA) evaluates the US Bureau of Land Management (BLM) proposal for the roadway safety improvements within the Red Rock Canyon National Conservation Area (RRCNCA). If approved, the RRCNCA Low Water Crossings and Roads Improvements Project will be built as a phased construction project.

The BLM, in partnership with Federal Highway Administration (FHWA) - Central Federal Lands Highway Division (CFLHD), an interdisciplinary design team developed the proposed roadway safety improvements within the Core Area of the RRCNCA evaluated in this EA. Chapter 6, List of Preparers, identifies the consultants and agency staff who worked as part of the interdisciplinary team.

This EA presents the environmental impacts and mitigation for the construction, operation, and maintenance of the Proposed Action and alternatives, including the No Action Alternative. The Field Office Manager will first determine whether an environmental impact statement (EIS) is required based on the significance of environmental effects (40 CFR 1509.9) documented in this site-specific EA. If no significant effects are anticipated, a Finding of No Significant Impact (FONSI) will be issued and a Decision Record (DR) will be prepared. The DR will document the decision regarding the action for which the EA was completed and will specify which alternative is selected for implementation.

1.1 Identifying Information

1.1.1 Title, Environmental Assessment (EA) Number, and Type of Project

Red Rock Canyon Low Water Crossings and Roads Improvements Project

BLM Project Number: DOI-BLM-NV-S020-2014-0007-EA

CFLHD Project Number: NV BLM 10(2)

Environmental Assessment for the Bureau of Land Management (BLM) Red Rock Canyon Low Water Crossings and Roads Improvements Project

Environmental Assessment Prepared: August 06, 2014

1.1.2 Location of Project

Red Rock Canyon National Conservation Area

Las Vegas, Nevada

Mount Diablo Prime Meridian

Project Segment	Section	Township	Range
Sandstone Wash	35	20 S	58 E
	2	21 S	58 E
Red Rock Wash	3, 10	21 S	59E
Visitor Center Parking Area	12	21 S	58 E
Flood Warning System:			
@ Unnamed Wash	12	21 S	58 E
@White Rock Wash	34	20 S	58 E
@Pine Creek Wash	14	21 S	58 E

1.1.3 Name and Location of Preparing Office

Red Rock/Sloan Field Office
4701 N Torrey Pines Drive
Las Vegas, NV 89130

1.2 Background

The BLM, Red Rock/Sloan Field Office is responsible for managing RRCNCA. RRCNCA was designated a National Conservation Area for its unique and nationally important geological, archaeological, ecological, cultural, scenic, scientific, wildlife, riparian, wilderness, endangered species, and recreation resources. RRCNCA is approximately 198,000 acres and is located 15 miles west of Las Vegas, Nevada (see Figure 1). RRCNCA amenities include a 13-mile scenic drive; more than 60 miles of multi-use trails for hiking, horseback riding, and mountain biking; road biking and rock climbing opportunities; picnic areas; a campground; and a visitor center with exhibits and a bookstore.

When the original RRCNCA Visitor Center opened in 1982 the area experienced approximately 20,000 annual visitors. Today, RRCNCA is visited by over one million people annually. One of the most visited areas of RRCNCA is the Scenic Loop Drive.

1.3 Purpose and Need for Action

The purpose of the project is to: 1) improve safety for vehicles, bicyclists, equestrians, and pedestrians, 2) reduce operations and maintenance costs, 3) protect and conserve the resources, and 4) improve visitors experience in the RRCNCA.

Flash floods impact the Scenic Loop Drive every year. These events convey an enormous amount of water in a very short time frame and transport a significant amount of sand, gravel, boulders and debris. Concrete fords are currently in place at five wash crossings along the Scenic Loop Drive. Flash flooding, safety concerns, and maintenance costs are greatest at the Sandstone Wash and Red Rock Wash crossings.

High water and debris at these crossings strand visitors until the debris is cleared. Removing the sand, gravel, boulders, and debris: requires heavy equipment, can take up to 10 hours to clear, is costly, and closes the Scenic Loop Drive to visitors. Additionally, the existing fords alter natural flows and inhibit sediment transport.

The Visitors Center Parking Lots have accumulated a lot of signs and pavement markings over the years. Many of the signs and pavement markings conflict, are difficult to read, or simply do not provide the information visitors need to safely and confidently navigate the area. The buss loading and unloading area in front of the Visitors Center is not clearly defined and can get quite congested. The parking lot pavement also needs maintenance, and in some areas complete replacement.

1.4 Decision to Be Made

The BLM is responsible for managing the resource and thereby the decision maker on the Proposed Action. The decision the BLM will make will be to decide whether or not to construct the proposed improvements.

This site-specific EA, as required by NEPA, provides the analytical framework for the BLM to evaluate cumulative impacts on public land resources and make an informed and documented decision.

The impacts from ground-disturbing activities can be reduced to a level of “not significant” provided that measures are undertaken to minimize and mitigate effects associated with construction and maintenance.

1.5 Scoping and Public Involvement

To determine the scope of environmental documentation and analysis required for this project a series of meetings were held with BLM and FHWA resource specialists. These meetings identified the affected resources, potential problems within the project area, and determined what field studies, plan reviews, analysis, and documentation would be needed before a formal decision could be made. Table 1 includes the resource areas identified for further analysis in this EA.

Public review and comment will be considered and included in the decision documentation. Two public meetings were held on June 26, 2014 to coincide with a 30-day public review and comment period, in accordance with 40 CFR §1506.6(b). Comments received during the 30-day public review period are included in Appendix B.

2.0 Proposed Action and Alternatives

The BLM, in partnership with FHWA CFLHD is proposing roadway safety improvements in the RRCNCA along the Scenic Loop Drive. Each alternative will contain a description of the proposed actions.

2.1 Summary of Proposed Actions

The Project proposes the following improvements to the Scenic Loop Drive and Visitors Center Parking:

- Remove the existing roadway at the Sandstone Wash and replace it with a bridge approximately 300 feet north of its current location.
- Remove the concrete ford at the Red Rock Wash and replace it with a bridge on existing alignment.
- Install flood warning sensors at three additional wash crossings.
- Improve the Visitor Center parking area by making minor adjustments to the parking area, and resurfacing or removing and replacing the existing asphalt.

2.1.1 Sandstone Wash Low Water Crossing

A new bridge would be constructed on a new alignment approximately 300 feet north of the existing wash crossing (Figure 2). The bridge would be approximately 153 feet in length and 32 feet wide. The bridge would provide a minimum 8 foot vertical clearance above the Sandstone wash. The bridge deck (super structure) would be approximately 2 feet thick. The span between the three concrete pier walls would be 33-41 feet. The bridge abutment fill slopes would be protected with concrete wing walls, rip-rap to stabilize the toe of embankment fill, and fill slopes revegetated per the restoration plan.

Transitional guardrail, or elevated curbing would be located on the approaches and connect into the bridge rail. The toe wall of the existing concrete ford would remain to facilitate the hydraulics of the new channel.

The existing Sandstone Wash low water crossing would remain in service during construction to maintain the movement of vehicles, bicyclists, and pedestrians on Scenic Loop Drive. After construction of the new bridge is completed, the old concrete roadway and asphalt approaches would be removed and the area reclaimed and revegetated according to the restoration plan.

Equipment and material staging would be located near the construction site in the area outside the wash. Secondary staging and storage areas may include a portion of the parking lots at the Fee Station and at the exit of the Scenic Loop Drive. Typical heavy equipment used in road and bridge construction would be used; such as, bulldozer, hoe ram, drill rig, grader, front-end loader, backhoe, dump trucks, cement trucks, vibrating compactor, water truck, paving machine, road sweeper, portable generators, and mast lighting.

The estimated permanent and temporary impacts for the bridge are approximately 1.7 acres and 5.4 acres, respectively. Permanent impacts would include new pavement, clearing and grubbing, riprap

areas, and earthwork for cut and fill slopes. Temporary impacts would consist of construction areas, equipment staging, and access to allow for vehicle/equipment movement.

Construction would begin in December 2014 and be completed in June 2015. Most construction would occur during the day, although some work may occur at night.

2.1.2 Red Rock Wash Low Water Crossing

A new bridge would be constructed on the existing alignment (Figure 3). The bridge would be approximately 194 feet in length and 32 feet wide. The bridge would provide a minimum 8 foot vertical clearance above the Red Rock wash. The bridge deck (super structure) would be approximately 2 feet thick. The span between the four concrete pier walls would be 33-41 feet. The bridge approaches would be reconstructed as required to meet the profile of the bridge. The bridge abutment fill slopes would be protected with concrete wing walls, rip-rap to stabilize the toe of embankment fill, and fill slopes revegetated per the restoration plan. Transitional guardrail, or elevated curbing would be located on the approaches and connect into the bridge rail.

A temporary paved detour would be constructed just upstream and adjacent to the new bridge. The paved detour would be approximately 20 feet wide and 1,500 feet long. The paved detour would be removed and area reclaimed once construction of the bridge is complete.

Equipment and material staging would be located near the construction site in the area outside the wash. Secondary staging and storage areas may include a portion of the parking lots at the Fee Station and at the exit of the Scenic Loop Drive. Typical heavy equipment used in road and bridge construction would be used; such as, bulldozer, hoe ram, drill rig, grader, front-end loader, backhoe, dump trucks, cement trucks, vibrating compactor, water truck, paving machine, road sweeper, portable generators, and mast lighting.

The estimated permanent and temporary impacts for the bridge are approximately 2.7 acres and 10.9 acres, respectively. Permanent impacts would include new pavement, clearing and grubbing, riprap areas, and earthwork for cut and fill slopes. Temporary impacts would consist of construction areas, detours, equipment staging, and access to allow for vehicle/equipment movement.

Construction would begin in December 2014 and be completed in June 2015. Most construction would occur during the day, although some work may occur at night.

2.1.3 Flood Warning System

Flood warning sensors would be installed at the Unnamed wash near the Visitor Center, White Rock Wash, and Pine Creek Wash (Figure 4). The flood warning system would relay real-time flow depth, humidity, and temperature data to staff at the Visitor Center, who could then alert visitors.

The sensors would be located next to the minor wash crossings outside the roadway clear zone. Existing vegetation and topography would be used to screen the sensors. The footprint of the sensors is less

than 10 feet by 10 feet. The enclosure would be painted to blend into the landscape and match the color of the predominate vegetation.

Equipment and material staging would be located near the installation outside the wash. Light construction equipment would be used to install the sensors; such as, bobcat, backhoe, dump truck, cement truck, water truck, small post augers, road sweeper, and portable generator.

The estimated permanent impacts for the flood warning sensors are less than a tenth of an acre. The temporary impacts are approximately 0.7 acres. Permanent impacts would include clearing and grubbing and placement of the sensor enclosure and its contents. Temporary impacts would consist of construction areas, equipment staging, and access to allow for vehicle/equipment movement.

Construction would begin in December 2014 and be completed in June 2015. Most construction would occur during the day, although some work may occur at night.

2.1.4 Visitor Center Parking Improvements

The layout of the bus loading area in front of the Visitors Center would be redesigned to accommodate visitor needs and align with design standards. The existing sandstone boulders in the loading zone would be removed and replaced with concrete curbing, pavement, and signing and striping to clearly delineate the buss loading zone.

The layout of the existing parking lots would be modified to improve vehicle circulation and maximize parking in the existing disturbed areas. The asphalt would be resurfaced, or removed and replaced. New signing and striping would be installed. The pavement between the Fee Station and Visitors Center parking lots would be resurfaced, or pulverized and replaced. The proposed improvements would be completed within existing disturbed areas (see Figure 5).

Equipment and material staging would be located near the work area. Secondary staging and storage areas may include a portion of the parking lots at the Fee Station and the lower bus parking lot at the Visitors Center. Typical heavy equipment used in road construction would be used; such as, grader, front-end loader, backhoe, small post augers, dump trucks, cement trucks, vibrating compactor, water truck, paving machine, road sweeper, portable generators, and mast lighting.

Construction would begin in December 2014 and be completed in June 2015. Most construction would occur during the day, although some work may occur at night.

2.1.5 Maintenance

Maintenance activities are included in this EA and would be limited to the disturbance areas identified in the proposed action. Anticipated maintenance activities include but are not limited to: removal of rock and debris from the roadway; removal of sediment and debris from culverts; cleaning ditches; resealing or resurfacing pavements; repairing potholes; sealing cracks in asphalt and concrete; routine grading to maintain roadway shoulders, cut and fill slopes, and removal of invasive vegetation; replacing damaged railing, restriping, replacing signs, graffiti removal, repainting bridges, and servicing flood sensors.

Maintenance activities would adhere to the same environmental commitments, stipulations, and mitigations as outlined for the proposed action. Maintenance equipment would be similar to that used for construction.

Preventive maintenance will be done throughout the year, or as required by material suppliers and equipment manufactures. Supplemental maintenance may also be done more frequently if requested, or in response to a significant storm event, accident, vandalism, or other such unforeseeable event. Maintenance would occur during the day, beginning a half hour before sunrise and ending a half hour after sunset. On occasion maintenance work may be done at night.

2.2 Construction Activities and Measures to Avoid Environmental Impacts

The following environmental commitments and stipulations would be used to avoid or minimize impacts to resources as a result of the proposed project.

2.2.1 Air Resources

- The proposed action will comply with the Clark County Department of Air Quality (DAQ) regulations for construction, and all necessary permits will be acquired, prior to work. Emission reduction and mitigation measures, in accordance with the dust control permit, will be stipulated as part of the permit process. Fugitive dust from soil disturbing activities will be minor and will be reduced in accordance with all dust control permit stipulations for the duration of the project.
- All heavy equipment used during the construction phase, will be in compliance with smog control regulation and will meet all state required emissions standards for the construction industry.
- Best Management Practices (BMPs) to mitigate fugitive emissions from the project site will be implemented and enforced during work and non-work hours, including weekends.

2.2.2 Cultural Resources

- In the event of a cultural, historical, archaeological, or paleontological discovery, the BLM archaeologist will be notified immediately and the area where the discovery is located will be avoided until the BLM responds.

2.2.3 Fuels/Fire Management

- The project will comply with fire restrictions current at the time of project implementation. Seasonal fire restrictions are typically in place from approximately May through October, though dates can vary from year to year.
- Specific, non-compliant activities may be waived or permitted on a case-by-case basis by a BLM line officer after review and approval by the BLM Fire Management Officer.

2.2.4 Geology / Mineral Resources/Energy Production

- If excavation that produces mineral materials within the area is necessary, the mineral materials must be used within the project area or stockpiled on site for disposal by the BLM.

- If mineral materials are to be stockpiled on site for a future disposal, specific BLM use authorization in the form of a contract, free use permit, or material site ROW will be necessary before the stockpiled mineral materials can be removed from the ROW.

2.2.5 Hazardous Waste

- The contractor would immediately notify the BLM authorized officer of any release of a hazardous substance, toxic substance, or hazardous waste on or near the project area. As required by law, the contractor would have responsibility for and will take all action(s) necessary to fully remediate and address the hazardous substance(s) on or emanating from the project area, in the event of a release of any size and/or quantity.
- In the event of a release of a hazardous substance, regardless of the quantity released, as a result of project operations, the contractor must comply with all applicable, federal, state, and local laws, regulations, and BLM policy, including reporting requirements, when handling, reporting, containing, cleaning, removing and disposal of a released substance(s).
- General construction site waste shall be stored and secured so that it does not blow away. The worksite must be in compliance with OSHA and Environmental regulations for construction sites. High winds are common in the project area.

2.2.6 Wild Horses and Burros

- All access gates must remain closed to keep wild burros off of SR 159. Individuals would be informed to not harass (feed, pet, chase, etc.) wild horses and burros if encountered on or near the project area. If they do see any wild horses and burros, they would keep a safe distance; they are wild animals and can be unpredictable, especially during foaling and breeding season.
- If areas of surface water or puddles are created during construction activities, they must be temporarily fenced off in order to keep wild horses and burros from drinking potentially contaminated water.

2.3 No Action Alternative

Under the no-action alternative, the proposed improvements would not occur, resulting in increased maintenance costs, continued safety concerns, and a continuation of the inefficient traffic, pedestrian, and bicycle circulation at the Visitor Center.

2.4 Alternatives Considered but not Analyzed in Detail

An alternative to replace the Sandstone Wash low water crossing with a bridge on the existing alignment was considered but dismissed. Replacement on the existing alignment would require extensive fill and raise the profile of the roadway, resulting in non-conformance with the BLM Visual Resource Management Class II criteria.

Similarly, replacement of the Red Rock Wash low water crossing on new alignment was also considered but dismissed due to the increased cost and lack of tangible benefits. Red Rock Wash is very wide with limited terrain features such as rock outcroppings that would allow for the raised structure to be

screened from view. In addition, a shift in the location would require extensive roadway realignment across a large area, resulting in increased project costs as well as increased areas of disturbance.

2.5 Conformance

The EA is in conformance with the BLM RRCNCA Resource Management Plan (RMP) (BLM, 2005a) approved May 20, 2005.

The RRCNCA RMP identifies the Scenic Drive and environs as a "developed area" with "substantial modification of the natural environment with intensified motorized use and parking" (page 29, Record of Decision, RRCNCA RMP, 2005). This includes road paving and other improvements in multiple locations. The Proposed Action supports the Preferred Alternative identified in the RRCNCA RMP by improving facilities that accommodate increasing visitor use in the Scenic Loop Drive vicinity.

3.0 Affected Environment

This section discusses the resources identified by BLM as necessary to reach a reasoned choice among the range of alternatives. In designating the resources to be carried forward for analysis, environmental resources known to occur or with the potential to occur in the Proposed Action have been identified.

Table 1 summarizes the environmental attributes that have been reviewed, whether they would be affected by the project, and rationale for that determination. Elements that are either not present, or are present but would not be affected will not be discussed further. Resources that may be affected are analyzed in further detail in the Affected Environment and Environmental Effects sections of this document. Mitigation measures are detailed to mitigate adverse impacts to resources in Chapter 4.

Table 1. Affected Resources Form

Resource	Not Present	Present/Not Affected	Present May be Affected	Rationale for Determination
Air Resources		X		<p>The federal Clean Air Act of 1990 requires that air quality throughout the United States meet certain National Ambient Air Quality Standards (NAAQS), with respect to criteria pollutants, in order to protect the public health and the environment. The project area is located in a non-attainment area (does not meet the standard) for particulate matter of 10 microns or less (PM₁₀) and therefore must be managed in accordance with the Clark County State Implementation Plan (SIP).</p> <p>Fugitive emissions from construction activities are temporary in nature and will not create any lasting impacts to the environment.</p> <p>Minimization measures built into the project design will reduce the risk of any negative impacts to air quality.</p>
Areas of Critical Environmental Concern	X			<p>The project area is not located within an Area of Critical Environmental Concern or any critical desert tortoise habitat on BLM managed lands.</p>
BLM Natural Areas	X			<p>The project area is not located within the North Fork Pine Creek Natural Area.</p>

Table 1. Affected Resources Form

Resource	Not Present	Present/Not Affected	Present May be Affected	Rationale for Determination
Cultural Resources	X			Based on field inspection of the Scenic Loop Drive, no historic properties were found present within the Area of Potential Effect. No cultural resources would be affected.
Greenhouse Gas Emissions		X		Currently there are no emission limits for suspected greenhouse gas (GHG) emissions, for this project, and no technically defensible method for predicting potential climate changes from GHG emissions. However, there are, and would continue to be, several efforts to address GHG emissions from federal activities, including BLM authorized uses in future planning documents.
Environmental Justice	X			No minority or low-income communities present in or near the project area.
Farmlands (Prime or Unique)	X			There are no prime or unique farmlands in the District.
Fish and Wildlife Excluding Federally Listed Species			X	The project has the potential to impact wildlife species. Impacts are assessed in this EA.
Floodplains			X	The project would impact existing floodplains and create new floodplains. Impacts are assessed in this EA.
Fuels/Fire Management		X		Compliance with BLM fire restrictions current at time of project implementation will mitigate any risks introduced by the proposed actions. Minimization measures built into the project design will reduce the risk of any negative impacts to fuels and fire management.

Table 1. Affected Resources Form

Resource	Not Present	Present/Not Affected	Present May be Affected	Rationale for Determination
Geology / Mineral Resources/Energy Production		X		No mining claims are present in the project area. Minimization measures built into the project design will reduce the risk of any negative impacts to geology or mineral resources.
Hydrologic Conditions			X	The project would potentially impact the hydrologic conditions of the local hydrographic basin. Impacts are assessed in this EA.
Invasive Species/Noxious Weeds			X	New disturbance and construction activities have the potential to spread and/or introduce nonnative species. Impacts are assessed in this EA.
Lands/Access		X		The majority of the proposed project will occur along existing roads and result in minimal new disturbance. Additionally minimization measures built into the project design will reduce the risk of any negative impacts to lands and access.
Livestock Grazing	X			The project area is not located in any authorized grazing allotments.
Migratory Birds			X	The project has the potential to impact migratory birds. Impacts are assessed in this EA.
Native American Religious Concerns	X			No Native American concerns were identified during the development of the Red Rock RMP, as well as other previous consultations.

Table 1. Affected Resources Form

Resource	Not Present	Present/Not Affected	Present May be Affected	Rationale for Determination
Paleontology		X		<p>Based on literature review and relevant maps, no paleontological resources would be affected by the project.</p> <p>Minimization measures built into the project design will reduce the risk of any negative impacts to paleontological resources if an unexpected discovery occurs.</p>
Rangeland Health Standards		X		<p>Negative impacts to rangeland health are not expected.</p>
Recreation			X	<p>Although the roadway would be constructed in an area where off-highway use is prohibited, it would remain in conformance with the RMP. The existing roadway would be demolished to encompass the new alignment. The RRCNCA RMP decision regarding the prohibition of off-highway (cross country) use outside of this realignment of Scenic Loop Drive would remain the same. Impacts are assessed in this EA.</p>
Socio-Economics		X		<p>The project may provide short-term economic benefit in employment during construction, as well as long-term social and economic benefits for providing safe access through RRCNCA Scenic Loop Drive, but not to the level that detailed analysis is required.</p>
Soils			X	<p>Local soils, including areas with desert pavement and or biological soil crust, would be altered, potentially leading to increases in local erosion. Impacts are assessed in this EA.</p>

Table 1. Affected Resources Form

Resource	Not Present	Present/Not Affected	Present May be Affected	Rationale for Determination
Threatened, Endangered (T&E) or Candidate Plant Species	X			There are no T&E or candidate plant species in the project area.
T&E or Candidate Animal Species			X	The project has a may affect determination for the threatened desert tortoise (<i>Gopherus agassizii</i>) and has no effect on any other federally listed species or designated critical habitat. Impacts are assessed in this EA.
Wastes (hazardous or solid)	X			While no hazardous waste concerns have been identified in the project area, the project description includes steps that would be taken if any release or discovery of hazardous waste would occur during the proposed activity.
Water Resources/Quality (drinking/surface/ground)			X	The project may alter surface water runoff patterns and may cause erosion. Impacts are assessed in this EA under Hydrologic Conditions (including water quality).
Wetlands/Riparian Zones	X			No permanent surface waters or wetlands exist in or near the project area.
Wild and Scenic Rivers	X			No wild and scenic rivers are located in the project area.
Wilderness/Wilderness Study Areas (WSA)		X		There will be no direct/indirect impacts to the nearby La Madre Mountain Wilderness or Rainbow Mountain Wilderness are anticipated. WSAs are not present.

Table 1. Affected Resources Form

Resource	Not Present	Present/Not Affected	Present May be Affected	Rationale for Determination
Woodland / Forestry			X	Cactus and yucca may be present within the project impact area. Cactus and yucca are considered government property and are regulated under the Nevada BLM forestry program. Impacts are assessed in this EA under Vegetation.
Vegetation			X	A rare plant survey of the project area (conducted in Spring 2012) identified a population of the BLM sensitive plant species yellow two-tone beardtongue (<i>Penstemon bicolor ssp. Bicolor</i>) within the footprint of the Sandstone Wash low water crossing. Impacts are assessed in this EA.
Visual Resources			X	The project occurs in Visual Resource Management Classes II and III. Impacts are assessed in this EA.
Wild Horses and Burros		X		The project is located in the Red Rock Herd Management Area. Impacts to wild horses and burros are not anticipated because of the scope and location of the project. Minimization measures built into the project design will reduce the risk of any negative impacts to wild horses and burros.
Lands with Wilderness Characteristics	X			There are no designated lands with wilderness characteristics in the project area.

3.1 Fish and Wildlife Excluding Federally Listed Species

3.1.1 Wildlife

The RRCNCA supports a diverse community of nearly 300 wildlife species. The project area supports wildlife characteristic of the northeastern Mojave Desert. Biological diversity varies according to

topography, plant community, proximity to water, soil type, and season. Many of these species have adapted complex life strategies for survival in the desert environment. Wildlife species in the general area include small mammals, rodents, birds, and reptiles. Based on ecological sensitivity factors, groups of priority management concern are bats, raptors, reptiles, and amphibians. The remaining RRCNCA wildlife group, carnivores and hoofed animals, represent a mix of unrelated species. Carnivores include foxes, coyotes, ringtails, badgers, bobcats, and mountain lions. The hoofed animals of the RRCNCA are mule deer, bighorn sheep, and elk. Several common species of reptiles would be represented in the surrounding habitat types. These species include the western whip-tail (*Cnemidophorous tigris*), desert iguana (*Dipsosaurus dorsalis*), side-blotched lizard (*Uta stansburniana*), and zebra-tail lizard (*Callisaurus draconoides*). Common bird species that would be represented include the rock wren (*Salpinctes obsoletus*), black-throated sparrow (*Amphispiza quinquestriata*), common raven (*Corvus corax*), phainopepla (*Phainopepla nitens*), and red-tailed hawk (*Buteo jamaicensis*). Common mammal species include the black-tailed jackrabbit (*Lepus californicus*) and the desert cottontail (*Sylvilagus audubonii*). Common Mojave Desert rodent inhabitants include cactus mice (*Peromyscus eremicus*), Merriam kangaroo rats (*Dipodomys merriami*) and species associated with rocky habitats such as the wood rat (*Neotoma lepida*). All of these species nest, hunt, and forage, and rely on close ecological relationships to the habitat in which they live.

3.1.2 BLM Sensitive Wildlife Species

The BLM sensitive species western burrowing owl, chuckwalla, banded Gila monster, Mojave shovel-nosed snake, desert glossy snake, and Mojave Desert sidewinder may be present in the general area. These species would be displaced as lands are disturbed within the project area.

3.1.2.1 Western burrowing owl (*Athene cuniculari hypugaea*)

The Western burrowing owl is a diurnal bird of prey specialized for grassland and shrub-steppe habitats in western North America. The owls are widely distributed throughout the Americas and can be found from central Alberta, Canada, to Tierra del Fuego in South America. Burrowing owl habitat typically consists of open, dry, treeless areas on plains, prairies, and desert floors. Burrowing owls most frequently use mammal burrows created by other animals such as prairie dogs (*Cynomys* spp.), ground squirrels (*Spermophilus* spp.), coyotes (*Canis latrans*), or desert tortoises (*Gopherus agassizii*). The burrows are used for nesting, roosting, cover, and caching prey. In recent decades, the range and species count have been declining primarily due to agricultural, industrial, and urban development that reduce burrow availability. Suitable habitat for burrowing owl is found within the desert wash habitat at the White Rock Wash and Red Rock Wash project areas.

3.1.2.2 Western chuckwalla (*Sauromalus obesus*)

The western chuckwalla is a Nevada state protected species that is found throughout the deserts of the southwestern United States and northern Mexico. Chuckwallas inhabit rocky outcrops where cover is available between boulders or in rock crevices, typically on slopes and open flats below 5000 feet. Typical habitat includes rocky hillsides and talus slopes, boulder piles, lava bed, or other clusters of rock usually in association with Mojave Desert Shrub vegetation. This species requires shady, well-drained

soils for nests. The chuckwalla is a widespread species, but is regionally limited by its requirement for rocky outcrops. Chuckwallas likely occur within the project area, but would be localized on rocky outcroppings. Suitable habitat for chuckwallas is found within the desert wash and rocky habitat at all of the project areas.

3.1.2.3 Banded Gila monster (*Heloderma suspectum*)

The Gila monster is a large, heavy-bodied lizard with a massive head, a short thick tail, short limbs, and strong claws. It has flamboyant dorsal coloration of black and pink, orange, or yellow and occasionally exceeds 50 centimeters (19.7 inches) in total length. The Gila monster's range includes extreme southwestern Utah, southern Nevada, and adjacent southeastern California south through southern Arizona, southwestern New Mexico, and much of Sonora to Sinaloa, Mexico. Its habitat includes Mojave and Sonoran desert scrub, desert grassland, thorn scrub, and occasionally pine-oak woodland. Threats to this reptile include illegal collection, traffic fatalities, and most severely from habitat destruction from urban and agricultural development. Suitable habitat for banded Gila monster is found within any of habitats within the project areas, except for where the road pavement is present.

3.1.2.4 Desert glossy snake (*Arizona elegans*)

The desert glossy snake is a burrowing, nocturnal snake that occurs in a variety of habitat throughout the Mojave Desert including light shrubby to barren desert, grasslands, and woodlands. The desert glossy snake generally prefers open areas where the ground is sandy to loamy. Suitable habitat for desert glossy snake is found within the within the desert wash and rocky habitat at all project areas.

3.1.2.5 Mojave Desert sidewinder (*Crotalus cerastes cerastes*)

The Mojave Desert sidewinder is a nocturnal snake hiding in the day in animal burrows or coiled camouflaged in a shallow self-made pit at the base of a shrub. This species is most common where there are sand hummocks topped with creosote bushes, mesquite, or other desert plants but may also occur on flats, barren dunes, hardpan, and rocky hillsides. Suitable habitat for the Mojave Desert sidewinder is found within any of habitats within the project areas, except for where the road pavement is present.

3.1.2.6 Mojave shovel-nosed snake (*Chionactis occipitalis occipitalis*)

The Mojave shovel-nosed snake is a burrowing, nocturnal snake frequenting washes, dunes, sandy flats, loose soil, and rocky hillsides in sandy gullies or pockets among the rocks throughout the Mojave Desert. Suitable habitat for Mojave shovel-nosed snake is found within the desert wash and rocky habitat at all project areas.

3.2 Floodplains

Sandstone Wash and Red Rock Wash are located in Federal Emergency Management Agency (FEMA) regulated 100-year floodplains and subject to alluvial fan flooding. Alluvial fan flooding is characterized by “high velocity flows”, active processes of erosion, sediment transport, and deposition; and unpredictable flow paths” (44 CFR §59.1).

The project work at the Visitor Center, and the flood warning systems at the Unnamed Wash and White Rock Wash does not occur within a mapped floodplain. The flood warning system at Pine Creek Wash would occur within a 100-year floodplain—similar to Sandstone Wash and Red Rock Wash.

3.3 Hydrologic Conditions (including Water Quality)

Desert washes, which are the common in the Mojave Desert region including the washes in the project area, are braided in plain view. These washes convey flowing water only intermittently during seasonal precipitation events, are unstable, and can migrate laterally during substantial runoff events. Water in this area commonly flows into dry lakes, or as in the case of RRCNCA, detention basins. Geologically, the project area is located on alluvial fan lobes that form large, cone-shaped, sedimentary deposits. Dry washes can also carry destructive bedloads (boulders and gravels) during rain events. The hydrologic processes that occur on alluvial fans can be random and difficult to model. Sediments, which can range from clay to large boulders, are transported across alluvial fans by water in desert washes, debris flows, and sheet floods. Flood events on alluvial fans in arid climates are triggered by significant precipitation events. Specific to the Mojave Desert region, these would include the random summer cloud bursts that occur infrequently but can supply a large amount of water to a localized area, or a larger storm such as a tropical storm that occurs on a 100-year time scale. Any of these storms could result in flooding hazards that would cause significant damage across the project area and could potentially cause significant localized destruction, especially following a vegetation consuming wildfire.

There are no drinking water natural resources within RRCNCA. The only place where drinking water is available within RRCNCA is the Visitor Center, campground, and fire station.

3.4 Invasive Species/Noxious Weeds

Invasive plants and noxious weeds are managed on public lands by the BLM under the direction of the National Invasive Species Council (NISC) established in 1999 (Executive Order [EO] 13112). This statute defines invasive species as “...an alien (non-native) species whose introduction does, or is likely to cause, economic or environmental harm or harm to human health” (NISC, 2008). In addition, much of the management of invasive plants and the listing of noxious weeds is regulated by the U.S. Department of Agriculture under the Federal Noxious Weed Act (7 U.S.C. 2801 et seq. 1974).

Executive Order 13112 outlines the federal responsibility to “prevent the introduction of invasive species and provide for their control and to minimize the economic, ecological, and human health impacts that invasive species cause.” Additionally, Nevada Revised Statutes, Chapter 555.05 defines noxious weeds and mandates the extent that land owners and land management agencies must control specific noxious weed species on lands under their jurisdiction.

Weed management in the RRCNCA is guided by the RRCNCA Resource Management Plan and Record of Decision (BLM, 2005b) as well as the Las Vegas Field Office Weed Plan (BLM, 2006). These resources provide guidance for an active integrated weed management program using BMPs.

Portions of the project area and surrounding areas have been surveyed for noxious and invasive weeds during routine weed inventory surveys. No noxious weeds have been found directly in the project

footprint. However, of the 47 species designated as noxious by the State of Nevada, three species have been documented near the general project area: Saltcedar (*Tamarix ramosissima*), Russian knapweed (*Acroptilon repens*), and Puncturevine (*Tribulus terrestris*).

Russian knapweed is classified as a Category B noxious weed and must be eradicated where the action is deemed feasible. It is recognized that for Category B species, some infestations may be too extensive to be realistically controlled or eradicated. Russian knapweed is typically found along roadsides and waterways.

Saltcedar is classified as a Category C noxious weed, indicating the species is present to such an extent that precludes active eradication in an environmental setting for many infestations. For species classified Category C, the main goal is to keep the population from spreading further. However, in isolated springs and riparian areas, eradication of Saltcedar may be achieved. Around the project area, Saltcedar occurs in areas where water is available close to the soil surface, such as around springs, washes, and riparian areas. Dense stands of Saltcedar, in addition to forming a monoculture and precluding native plant recovery, can also drastically alter fire regimes by increasing fuel loads.

Puncturevine is also classified as a Category C noxious weed, meaning eradication of this species on a landscape scale is not feasible. However, in isolated areas such as the project area, this noxious weed can be eradicated through an active integrated weed management program. Puncturevine prefers dry, sandy soils and is frequently found along roadsides, crop fields, and other disturbed areas.

Other noxious weeds that have been known to occur in the broader area of the project include Silverleaf nightshade (*Solanum elaeagnifolium*), Perennial pepperweed (*Lepidium latifolium*), several species of Knapweed, Malta starthistle (*Centaurea melitensis*), Johnsongrass (*Sorghum halepense*), Scotch thistle (*Onopordum acanthium*), Canada thistle (*Cirsium arvense*), Fountain grass (*Pennisetum setaceum*), and Giant reed (*Arundo donax*).

There are also weed species in RRCNCA that are non-native and invasive, yet have not been legally designated as noxious by the State of Nevada. Invasive weeds (that are not designated as noxious) in the project area include (but are not limited to) red brome (*Bromus madritensis rubens*), cheatgrass (*Bromus tectorum*), common barley (*Hordeum vulgare*), Chilean chess (*Bromus trinii*), Russian thistle (*Salsola tragus*), and tumble mustard (*Sisymbrium irio*). Invasive weeds (particularly invasive annual grasses) are known to rapidly invade disturbed areas and to drastically alter fuel loads in shrub interspaces which would otherwise be bare.

3.5 Migratory Birds

The Migratory Bird Treaty Act (MBTA) (16 U.S.C. 703 *et. seq.*) protects migratory birds and their nests (nests with eggs or young). Under the 1918 MBTA and subsequent amendments (16 U.S.C. 703-711), it is unlawful to take, kill, or possess migratory birds. Numerous bird species travel through Nevada during spring and fall migrations. A list of the protected bird species can be found in 50 C.F.R. §10.13 (<http://www.gpo.gov/fdsys/pkg/CFR-2012-title50-vol1/xml/CFR-2012-title50-vol1-sec10-13.xml>). The list of birds protected under this regulation is extensive and the project site has potential to support

many of these species, including the BLM sensitive species the western burrowing owl (*Athene cunicularia*). Typically, the breeding season is when these species are most sensitive to disturbance, which generally occurs from February 15 through August 31.

3.6 Recreation

The RRCNCA RMP establishes management direction for lands within the project area. The project falls within the RRCNCA's Core and Visitor Center Areas. The Core Area is the primary area for recreational use in the RRCNCA, and covers approximately 60,000 acres. Recreational activities within the project area include picnicking, hiking, cycling, rock climbing, sightseeing, horseback riding, wildlife viewing, and photography.

The RRCNCA reports over 1 million visits every year to its Visitor Center. The area serves local residents as well as visitors who come to the RRCNCA in conjunction with stays in Las Vegas. The Red Rock Canyon Scenic Loop Drive is a BLM National Scenic Backcountry Byway and traverses approximately 13 miles of the RRCNCA with trailheads, scenic overlooks, and picnic facilities along its route. Approximately 20 of the more than 100 trails within the RRCNCA can be accessed directly from the Red Rock Canyon Scenic Loop Drive. The Visitor Center provides direct access to the Moenkopi Loop Trail, a 2-mile loop with views of the Wilson Cliffs and connections to the Calico Hills area. Trails are designated for various types of uses to accommodate hikers, rock climbers, and horses. Bicycles and off-highway vehicles are prohibited from off-highway use on any trails off of the Scenic Loop Drive.

3.7 Soils

Soils in the project area have developed on alluvial and colluvial fans of coarse material derived from limestone, sandstone, and granitic materials that have been eroded from the surrounding mountains. Soils that have formed in this area are generally gravelly loams or gravelly sandy loams. Younger soils have formed in the active drainages and there are little or no diagnostic soil horizons (entisols). Older soils on higher ground on ridges between the drainages may contain soils with some developed pedogenic features (aridisols). The limestone and sandstone parent materials have high calcium carbonate content. The dispersal of carbonate material by wind erosion has resulted in carbonate accumulation in almost all soils. Under the arid conditions little downward movement of the soluble constituents has occurred. Wind and water erosion is low to moderate, but over time fine particles have been removed from the surface leaving a 1 to 3 inch layer of thick coarse gravel loam or gravelly sandy loam on the surface. Weathering has also left rock fragments on the surface. The organic matter content of the soil surface layer is very low, typically less than 0.5 percent. The soils are very fragile and susceptible to ground disturbance from animals, humans, and motorized vehicles (BLM, 2012).

Biological Soil Crusts (BSC) are known to occur throughout the Mohave Desert Region (BLM, 2001). During the biological survey performed for the project, small patches of BSC were observed in the project area. The dominant crust component of the BSC in the project area was identified as squamulose lichens, exhibiting both flat and pinnacled morphology.

3.8 Threatened, Endangered or Candidate Animal Species

Threatened and Endangered (T&E) animal species are placed on a federal list by the U. S. Fish and Wildlife Service (USFWS) and receive protection under the Endangered Species Act of 1973, as amended. The only T&E species known to occur in the vicinity of the project area is the threatened desert tortoise (*Gopherus agassizii*). In the Mojave region, the desert tortoise occurs primarily on flats and bajadas with soils ranging from sand to sandy gravel characterized by scattered shrubs and abundant inter-shrub space for herbaceous plant growth. They are also found on rocky terrain and slopes. Historical survey data indicate that the area surrounding the project area is low density tortoise habitat.

3.9 Vegetation

3.9.1 General Vegetation

The project area is located within the blackbrush and creosote-bursage plant communities. According to Gap Analysis Program (GAP) Land Cover Data provided by the U.S. Geological Survey (USGS), the project area is dominated by blackbrush, primarily Mojave Mid-Elevation mixed desert scrub. Areas characterized by Sonora-Mojave creosote-bursage desert scrub and desert wash are also present within the project area (USGS, 2011). Field visits conducted in 2012 and 2014 identified vegetation consistent with the GAP Land Cover Data. Desert wash was identified as the dominant vegetation type in the drainages throughout the project area.

3.9.1.1 Blackbrush

Blackbrush is a slow growing and long-lived (up to 400 years) densely branched shrub that gets its name from its dark stems and branches that appear even darker when the shrub is dormant. Blackbrush scrub typically occurs between 1,900-5,200 feet in elevation at the transition between creosote scrub and higher elevation sagebrush scrub. Invasive non-native annual grasses and increased fire frequency are the most significant threat to this community.

3.9.1.2 Creosote-bursage scrub

Creosote-bursage scrub is the most abundant vegetation type in the Southern Nevada District. Creosote and white bursage are generally the most conspicuous plant species present. This vegetation community occurs below 4,000 feet and is the primary habitat for the threatened desert tortoise. Within the project area, this vegetation category is composed entirely of the Sonora-Mojave creosote-bursage desert scrub ecosystem. This vegetation consists of large open expanses of vegetation, including dispersed cactus and yucca that gradually integrates with saltbush scrub near valley bottoms and blackbrush at higher elevations. Predominate threats to this ecosystem include direct and indirect impacts resulting from anthropogenic activity, invasion by non-native annual grasses, and increased fire frequency.

3.9.1.3 Desert Wash

Desert wash is reflective of riparian vegetation associated with washes throughout the project area. Most of these areas are dry the entire year and represent trans-zonal plant communities, in which plant communities are shifting from one vegetation association to another. This community is described primarily by shrubs occurring along drainages. Species composition is influenced primarily by water availability and storage.

3.9.2 BLM Special Status Plants

BLM Sensitive Plant Species are species that require special management consideration to avoid potential future listing under the Endangered Species Act and that have been identified in accordance with procedures set forth in BLM Manual 6840. The following sensitive plant species are known to potentially occur within the proposed project area: Yellow two-tone beardtongue (*Penstemon bicolor* ssp. *bicolor*), and the Blue Diamond cholla (*Cylindropuntia whipplei* var. *multigeniculata*).

3.9.2.1 Yellow Two Toned Penstemon (*Penstemon bicolor* ssp. *bicolor*)

The yellow two-tone beardtongue is a BLM special status species restricted to western Clark County, Nevada, including the Las Vegas Valley, RRCNCA, and the McCullough Mountains (Glenne, 2003). The yellow two-tone beardtongue, and the closely related rosy two-tone beardtongue (*Penstemon bicolor* ssp. *Roseus*), are short-lived perennial herbs that reproduce from seed. All known sites are surrounded by Sonora-Mojave Creosotebush-White Bursage Desert Scrub and Mojave Mid-Elevation Mixed Desert Scrub. Both sub-species are generally restricted to naturally and artificially disturbed, often calcareous, moisture accumulating sites such as washes, roadsides, rocky slopes, crevices, and talus between 1,800 and 5,480 feet elevation (Smith, 2005). As an important survival strategy, yellow two-tone beardtongue can persist in the soil seed bank for many years before germinating; therefore, a single survey may not accurately determine the species presence or absence. The historic distribution of the yellow two-tone beardtongue includes 43 recorded occurrences (Glenne, 2003). Since 2003, 11 of the recorded occurrences within the BLM Las Vegas Valley disposal boundary have been developed. Presently, the known distribution includes 32 recorded occurrences. Rare plant surveys completed in 2003, 2012, and 2014 identified yellow-two toned beardtongue populations at both the Sandstone Wash and Red Rock Wash Low water crossing construction footprint.

3.9.2.2 Blue Diamond Cholla (*Cylindropuntia multigeniculata*)

The Blue Diamond cholla is a BLM special status plant species endemic to Clark County, Nevada. The Blue Diamond cholla is a cactus restricted to dry gypsiferous limestone areas mostly on cooler or more protected exposures (ledges of canyon walls, north sloping surfaces), and more rarely on exposed ridges from 3,450 to 4,350 feet elevation. All plant populations occur within Sonora-Mojave Creosote bush-White Bursage Desert Scrub and Mojave Mid-Elevation Mixed Desert Scrub communities. Presently, there are four known population complexes (Baker, 2005): Gass Peak in the Las Vegas Range, La Madre Mountain and Blue Diamond Hill in RRCNCA, and in the McCullough Mountains of Sloan Canyon National Conservation Area (Baker, 2005). All known populations of the Blue Diamond cholla are located outside of the construction footprints for the proposed action.

3.10 Visual Resources

The RMP, adopted May 20, 2005, assigned a Visual Resources Management (VRM) Classification of primarily Class II, with some areas of Class III, for the areas containing the Scenic Loop Drive and the Visitor Center. The most critical variable affecting the sensitivity of the visual resources in this area is the NCA status of the area along with high levels of visibility of the natural landforms. The Spring Mountains in the vicinity of the proposed action illustrate banding from different geologic eras, showing reds, yellows, and grays within the mountainous landforms. They serve as the backdrop for western-looking views for motorists on the Scenic Loop Drive. The mountains in the background are jagged and pronounced and create a dominant landform. By contrast, the landform inside of the Scenic Loop Road conveys smooth undulations.

Vegetation in this area is indicative of low-growing blackbrush, desert shrub, desert wash, and chaparral vegetative communities. These vegetative communities produce muted green, gray, and brown color patterns. Very few bodies of water or human-made structures occur along the Scenic Loop Drive. The Scenic Loop Drive is a one-way road for vehicles, and views for motorists are typically limited to a distance of less than 0.25 mile because of the winding and curving nature of the roadway, the rolling topography, and the screening provided by the desert vegetation.

4.0 Environmental Effects

The following section provides an analysis of the environmental effects that may occur by implementing either the proposed action or the no action alternative. The resources identified in Chapter 3 as being Present and potentially impacted by the project are analyzed. It also outlines mitigation measures that will be implemented in order to reduce negative impacts to the environment or local resources.

4.1 Fish and Wildlife Excluding Federally Listed Species

4.1.1 Proposed Action

Wildlife species, including BLM sensitive species, in the general area include small mammals, rodents, birds, and reptiles. The BLM sensitive species western burrowing owl, chuckwalla, banded Gila monster, Mojave shovel-nosed snake, desert glossy snake, and Mojave Desert sidewinder may be present in the general area. These species would be displaced as lands are disturbed within the project area. The primary direct impact of the proposed action on wildlife would be killing or maiming of ground dwelling animals during construction and the loss of habitat. Additional impacts associated with the mortality from vehicular traffic may also occur.

4.1.2 No Action

Under the no-action alternative, none of the elements included in the project would be constructed and no project related impacts to wildlife or BLM sensitive species would occur. Sensitive species would continue to be protected under the RRCNCA RMP.

4.2 Floodplains

4.2.1 Proposed Action

The project crosses FEMA-regulated 100-year floodplains at Sandstone Wash, Red Rock Wash, and Pine Creek Wash. In accordance with 44 CFR §60.3(c)(10), the structures at Sandstone Wash and Red Rock Wash have been designed to convey the 100-year flow with less than a 1-foot rise in the base flood elevation. The flood warning system at Pine Creek Wash will require the creation of a 10-foot by 10-foot concrete pad at existing grade and would not result in a change to the base flood elevation. It is anticipated that a Nationwide Permit will be required from the U.S. Army Corps of Engineers for permanent impacts within the washes.

4.2.2 No Action

Under the no-action alternative, none of the elements included in the project would be constructed and no project related impacts to floodplains would occur.

4.3 Hydrologic Conditions (including Water Quality)

4.3.1 Proposed Action

The project would not result in a substantial change to the existing hydrologic conditions in the project area. Although Sandstone Wash and Red Rock Wash would undergo minor increases to flow velocities at the two structure locations—as is the case any time a drainage feature is stabilized—both washes will continue to operate as ephemeral drainages within the larger RRCNCA alluvial fan system. At Sandstone Wash, the project will result in a 0.23 acre decrease in impervious surface due to the removal of the existing Scenic Loop Drive pavement and more direct roadway connection in that location. At Red Rock Wash, a 0.06 acre increase in impervious surface would result from the bridge/roadway pavement and roadway widening.

In addition, improvements at the Visitor Center, and installation of the flood warning system would not change the existing hydrologic conditions in the project area as the minor amount of new impervious surface would not impact the amount of stormwater runoff to area washes and drainages. Erosion control BMPs implemented throughout construction will minimize any sedimentation of storm water.

In the absence of any drinking water natural resources within RRCNCA, the project will have no effect on drinking water quality.

4.3.2 No Action

Under the no-action alternative none of the elements included in the project would be constructed and no project-related impacts to existing hydrologic conditions would occur.

4.4 Invasive Species/Noxious Weeds

4.4.1 Proposed Action

Vegetation removal and soil disturbance during construction could create optimal conditions for the establishment of invasive plant species. If invasive weeds are able to infest disturbed areas, it would not only preclude native plant and habitat recovery, but it would also place the area at a much higher risk of a wildfire. Vehicles and construction equipment traveling from areas that contain invasive species could disperse invasive plant seeds, resulting in their establishment in previously undisturbed areas that may not have contained invasive species, as well as increasing the distribution or abundance of existing populations in previously disturbed areas. The transportation of materials into areas disturbed by construction (for example, erosion control materials, borrow materials, mulch, and gravel, as well as native seed mixtures and/or saplings used during re-vegetation efforts) may also contribute to the spread of invasive plant species. In the absence of measures to prevent and control newly established infestations resulting from construction, invasive plant species can persist in disturbed and reclaimed areas, and those that are present in the construction area may spread into adjacent areas. However, the project includes measures to reduce the potential for introduction or spread of invasive plant species.

These measures are described in the Mitigation section of this document as well as in the Weed Management Plan.

4.4.2 No Action

Under the no-action alternative, none of the elements included in the project would be constructed and no project-related impacts to invasive plant species or noxious weeds would occur. Invasive plant species and noxious weeds would likely continue to be introduced and spread as a result of natural dispersal or from various land-disturbing activities, such as roadway maintenance and construction, recreation, and development. Increases in the numbers or extent of invasive plant species would be restricted by monitoring and control measures implemented by the BLM.

4.5 Migratory Birds

4.5.1 Proposed Action

Migratory birds, including the BLM sensitive species the western burrowing owl (*Athene cunicularia*), may be present on the project site. Depending on the time of year for construction, there is the potential to disturb nesting birds within or immediately adjacent to the proposed action. The proponent must comply with the MBTA and avoid potential impacts to protected birds within the project area. Additionally, mitigation measures outlined in the next section will be implemented throughout the life of the project.

4.5.2 No Action

Under the no-action alternative, none of the elements included in the project would be constructed and no project-related impacts to migratory birds would occur.

4.6 Recreation

4.6.1 Proposed Action

The project would have a positive, beneficial effect on recreation within the RRCNCA. Project elements at the Visitor Center parking area would improve vehicular and pedestrian circulation and safety through improvements to pedestrian walkways, pavement resurfacing, and signage. Parking areas would also be delineated with indicators or striping, which would be safer than the existing use of boulders. Although the Visitor Center would remain open during construction, construction-related disturbances (for example, noise, dust, and large equipment) could affect the visitor's experience and temporarily decrease the recreational value of the associated recreational elements (picnic areas, trail access, and scenic viewing). Construction would occur during the day provided there is no disruption in visitor traffic, although some work may occur at night. The Visitor Center parking area would either be resurfaced at night or in phases to allow at least one of the parking levels to remain open at all times.

The Scenic Loop Drive would remain open during visitor hours throughout construction. During the construction of the new alignment at Sandstone Wash, the existing roadway would remain open to

traffic and a detour would not be required. Prior to construction at Red Rock Wash, a temporary roadway would be constructed immediately adjacent to the existing alignment to allow construction to occur without disrupting traffic. Mitigation measures outlined in the next section will be implemented to reduce any negative impacts to recreation and visitor experiences.

The flood warning systems that would be installed throughout the project area would improve safety for visitors as they would enable RRCNCA personnel to efficiently close the Scenic Loop Drive and/or alert visitors if conditions warranted.

As previously noted, motorized vehicles are restricted to existing roadways and prohibited from off-highway (cross country) use in the vicinity of Scenic Loop Drive. At Sandstone Wash the proposed action includes the construction of roadway on a new alignment for a distance of approximately 600 feet. Although the roadway would be constructed in an area where off-highway use is prohibited, it would remain in conformance with the RMP. The existing roadway would be demolished to encompass the new alignment. The RRCNCA RMP decision regarding the prohibition of off-highway (cross country) use outside of this realignment of Scenic Loop Drive would remain the same.¹ The existing management direction related to off-highway vehicles in the project area was developed to address the effects of motorized activities on lands adjacent to the Scenic Loop Drive and the proposed action would not provide new access into areas where off-highway vehicles are prohibited.

4.6.2 No Action

Under the no-action alternative, none of the elements included in the project would be constructed. There would be no improvements to the Visitor Center parking area, Scenic Loop Drive, or installation of flood warning systems. The no-action alternative would result in fewer disturbances to the visitor's experience in the short-term. However, as visitation to the RRCNCA grows, the need for the upgrades included in the project would increase. The no action alternative would have a negative impact on visitor safety and experience in the long-term as visitors could continue to get stranded between low water crossings during flood events, or be confused by circulation patterns at the visitor center. Cyclists would be negatively impacted as the conditions of the road surface continue to deteriorate.

4.7 Soils

4.7.1 Proposed Action

The project, specifically the improvements at Sandstone Wash and Red Rock Wash, will not affect the types of soil found in the project area (gravelly loam) but will result temporary and permanent soil disturbance. Improvements at Sandstone Wash would result in approximately 7.1 acres of new soil disturbance resulting from both permanent and temporary impacts, while improvements at Red Rock Wash would result approximately 13.6 acres of disturbance.

¹ This clarification of this RMP decision regarding off-highway use outside of the Scenic Loop falls under 43 CFR, § 1610.5-4 (Plan) Maintenance.

Project repaving at the Visitor Center would not result in any new disturbed soil. The flood warning systems installed at the Unnamed Wash, White Rock Wash, and Pine Creek Wash would require the installation of a concrete pad approximately 10 feet by 10 feet at each wash. The project would result in the permanent impact of less than 0.04 acre of previously undisturbed soil for the installation and operation of the flood warning system.

In accordance with 40 CFR §122.26(b)(14), because the project's construction area is greater than 1.0 acre, a Nevada Construction Storm Water Permit is required to be obtained prior to construction. Permit acquisition includes the development of a Storm Water Pollution Prevention Plan (SWPPP) as stated in the mitigation measures section of this EA. Impacts to soils during construction will be minimized through the BMP implementation outlined in the SWPPP.

During the biological survey performed for the project, squamulose lichens BSC were observed in the project area. BSC are sensitive to human disturbances to varying degrees, with construction equipment traffic representing a higher degree of disturbance than foot traffic (BLM, 2001). The project is anticipated to result in approximately 1.2 acres of new BCS disturbance. Where BSC is affected by the movement of construction equipment, disturbance minimization will be accomplished through BMPs.

4.7.2 No Action

Under the no-action alternative, none of the elements included in the project would be constructed. The location, pattern, and amount of soil erosion would remain as is.

4.8 Threatened, Endangered or Candidate Animal Species

4.8.1 Proposed Action

Clearing and grubbing of vegetation is considered to be permanent disturbance. This project will disturb up to 21.4 acres of tortoise habitat (permanent and temporary disturbance), and some project areas are adjacent to undisturbed, contiguous habitat, wherein potential corridors for tortoise entry exist. Since tortoise sign has been found in the vicinity (in pre-project surveys that have been completed) and undisturbed habitat exists in the area, there is potential for tortoises to wander into the project area. If not noticed and avoided during construction, desert tortoises could be either injured or killed (by crushing) or harassed (by being moved out of harm's way). This project will require an authorized desert tortoise biologist, monitor, or other expert approved by the BLM to present an education program and a tortoise monitor to be onsite during construction during the tortoise active season per terms and conditions provided. In addition to the attached terms and conditions, the applicant must also comply with the following minimization measure:

Trenches and deep holes for low water crossings and emergency system must be backfilled or covered at the end of each day during hours of inactivity to prevent animals from inadvertently falling in.

Formal consultation is required with USFWS due to ground disturbance in tortoise habitat, which entails an append to the RRCNCA programmatic biological opinion (File No. 1-5-04-F-526)¹². The append will be

submitted to USFWS and consultation typically takes approximately 45 days. Section 7 consultation for this project will be covered under the appended RRCNCA programmatic biological opinion (File No. 1-5-04-F-526) contingent on compliance with the terms and conditions. Minimization measures in the above biological opinion contain measures to reduce potential impacts to desert tortoise.

4.8.2 No Action

Under the No Action Alternative, none of the elements included in the project would be constructed and no project related impacts to threatened, endangered, or candidate species would occur.

4.9 Vegetation

4.9.1 Proposed Action

Surface disturbance related to the construction of the project would result in the temporary and permanent removal of vegetation within the project area. Disturbance caused by clearing, grubbing, grading, and trenching would result in the loss of up to approximately 21.4 acres of creosote-bursage scrub, desert wash, and Mojave mixed scrub vegetation types. Total disturbance would consist of approximately 4.4 acres of permanent impact and 17.0 acres of temporary impacts. This estimate incorporates maximum levels of disturbance at Sandstone Wash and Red Rock Wash as well as locations where the flood warning systems would be installed. The vegetation that would be impacted by the project is represented throughout the project area and impacts would be minor when considered in this larger context.

Areas where surface disturbance would occur as a result of construction activities would be reclaimed and seeded with BLM-approved, weed-free seed mix once project construction is complete. While impacts to vegetation in these areas would be temporary, it would require several years before new growth would be similar to the existing vegetation.

All cactus and yucca in the project footprint would be salvaged and replanted in the temporary disturbance areas as outlined in the mitigation measures section.

4.9.2 No Action

Under the no-action alternative, none of the elements included in the project would be constructed. No temporary or permanent impacts to vegetation would occur.

4.10 BLM Special Status Plants

4.10.1 Proposed Action

4.10.1.1 Yellow Two-Toned Penstemon

The proposed action would directly and indirectly impact two out of 32 known population occurrences of yellow two-tone beardtongue habitat in RRCNCA. The survey conducted by BLM in April 2014 identified one individual plant at the Sandstone Wash crossing. The species was not found at the Red

Rock Wash crossing in 2014; however, in 2012 over 10 plants were identified. The proposed action would directly and indirectly impact a total of 10 acres of occupied habitat. Construction of the low water crossings would result in crushing, the removal of plants, and disturbance of soil containing seed of the species. The loss of individuals causes decreased seed production and recruitment, which in turn leads to reduced populations. The removal of plants and the soil seed bank combined could lead to extinction of the local population. Typically, top soil salvage is used to minimize project impacts; however, because of the rocky nature of both washes, topsoil salvage is not practical and may not be effective. As an impact minimization measure, seed collection is only effective when the plant is present and producing seed. Because only one plant is present this year, collecting the seed from affected individuals is not an effective conservation measure. Attempting to restore the population, by growing and replacing plants, would not preserve the genetic diversity and would not satisfactorily replace the lost soil seed bank. Given the project schedule and potential impacts associated with the project, the BLM would implement offsite conservation measures. These measures are described in the Mitigation section of this document.

4.10.1.2 Blue Diamond Cholla

All known populations of the Blue Diamond cholla are located outside of the proposed action areas; direct impacts to this sensitive plant species are not expected.

4.10.2 No Action

Under the no-action alternative, none of the elements included in the project would be constructed. No temporary or permanent impacts to BLM special status plants would occur.

4.11 Visual Resources

4.11.1 Proposed Action

The visual changes brought about by the proposed project in the Visitor Center parking lot and in the areas where flood monitoring systems would be located would be minor, and the level of impact would be low. For this reason, these elements of the proposed project are not discussed in further detail. Instead, the rest of this analysis focuses on the visual changes that would be brought about by construction of bridge structures at Sandstone Wash and Red Rock Wash.

The degree to which the proposed action is consistent with the VRM classification of the land on which it would be located is based on the thresholds indicated for each VRM Class Objective. A VRM Class II Objective allows for a weak degree of contrast to result from the proposed action. The BLM considers a weak degree of contrast to occur when the proposed action can be seen but does not attract attention.

The approach to both of the washes is screened from view by vegetation and topographic changes, and the distance that the washes are in view is limited to less than 0.25 mile. For motorists driving 20 mph, the length of time that the bridge would be seen is less than 1 minute. The size and scale of the bridge do not dominate the view. The proposed bridge would break from the continuity of the topography and create its own elevated contour. However, it would continue to follow the natural curve of the wash to

maintain the continuity and relationship between the artificial and the natural environment. The smooth texture and vertical patterning of the bridges would create a weak degree of contrast because the bridge can be seen but does not attract attention away from the mountainous landscape or desert brush. For these reasons, the proposed action would be consistent with the VRM Class II Objective. General mitigation measures to reduce the visual impact of the project and comply with VRM Class II objectives are outlined in the mitigation measures section of this EA. (See Appendix B for detailed Visual Analysis.)

4.11.2 No Action

Under the no-action alternative, none of the elements included in the project would be constructed. No temporary or permanent impacts to visual resources would occur. The no-action alternative would be consistent with the VRM Class II Objective.

4.12 Cumulative Effects

Cumulative impacts are defined in the BLM National Environmental Policy Act (NEPA) Handbook (1998) as impacts on the environment that result from the incremental impact of the project when added to other past, present, and reasonably foreseeable future actions. The project area for cumulative impacts extends beyond the immediate project-specific project area to include the broader geographic limits of the RRCNCA. Past, present, and reasonably foreseeable future actions within this project area that have impacted or may impact the affected resources are presented in Table 2.

Table 2. Past, Present, and Reasonably Foreseeable Future Planning and Projects

Factor	Action	Description	Area Affected
Past Planning	RRCNCA RMP (2005)	RMP describes the appropriate uses and development of the conservation area as it provides management guidance and identifies land use decisions to be implemented for management.	198,000 acres of public lands in the RRCNCA in Clark County.

Table 2. Past, Present, and Reasonably Foreseeable Future Planning and Projects

Factor	Action	Description	Area Affected
Past Project	Red Rock Scenic Drive Trail System (1995)	A 13-mile one-way paved road and 46 miles of paved and unpaved trails.	Located within the core area, the Red Rock Scenic Loop Drive is for visitors to drive, bike, or hike. The remaining miles of trail system provide access to other areas within the core area and beyond. The Red Rock Scenic Loop Drive Trail System is used for casual recreation use as well as for permitted activities. The system of trails continues to be maintained today.
Past Project	Cottonwood Valley Trail System (1996)	Approximately 60 miles of trails in the Cottonwood Valley area.	Located adjacent to the core area, the Cottonwood Valley Trail System provides a network of access to areas south of the core area. It is used for casual recreation use as well as for permitted activities. The system of trails continues to be maintained today.
Past Project	Graffiti Removal from the Lost Creek Archaeological Site	Removal of graffiti from rock art panels.	Rock art panels located in the Lost Creek archeological site in the core area of RRCNCA were vandalized in 2010. It is a popular destination for visitors. Removal of graffiti restored the cultural site and discouraged further vandalism from occurring.

Table 2. Past, Present, and Reasonably Foreseeable Future Planning and Projects

Factor	Action	Description	Area Affected
Past Project	Visitor Center (April 2010)	Construction of new Visitor Center, Amphitheater, and outdoor interpretive space. Old Visitor Center converted to BLM office facility.	Located within the core area, the newly constructed Visitor Center provides additional indoor and outdoor space for viewing and educational interpretation for enhanced visitor experience. The additional BLM office space created by the conversion of the former Visitor Center allows for more staff work space enabling for enhanced onsite support for RRCNCA. It is anticipated that visitation may increase as a result of the new infrastructure and additional staff support.
Past Project	SR-1 59 Corridor Trail Feasibility Study and Programmatic Environmental Assessment (PEA) (2010)	The PEA analyzed a network of trails intended to enhance connections from municipalities and the county into Red Rock Canyon. Inter-connectivity to trails in other municipalities and federal lands. The Zone 2 Trail is consistent with the planned systems trails that would make connections to non-motorized trails outside the RRCNCA. In addition, the Zone 2 Trail would connect to widely used existing on-road bicycle undesignated routes.	Planning for this project included consultation with trail planners from Clark County to accomplish these means. This proposed trail alignment is intended to connect nodes within RRCNCA, including both ends of the Scenic Drive. In the next phase of design, the proposed trail segments will add connections to the campground, Spring Mountain Ranch State Park, and Bonnie Springs.
Past Project	Wastewater system upgrade to Red Rock Visitor Center	Red Rock Visitor Center upgrade of septic system.	Red Rock Visitor Center is located within the core area. Improvements to the wastewater system would accommodate the increased use and address human health and safety.

Table 2. Past, Present, and Reasonably Foreseeable Future Planning and Projects

Factor	Action	Description	Area Affected
Current Planning	Transportation Feasibility Study	Analysis of current core area transportation infrastructure (Scenic Drive, trails trailheads, and parking) to find solutions to current transportation concerns and potential future issues due to increased visitor use.	The core area of the RRCNCA including the Scenic Drive, adjacent facilities, and transportation infrastructure.
Current Planning	RRCNCA RMP Amendment — Bolting in Wilderness	Analysis of the current bolting restrictions in RRCNCA wilderness to find solutions for safe climbing.	La Madre Mountain and Rainbow Mountain Wilderness Areas, approximately 27,879 acres and 20,311 acres of which (respectively) are located within RRCNCA.
Current Project	Special Recreation Permits for the Cottonwood Valley Trail System	EA analyzing a number of Special Recreation Permits for issuance over a given period of time within the Cottonwood Valley Trail System of RRCNCA. This would be done by identifying and clarifying areas approved for multiple recreation uses to meet current and future Special Recreation Permit annual needs for an approximate 5-year period (2012–2017).	Located adjacent to the core area, the Cottonwood Valley Trail System provides a network of access to areas south of the core area with various casual recreation use and permitted activities occurring there regularly.
Current Project	Upgrades to Red Rock Fire Station	Facility improvements include: <ul style="list-style-type: none"> • Upgrade of septic system • Installation of a well • Installation of communication system 	Red Rock Fire Station is located in the core area and improvements to the facility would accommodate use and address health and safety for onsite staff members who provide for protection of resources.

Table 2. Past, Present, and Reasonably Foreseeable Future Planning and Projects

Factor	Action	Description	Area Affected
Current Project	Upgrades to existing Red Rock Campground	<p>Campground improvements include installation of:</p> <ul style="list-style-type: none"> • Campsite parking stalls and parking lot • Well • Shade structures • Solar panels for electricity to the site • Concrete pads for picnic tables 	Campground is located in the core area and improvements to the facility would result in improved visitor experience and potential increase in use.
Current Project	Red Rock Hazardous Fuels Reduction Project	Treatment using herbicide, mowing, blading, or combination of these methods to remove invasive/noxious weeds and to create fuel breaks.	Fuels reduction treatments in and around the core area of RRCNCA would treat invasive/noxious weeds adjacent to roads, trails, and in previously burned areas to create fuel breaks and limit potential spread fire in the event of a wildland fire. Native plant species would be avoided.
Current Project	Geotechnical Investigation for BLM-FHWA RRCNCA Scenic Loop Drive Improvement Project	Borings and seismic survey to provide geotechnical analysis and recommendations for inclusion into the Red Rock Canyon Low Water Crossing and Pavement Improvement Project.	Along Scenic Loop Drive within the paved surface of the existing roadway and shoulder; would not result in any new disturbance. Drilling at the low water crossing location would result in a minimal amount of new temporary disturbance, which would be reclaimed immediately following completion of each boring. Seismic testing would not result in additional disturbance.
Current Project	Red Rock Visitor Center Well and Water Line Replacement Project	Replacement of the tank and water line that provide water to the Visitor Center.	Red Rock Visitor Center is located within the core area. Improvements to the well and water line would improve functionality and service.

Table 2. Past, Present, and Reasonably Foreseeable Future Planning and Projects

Factor	Action	Description	Area Affected
Future Project	State Route 159 Multi-Use Trail — Zone 2	The 3.1-mile Zone 2 Trail roughly parallels SR-159 on the western side and extends from the Red Rock Visitor Center to the Scenic Drive Exit Lot.	Located within the core area, the Zone 2 Trail is one segment of the five segment SR-159 Corridor Trail intended to connect to trails in other municipalities and federal lands. With the EA completed in early 2012, the Zone 2 project is shelf-ready and pending funding for construction. This hiking/biking/equestrian riding trail would provide access into RRCNCA for casual recreation users as well as for permitted activities. It is anticipated that visitation may increase as a result of the completion of the trail.
Future Planning	Transportation and Travel Management Plan	Analyzing, defining, and designating current and future roads, trails, signage, and information systems within the RRCNCA.	198,000 acres of public lands in the RRCNCA in Clark County.

4.12.1 Fish and Wildlife Excluding Federally Listed Species

4.12.1.1 Proposed Action

Past, present, and reasonably foreseeable future projects are located within or adjacent to the core area of RRCNCA where BLM Sensitive Species are present (chuckwalla, burrowing owl, banded Gila monster, Mojave shovel-nosed snake, desert glossy snake, and Mojave Desert sidewinder). These and other wildlife species can be displaced, injured, or killed when lands are disturbed during construction periods and post-construction visitor use.

Current and planned facility and infrastructure improvements at the Visitor Center, Red Rock Fire Station, and Red Rock Campground would upgrade amenities and systems to meet growing visitor use. As the projects are completed, an increase in visitor use may occur, which could increase the potential for visitor-wildlife interactions and may lead to an increase in animal displacement, harassment, or mortality. However, the projects listed in Table 2 have been developed to concentrate visitor use in designated areas and reduce impacts overall to wildlife, vegetation, and habitat.

The construction of the proposed action is expected to result in impacts to wildlife. The project would disturb marginal to poor quality habitat and disturb wildlife species during construction. Over the long-

term, the proposed improvements in combination with other past, present, and reasonably foreseeable future projects would encourage visitors to remain in developed areas within the RRCNCA, benefitting wildlife and resulting in a beneficial cumulative effect on wildlife in the RRNCA.

4.12.1.2 No Action

The no-action alternative would not result in additional effects to wildlife or their habitat.

4.12.2 Floodplains

4.12.2.1 Proposed Action

The proposed action encounters regulated 100-year floodplains at Sandstone Wash, Red Rock Wash, and Pine Creek Wash. The proposed action would not increase base flood elevations by more than one foot in any of these locations. The flood warning systems that would be installed throughout the project area would improve safety for visitors as they would enable RRCNCA personnel to close Scenic Loop Drive and/or alert visitors if conditions warranted. When combined with past, present, and reasonably foreseeable future actions, the proposed action is not expected to result in cumulative impacts to floodplains.

4.12.2.2 No Action

The no-action alternative would not result in cumulative effects to floodplains.

4.12.3 Hydrologic Conditions (including Water Quality)

4.12.3.1 Proposed Action

Although the proposed action may result in minor impact when combined with past, present, and reasonably foreseeable actions, neither the construction period nor final operation of the project would result in substantial changes to existing hydrologic conditions. The net reduction in impervious surface area that would be created by the project would result in a minor reduction in the amount of stormwater runoff that would be directed into the washes. Erosion control BMPs implemented throughout construction would minimize any sedimentation of stormwater or other changes to the existing water quality. As a result, when combined with past, present, and reasonably foreseeable future actions, the proposed action would result in long-term beneficial effects.

4.12.3.2 No Action

The no-action alternative would not result in cumulative effects to hydrologic conditions or water quality.

4.12.4 Invasive Species/Noxious Weeds

4.12.4.1 Proposed Action

Designated trails, trailheads, roads, parking areas, facilities, and infrastructure within the RRCNCA have been developed to provide access and recreational opportunities for visitors. Current and planned

facility and infrastructure improvements at the Visitor Center, Red Rock Fire Station, and Red Rock Campground would upgrade amenities and systems to meet growing visitor use. The existing, improved, or new trails, trailheads, roads, and parking areas would encourage recreation use on the trails and built areas. Trail construction would enable a greater range of access and connectivity to other trails and areas within the RRCNCA and may help to disperse recreation use in the core area and throughout RRCNCA, which could facilitate the spread of invasive species and noxious weeds. The Red Rock Hazardous Fuels Reduction project as well as routine invasive weed treatment projects would likely reduce the extent of wildfire and the spread of invasive non-native species that could establish after wildfire events.

Vegetation removal, soil disturbance, and the transport of materials during the construction of the proposed action could create optimal conditions for the establishment of invasive plant species. The increased visitor use associated with other past, present, and reasonably foreseeable future projects could result in adverse cumulative effects on the spread of invasive species and noxious weeds. However, the proposed action is not expected to substantially contribute to these cumulative effects due to the environmental commitments and mitigation measures to reduce the introduction or spread of invasive species and noxious weeds.

4.12.4.2 No Action

The no-action alternative would not result in additional effects to invasive species and noxious weeds.

4.12.5 Migratory Birds

4.12.5.1 Proposed Action

Past, present, and reasonably foreseeable future activities include development and improvements to roads, trails, and infrastructure that may have impacted or have the potential to impact migratory birds (primarily through impacts to habitat, displacement, or mortality). However, impacts have been and would continue to be minimized with the implementation of BMPs during design and construction. In addition, most of the projects included in Table 2 are designed to encourage visitors to use designated areas and avoid vegetation and habitat, which may result in long-term benefits to migratory birds.

The construction of the proposed action is not expected to result in adverse effects to migratory birds. The proposed improvements would encourage visitors to remain in developed areas within the RRCNCA; potential impacts during construction would be avoided through the implementation of the provisions set forth in the MBTA.

Overall, the proposed action, combined with past, present, and reasonably foreseeable future actions, would result long-term beneficial cumulative effects to migratory birds by encouraging visitors to remain in developed areas and avoid vegetation and habitat.

4.12.5.2 No Action

The no-action alternative would not result in additional effects to migratory birds.

4.12.6 Recreation

4.12.6.1 Proposed Action

Past, present, and future designated trails, trailheads, roads, parking areas, facilities, and infrastructure within the RRCNCA have been developed to provide access and recreational opportunities for visitors and cumulatively have improved the recreational experience and opportunities in the RRCNCA.

The 2005 RRCNCA RMP provides management guidance and land use decisions for recreation and resource protection. As growth in the Las Vegas Valley continues, visitation to the RRCNCA will increase. The RRCNCA Transportation Feasibility Study and subsequent Travel and Transportation Management Plan will address current and future visitation conditions and provide plans to concentrate travel and transportation use to designated areas, helping to improve recreational opportunities throughout RRCNCA.

The proposed action is expected to have a positive, beneficial effect on recreation within the RRCNCA. When combined with past, present, and reasonably foreseeable future actions, long-term beneficial cumulative effects to recreation are anticipated.

4.12.6.2 No Action

The no-action alternative would not result in cumulative effects to recreation.

4.12.7 Soils

4.12.7.1 Proposed Action

Facility and infrastructure improvements included in Table 2 are not expected to result in cumulative impacts to soils. Minimal soil disturbance would be created and any residual effects would be minimized through the implementation of BMPs and mitigation measures. In addition, the project would result in a minor reduction in impervious surface.

The proposed action would cause soil disturbance and but would reduce impervious surfaces (0.13 acre reduction in impervious surface). Given the reduction in impervious surface, acreage of new soil disturbance in relation to the size of each wash, and the infrequency of heavy precipitation events, soil impacts from stormwater runoff are expected to be minimal. The Proposed Action when combined with other past, present, and reasonably foreseeable future projects would not result in adverse cumulative effects to soils in the RRCNCA because soil disturbance and impervious surface area increases would be minimal.

4.12.7.2 No Action

The no-action alternative would not result in cumulative effects to soils.

4.12.8 Threatened, Endangered or Candidate Animal Species

4.12.8.1 Proposed Action

Past, present, and reasonably foreseeable future projects are located within or adjacent to the Core area of RRCNCA where desert tortoises are present. Current and planned facility and infrastructure improvements at the Visitor Center, Red Rock Fire Station, and Red Rock Campground would upgrade amenities and systems to meet growing visitor use. As the projects are completed, an increase in visitor use may occur, which could increase the potential for take of desert tortoise and/or sensitive species through mortality, degradation of habitat, spread of weeds, and increase in the risks of wildfires, vandalism, trash dumping, and poaching. However, the projects listed in Table 2 have been developed to concentrate visitor use in designated areas and reduce impacts overall to wildlife, vegetation, and habitat.

The construction of the proposed action would disturb desert tortoise habitat. Because of the short-term duration of project activities, proposed minimization measures, and low number of tortoises in the action area, the project is expected to have a minimal impact on desert tortoises and their habitat. In addition, the proposed improvements would encourage visitors to remain in developed areas within the RRCNCA and avoid vegetation and habitat.

Overall, the proposed action, combined with past, present, and reasonably foreseeable future actions, would be expected to result in long-term beneficial cumulative effects to T&E animal species because the actions would concentrate visitor use in designated areas and would reduce impacts to wildlife, vegetation, and habitat overall.

4.12.8.2 No Action

The no-action alternative would not result in additional effects to T&E animal species.

4.12.9 Vegetation

4.12.9.1 Proposed Action

Past, present, and reasonably foreseeable future projects are located within or adjacent to the Core area of RRCNCA. Because the project would require the clearing and grubbing of vegetation—most notably along the new bridge alignment at Sandstone Wash, the project would contribute to cumulative impacts to BLM managed native plant communities. To minimize impacts, the project will utilize a salvage plan for yucca and cacti, and a restoration plan for vegetation that cannot be salvaged. Construction BMPs will be utilized to further avoid impacts to vegetation. Given the vastness of the 198,000 acres comprising RRCNCA, even when combined with past, present, and reasonably foreseeable actions, the project would not be expected to significantly impact vegetation within the project area or within the larger area of RRCNCA.

4.12.9.2 No Action

The no-action alternative would not result in additional effects to BLM managed native plant communities.

4.12.10 BLM Special Status Plants

4.12.10.1 Proposed Action

Past, present, and reasonably foreseeable future projects are located within or adjacent to the Core area of RRCNCA where BLM Sensitive Plant Species are present. BLM Sensitive Plant Species known to occur in the project area (yellow two-tone beardtongue and Blue Diamond cholla) have been reduced through development and historic actions. The historic distribution of the yellow two-tone beardtongue includes 43 recorded occurrences (Glennie, 2003)¹⁴. Presently, the known distribution includes 32 recorded occurrences.

As current and planned projects are completed and growth in the Las Vegas Valley continues, increase in visitor use may occur, which could increase the potential for impacts to vegetation and BLM sensitive species. However, designated trails, trailheads, roads, parking areas, facilities, and infrastructure within the RRCNCA have been developed to concentrate visitor use to designated areas to reduce impacts to vegetation and BLM Sensitive Plant Species.

The proposed action would incrementally contribute to cumulative effects to BLM Sensitive Plant species through direct and indirect impacts to two of the 32 known population occurrences of yellow two-tone beardtongue habitat in RRCNCA. The BLM would implement offsite conservation measures consistent with BLM MS 1794- Regional Mitigation Manual to mitigate the effects of the proposed action on these BLM sensitive plant species.

4.12.10.2 No Action

The no-action alternative would not result in additional effects to BLM Sensitive Plant Species.

4.12.11 Visual Resources

4.12.11.1 Proposed Action

Past, present, and reasonably foreseeable future activities include development and improvements to roads, trails, and infrastructure that may have impacted or have the potential to impact visual resources. However, any roads, trails, parking lots, or transportation infrastructure would be constructed following VRM Class II guidelines that would keep a low natural profile and maintain the natural beauty of the RRCNCA.

The visual changes brought about by the proposed project would be minor, and the level of impact would be low. As a result, the proposed action combined with other past, present, and reasonably foreseeable future actions is not expected to result in adverse cumulative effects to visual resources because the actions would be consistent with the VRM II guidelines.

4.12.11.2 No Action

The no-action alternative would not result in cumulative effects to visual resources.

4.13 Mitigation Measures

4.13.1 Floodplains

- A Nationwide Permit will be required from the U.S. Army Corps of Engineers for permanent impacts within the washes.

4.13.2 Invasive Species/Noxious Weeds

- A Weed Management Plan will be implemented by the contractor to control the spread of noxious weeds throughout construction and reclamation. The Weed Plan must be approved by the BLM Weed Management Specialist prior to construction. Additional measures to control the spread of noxious weeds are listed below.
- The contractor will limit the size of any vegetation and/or ground disturbance to the absolute minimum necessary to perform the activity safely and as designed. The contractor will avoid creating soil conditions that promote weed germination and establishment.
- The contractor will coordinate project activities with the BLM weed coordinator (702-515-5295) regarding any proposed herbicide treatment. If herbicide treatment is needed, the contractor will prepare, submit, obtain, and maintain a pesticide use proposal for the proposed action. Weed treatments may include the use of herbicides, and only those herbicides approved for use on public lands by the BLM.
- The contractor will begin project operations in weed-free areas whenever feasible before operating in weed-infested areas.
- The contractor will locate pits and staging areas for the use of equipment storage, machine and vehicle parking, or any other area needed for the temporary placement of people, machinery, and supplies. These staging areas will be selected from locations that are relatively weed-free. The contractor will avoid or minimize all types of travel through weed-infested areas or restrict major activities to periods of time when the spread of seed or plant parts are least likely.
- BLM or the contractor will determine equipment cleaning sites. These sites will be coordinated with the BLM. Project-related equipment and machinery (this especially includes the nooks and crannies of undercarriages) will be cleaned of all mud, dirt, and plant parts before moving into relatively weed-free areas and when leaving weed infested sites. Seeds and plant parts need to be collected, bagged, and deposited in landfills through the waste disposal system when practical. (This is not meant to apply to service vehicles that will stay on roadways avoiding weed infested sites.)

- Project workers need to inspect, remove, and dispose of weed seed and plant parts found on their clothing and equipment. Disposal methods vary depending on the project.
- The proponent will be responsible for controlling all undesirable invading plant species (including listed noxious weeds and other invasive plants identified as undesirable by federal, state, or local authorities) within the boundaries of their authorization area and BLM-authorized ancillary facilities (such as access and utility corridors), including all operating and reclaimed areas, until re-vegetation activities have been deemed successful and responsibility released by the authorized officer. Control standards and measures proposed must conform to applicable state and federal regulations.
- The proponent will use weed-free seed for reclamation; other organic products for erosion control, stabilization, or re-vegetation (such as straw bales, organic mulch) must be certified weed-free.
- The proponent is responsible for ensuring that all project-related vehicles and equipment arriving at the site (including drill rigs, dozers, support vehicles, pickups, and passenger vehicles, including those of the operator, any contractor, or subcontractor and invited visitors) do not transport noxious weeds onto the project site. The proponent will ensure that all such vehicles and equipment that will be traveling off constructed and maintained roads or parking areas within the project area have been power washed, including the undercarriage, since their last off-road use and prior to off-road use on the project. When beginning off-road use on the project, such vehicles and equipment will not harbor soil, mud or plant parts from another locale. Depending on the site setting such as remoteness, or other site condition, the operator may be required to have an onsite wash area identified and readily available. If a noxious weed infestation is known or later discovered on the project site, project-related vehicles or equipment that have traveled through such an infestation will be power washed, including the undercarriage, prior to leaving the site, at an established, identified wash area. Wash water and sediment will be contained in an adjacent settling basin. Should any vegetation emerge in the wash area or settling basin, it will be promptly identified and appropriately controlled if found to be an undesirable invasive plant.

4.13.3 Migratory Birds

- To prevent undue harm, habitat-altering projects or portions of projects should be scheduled outside bird breeding season. In upland desert habitats and ephemeral washes containing upland species, the season generally occurs between February 15th and August 31st.
- If a project that may alter any breeding habitat has to occur during the breeding season, then a qualified biologist must survey the area for nests prior to commencement of construction activities. This will include burrowing and ground nesting species in addition to those nesting in vegetation. If any active nests (containing eggs or young) are found, an appropriately sized buffer area must be avoided until the young birds fledge. As the above dates are a general

guideline, if active nests are observed outside this range, they are to be avoided as described above.

4.13.4 Recreation

- Implementation of BLM-approved traffic control measures, such as construction cones and construction lights, will be used to minimize traffic delays.
- All areas within the RRCNCA that are currently open to the public will remain open to the public. The BLM and/or the contractor will advise visitors of construction activities. Construction updates and advisements will be available at the field office or Visitor Center.
- The Scenic Loop Drive and Visitor Center will remain open during visitor hours and access to the Red Rock Canyon Campground will be maintained.

4.13.5 Soils

- A SWPPP will be developed prior to construction and implemented throughout the life of the project.
- Impacts to soils will be minimized through implementation of BMPs as identified in the Nevada Department of Environmental Protection BMP Guide.

4.13.6 T&E Animal Species

- *Speed limit:* The speed limit is 35 miles-per-hour on the Red Rock Scenic Loop road. Within Clark County, the speed limit is 25 miles-per-hour on unposted County roads; this speed will be established for all activities at all times unless otherwise designated.
- *Vehicles:* All project/event-related individuals will check underneath stationary vehicles before moving them.
- *Vehicle traffic:* Traffic will be restricted to the Scenic Loop Drive, unless otherwise authorized by BLM and the USFWS.
- *Litter-control:* This will be implemented and enforced by the contractor or BLM. Trash containers will remain covered, must be raven-proof, and emptied frequently enough to prevent overflow of materials. Trash, litter, project debris, etc. will be transferred to a designated solid waste disposal facility. Vehicles hauling trash must be secured to prevent litter from blowing out along the road.
- *Tortoise mortality/injury:* BLM wildlife staff (702-515-5000) and the USFWS (702-515-5230) must be notified of any desert tortoise death or injury due to the project implementation by close of business on the following work day. In addition, the USFWS's Division of Law Enforcement will be notified in accordance with the reporting requirements of this biological opinion.

- *Tortoise activity:* The period of greatest tortoise activity is generally defined as March 1–October 31. However, unseasonably warm weather and/or precipitation outside this period may result in tortoise activity, particularly by hatchlings and juvenile tortoises, and thus warrant adherence to requirements established for periods of greater activity. Similarly, BLM may determine that additional measures are appropriate for projects planned for the end or beginning of either period if conditions are suitable for desert tortoises to be active.
- *Education program:* The BLM or their designee shall (as defined below) present a tortoise education program to all foremen, workers, permittees, and other employees or participants involved on projects covered under this opinion. The program will consist of either a presentation or fact sheet as determined by project-level consultation between BLM and the USFWS. The program or fact sheet will include information on the life history of the desert tortoise, legal protection for desert tortoises, penalties for violations of federal and state laws, general tortoise activity patterns, reporting requirements, measures to protect tortoises, terms and conditions of the biological opinion, and personal measures employees can take to promote the conservation of desert tortoises. The definition of "take" will also be explained. Workers and project associates will be encouraged to carpool to and from the project sites. Specific and detailed instructions will be provided on the proper techniques to capture and move tortoises that appear onsite if appropriate, in accordance with USFWS-approved protocol. Currently, the USFWS-approved protocol is Desert Tortoise Council 1994, revised 1999¹⁵.
- *Biologist approval:* Biologists to be used to implement the terms and conditions of the biological opinion, or permit issued by BLM, must be approved by the USFWS. Any biologist and/or firm not previously approved must submit a statement of qualifications in the USFWS-developed format and be approved by USFWS before authorized to represent BLM in meeting compliance with the terms and conditions of the biological opinion. Other personnel may assist with implementing conservation measures, but must be under direct field supervision by the authorized biologist.
- *Biologist qualifications:* In accordance with Procedures for Endangered Species Act Compliance for the Mojave Desert Tortoise (USFWS, 1992), an authorized desert tortoise biologist should possess a bachelor's degree in biology, ecology, wildlife biology, herpetology, or closely related fields as determined by BLM and the USFWS. The biologist must have demonstrated prior field experience using accepted resource agency techniques to survey for desert tortoises and tortoise sign, which should include a minimum of 60 days of field experience. All tortoise biologists will comply with the USFWS-approved handling protocol (USFWS, 1999). The biologist and/or monitor must be familiar with the terms and conditions of the biological opinion that resulted from project-level consultation between BLM and the USFWS.
- *Tortoise in harm's way:* If a tortoise is found within the project/activity site in harm's way, all potentially harmful activity will cease until the tortoise moves or is moved out of harm's way

by an authorized biologist. If a desert tortoise is in imminent danger, the tortoise will be moved out of harm's way and on to adjacent BLM land, using techniques described in the tortoise education program.

- *Moving tortoises:* Tortoises that are moved offsite and released into undisturbed habitat on public land must be placed in the shade of a shrub, in a natural unoccupied burrow similar to the hibernaculum in which it was found, or in an artificially constructed burrow in accordance with the tortoise handling protocol. Tortoises encountered will be treated in a manner consistent with the appropriate measures in this biological opinion.
- *Permits:* All appropriate state and federal permits, including Nevada Division of Wildlife and USFWS permits for handling desert tortoises or their parts, must be acquired by the tortoise biologists or other personnel before project initiation and prior to handling any desert tortoise or their parts, or conducting any activity requiring a permit.
- *Project oversight:* A BLM representative(s) will be designated, who will be responsible for overseeing compliance with the reasonable and prudent measures, terms and conditions, reporting requirements, and re-initiation requirements contained in this biological opinion. The designated representative will provide coordination among the permittee, contractor, BLM, and the USFWS.
- *Desert tortoise burrows:* Burrows will be avoided whenever possible; if not, burrows will be cleared in accordance with the measures set forth in this biological opinion.
- *Heat stress:* Desert tortoises encountered experiencing heat stress will be placed in a tub, by an authorized tortoise biologist, with one inch of 76–90°F water for at least 20 minutes or until heat stress symptoms are no longer evident.
- *Temperature restrictions:* Desert tortoises will be treated in a manner to ensure that they do not overheat, exhibit signs of overheating (such as gasping, foaming at the mouth, etc.), or are placed in a situation where they cannot maintain surface and core temperatures necessary to their well-being. Desert tortoises will be kept shaded at all times until it is safe to release them. No desert tortoise will be captured, moved, transported, released, or purposefully caused to leave its burrow for whatever reason when the ambient air temperature is above 95°F (35°C). Ambient air temperature will be measured in the shade, protected from wind, at a height of 2 inches (5 centimeters) above the ground surface. No desert tortoise will be captured if the ambient air temperature is anticipated to exceed 95°F (35°C) before handling and relocation can be completed. If the ambient air temperature exceeds 95°F (35°C) during handling or processing, desert tortoises will be kept shaded in an environment that does not exceed 95°F (35°C), and the animals will not be released until ambient air temperature declines to below 95°F (35°C).
- *Reporting:* The contractor, permittee, or project lead if an internal action, must submit a document to BLM wildlife biologist within 30 days of completion of the project showing the

number of acres disturbed, remuneration fees paid, and number of tortoises observed or taken, which includes capture and displacement, killed, injured, or harassed by other means, during implementation of programmatic actions.

- *Project boundaries:* Limits of disturbance will be clearly indicated on the design plans. All activities will be confined to designated areas.

FOR ACTIONS INVOLVING NEW GROUND DISTURBANCE:

- *Blading of vegetation:* Will occur only to the extent necessary and will be limited to areas designated for that purpose by BLM or tortoise biologist.
- *Fees:* Prior to issuance of authorization, and prior to any surface-disturbing activity associated with the proposed project, the BLM will pay a remuneration fee of \$836 for each acre of surface disturbance, if paid prior to March 1, 2015. This rate will be indexed annually for inflation based on the Bureau of Labor Statistics Consumer Price index for All Urban Consumers (CPI-U). Information on the CPI-U can be found at <http://stats.bls.gov/news.release/cpi.nws.htm>. An exception is made if the disturbance for the project is less than 0.25 acre of disturbance or for activities that result in a long-term benefit for the species (for example, trail realignment to minimize habitat impacts). A total of 21.4 acres of disturbance are within tortoise habitat; therefore, fees are required.
- *Notification:* The project applicant/BLM lead will notify BLM wildlife staff at least 10 days before initiation of the project. Notification will be made to BLM's wildlife staff representative responsible for NEPA review of the project at 702-515-5000.
- *Clearance:* All project areas, staging areas, etc. will be cleared of tortoises by an authorized tortoise biologist no more than 3 days before the start of ground disturbance using 100 percent coverage survey techniques. Burrows found outside the area to be disturbed will be flagged and avoided. Clearance will involve excavating nests; relocating eggs; flagging avoidable burrows; collapsing unavoidable, or unoccupied burrows; and relocating tortoises in accordance with the USFWS-approved protocol for handling desert tortoises (USFWS, 1999).

ADDITIONAL MITIGATION MEASURES

- Trenches or deep holes will be backfilled or covered at the end of each day during hours of inactivity to prevent animals from inadvertently falling in.
- A tortoise monitor will be onsite for project construction during the period of greatest tortoise activity (generally March 1 through October 31). An authorized tortoise biologist will be on call at all times.

4.13.7 Vegetation

- Cactus and yucca are considered government property under the forestry program. If cactus and yucca are unable to be avoided, they would be salvaged and replanted in the temporary use areas following completion of construction.
- Unless otherwise directed by the BLM botanist, all replanted cactus and yucca would be watered and otherwise maintained for a period of 1 year.
- To ensure successful salvage and transplant, all cactus and yucca would be salvaged using a contractor (or other approved by the BLM botanist) with at least 3 years of experience salvaging and maintaining plant materials in the Mojave or Sonoran deserts.
- A BLM-approved restoration plan approved by the BLM Botanist and consistent with guidelines for the RRCNCA will be put in place prior to construction.
- All areas of disturbance will be restored immediately after completion of the project.

4.13.8 BLM Special Status Plant Species

- A rare plant survey of the project area (conducted in Spring 2012) identified a population of the BLM sensitive plant species yellow two-tone beardtongue (*Penstemon bicolor ssp. Bicolor*) within the footprint of the Sandstone Wash low water crossing. Impacts are assessed in this EA.
- To address impacts to the BLM Sensitive Plant Species yellow two-tone beardtongue, the BLM will implement off site conservation measures consistent with BLM MS 1794 Regional Mitigation Manual. Offsite mitigation will include seed collection of both affected and adjacent populations and long-term conservation storage by adding the species to the National Collection of Endangered Plants. Offsite conservation will benefit the species and public by conserving genetic diversity. The loss of genetic diversity is one of the biggest threats to rare plant populations. Seed from the species will be available for future conservation efforts by BLM and other federal agencies. In addition, offsite conservation will help address genetic erosion created by hybridization with *Penstemon palmeri*; the introduction of *Penstemon palmeri* now threatens many of the population occurrences in the RRCNCA.

4.13.9 Visual Resources

- All permanent components of the project will meet BLM established criteria for Visual Resource Management Class II. This may be accomplished by the following actions:
- Cut or fill slopes will be replanted with native species to minimize visual impacts. To the extent that any significant plants are located in the area disturbed by project construction, efforts should be made to salvage these plants and use them in re-vegetation of areas where vegetation has been removed.
- Natural desert environment color palettes and/or BLM Standard Colors will be used for the bridges and associated infrastructure to minimize visual impact.

- Texture applications will be used as necessary to minimize the smooth appearance of the various elements of the bridges, particularly the piers that create visual contrast with the surrounding landscape.
- Design elements will minimize the mass of the bridges to minimize the degree of contrast and dominance created by the bridges: Includes minimizing the length of the bridge, the height, the depth of the superstructure, and the number of piers or columns, and limiting the use of railings to only meet safety standards.
- Design elements will minimize the use of bridge features that create vertical patterning because this patterning does not occur naturally in this setting.

5.0 Agency Consultations

Table 3. List of Persons, Organizations, and Agencies Consulted

Name	Purpose and Authorities for Consultation or Coordination	Findings and Conclusions
U.S. Fish and Wildlife Service	Formal Section 7 consultation will be completed concerning potential impacts to desert tortoise.	The proposed action is not likely to jeopardize the continued existence of the threatened Mojave desert tortoise. The project must comply with mitigation measures included in this EA.

6.0 List of Preparers

Table 4. List of Preparers

Name	Title	Responsible for the Following Section(s) of this document
BLM Staff		
Lisa Christianson	Air Resource Specialist	Air Resources/ Greenhouse Gas Emissions/ Wastes (hazardous or solid)
Carla Wise	Biologist	Areas of Critical Environmental Concern/ Fish and Wildlife Excluding Federally Listed Species/ Migratory Birds/ Threatened, Endangered or Candidate Animal Species
Sendi Kalcic	Wilderness Specialist	BLM Natural Areas/ Wilderness/WSA/ Lands with Wilderness Characteristics
Mark Boatwright	Archeologist	Cultural Resources/ Native American Religious Concerns/ Paleontology
Susan Farkas	Planning and Environmental Coordinator	Environmental Justice/ Socio-Economics
Boris Poff	Hydrologist	Floodplains/ Hydrologic Conditions/ Soils/ Water Resources/Quality (drinking/surface/ground)/ Wetlands/Riparian Zones
Chad Vellinga, P.E.	Project Manager	Document oversight, review, and editing
Lauren Brown	Weeds Management Specialist	Fuels/Fire Management/ Invasive Species/Noxious Weeds/ Editor of Document
Lori Dee Dukes	Geologist	Geology / Mineral Resources/Energy Production
Kerri-Anne Thorpe	Realty Specialist	Lands/Access
Katie Kleinick	Natural Resource Specialist	Livestock Grazing/ Rangeland Health Standards/ Threatened, Endangered or Candidate Plant Species/ Vegetation Excluding Federally Listed Species/ Woodland / Forestry
Nick Walendziak	Recreation Specialist	Recreation
Brenda Warner	Visual Resource Specialist	Visual Resources
Krystal Johnson	Wild Horse and Burro Specialist	Wild Horses and Burros/ Farmlands
FHWA-CFLHD Staff		
Matt Ambroziak, P.E.	Project Manager	Project Delivery
Jeff Berna	Environmental Program Specialist	Environmental Compliance

Table 4. List of Preparers

Name	Title	Responsible for the Following Section(s) of this document
Consultant Staff (CH2M HILL)		
Bill Lang, P.E	Project Manager	Project Delivery
Brett Weiland	Senior Environmental Planner	Environmental Lead
George Woolley	Environmental Planner	EA Development/GIS
Shonna Sam	Environmental Planner	EA Development
Colleen Roberts	Senior Environmental Planner	QA/QC
Jessica Birnbaum	Biologist	Natural Resources/Threatened and Endangered Species
Caitlin McCusker	Environmental Planner	Visual Resources
Candice Hein, P.E.	Project Engineer	Roadway Design
Doug Stewart, P.E.	Project Engineer	Drainage Design
John Rohner, P.E.	Project Engineer	Structure Design

7.0 References

1. Baker, M.A. 2005. Current knowledge and conservation of *Cylindropuntia multigeniculata* (Cactaceae), the Blue Diamond cholla. Status Report Prepared for U.S. Fish and Wildlife Service, Nevada State Office, Reno, Nevada.
2. Bureau of Land Management (BLM). 1998. National Environmental Policy Act (NEPA) Handbook.
3. ——. 2001. Biological Soil Crusts: Ecology and Management. Technical Reference 1730-2.
4. ——. 2005a. Red Rock Canyon National Conservation Area (RRCNCA) Resource Management Plan.
5. ——. 2005b. RRCNCA Resource Management Plan and Record of Decision.
6. ——. 2006. Las Vegas Field Office Weed Plan.
7. ——. 2012. Final Environmental Assessment Red Rock Hazardous Fuels Reduction Project. DOI-BLM-NV-S000-2011-0002-EA
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9. National Invasive Species Council (NISC). 2008. Executive Order 13112.
10. RRCNCA Programmatic Biological Opinion. 2014. Prepared for the BLM. File No. 1-5-04-F-526.
11. Smith, F.J. 2005. Current knowledge and conservation status of *Penstemon bicolor* (Brandegee) Clokey & Keck (Plantaginaceae), the two-tone beardtongue. Status Report Prepared for Nevada Power Company, Las Vegas, Nevada and U.S. Fish and Wildlife Service, Nevada State Office, Reno, Nevada.
12. U.S. Fish and Wildlife Service (USFWS). 1992. Procedures for Endangered Species Act Compliance for the Mojave Desert Tortoise.
13. ——. Revised 1999. U.S. Fish and Wildlife Service, Desert Tortoise Council 1994, revised 1999.
14. U.S. Geological Survey (USGS). 2011. Gap Analysis Program (GAP).

Appendix A – Figures

Appendix B – Supporting Documentation
