

Appendix F  
Restoration Plan

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RESTORATION PLAN FOR  
THE RED ROCK TRAIL AND INTERSECTIONS IMPROVEMENTS  
PROJECT  
DOI-BLM-NV-S020-2021-0008-EA

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# 1.0 Introduction/Background

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The Bureau of Land Management (BLM), in partnership with the Federal Highway Administration – Central Federal Lands Highway Division (FHWA-CFLHD) has approved roadway improvements to safety, access, and preservation of natural resources in the Red Rock Canyon National Conservation Area (RRCNCA) along State Route (SR)-159 (Figure 1). The main elements of the Proposed Action include a 5.5-mile-long, multi-use trail connecting the Summerlin residential development and existing Interstate (I)-215 West Beltway Trail to the RRCNCA Scenic Drive Fee Area, extended deceleration lanes at the Calico Basin Road and RRCNCA Scenic Drive Fee Area intersections with SR-159, four new parking areas, and relocation of the “Red Rock Canyon” rock sign. As described in the BLM National Environmental Policy Act Environmental Assessment (EA) document DOI-BLM-NV-S020-2021-0008-EA, this project will permanently impact 19.72 acres and temporarily impact 15.44 acres of creosote bush, blackbrush, and desert wash habitat. This restoration plan describes the revegetation practices and performance standards that will be implemented to restore the project area once project improvements are complete. This plan is prepared based on Southern Nevada District Office (SNDO) restoration planning guidance dated September 2001 (BLM and Native Resources 2001; SAIC 2001).

The project is located in the RRCNCA, 15 miles west of Las Vegas, Nevada (Figure 1). The project includes the following improvements to SR-159, intersections, and trail:

- Construct a 5.5-mile-long, multi-use trail connecting the Summerlin residential development and existing I-215 West Beltway Trail to the RRCNCA Scenic Drive Fee Area.
- Extend deceleration lanes at the Calico Basin Road and RRCNCA Scenic Drive Fee Area intersections with SR-159.
- Construct three new parking areas within this portion of RRCNCA.
- Relocate the “Red Rock Canyon” rock sign.

The project has been designed to improve safety for all users of SR-159, improve access to RRCNCA, and create a high-quality recreational experience for visitors in the RRCNCA. The BLM Red Rock/Sloan Field Office is responsible for managing the RRCNCA.

Total new surface disturbance resulting from the project would be approximately 35.16 acres. This includes 19.72 acres of permanent disturbance and 15.44 acres of temporary disturbance. The area impacted is within the Nevada Department of Transportation right-of-way and BLM multiple-use lands outside of any Areas of Critical Environmental Concern. The U.S. Fish and Wildlife Service has identified this area as low-density desert tortoise habitat. No designated critical habitat for this species is present.

Surface disturbance will occur in several vegetation community types, as described in the RRCNCA Resource Management Plan and Record of Decision (BLM 2005). The creosote bush community generally occurs on valley floors and benches at elevations below 3,600 feet. In addition to creosote bush, other dominant species in this community include white bursage (*Ambrosia dumosa*), desert-thorn (*Lycium andersonii*), hopsage (*Grayia spinosa*), several cactus species, and the invasive grasses red brome (*Bromus rubens*) and cheatgrass (*B. tectorum*). The blackbrush community generally occurs on bajada terraces with shallow soils at elevations between 3,500 and 6,000 feet. Other dominant species found in this community include Joshua tree (*Yucca brevifolia*), banana yucca (*Y. baccata*), Mormon tea (*Ephedra* spp.), and horsebrush (*Tetradymia* spp.). Grass species include big galleta (*Hilaria rigida*) and desert needle grass (*Achnatherum speciosum*). The desert wash community bisects the creosote bush and blackbrush communities and is composed of a variety of species.

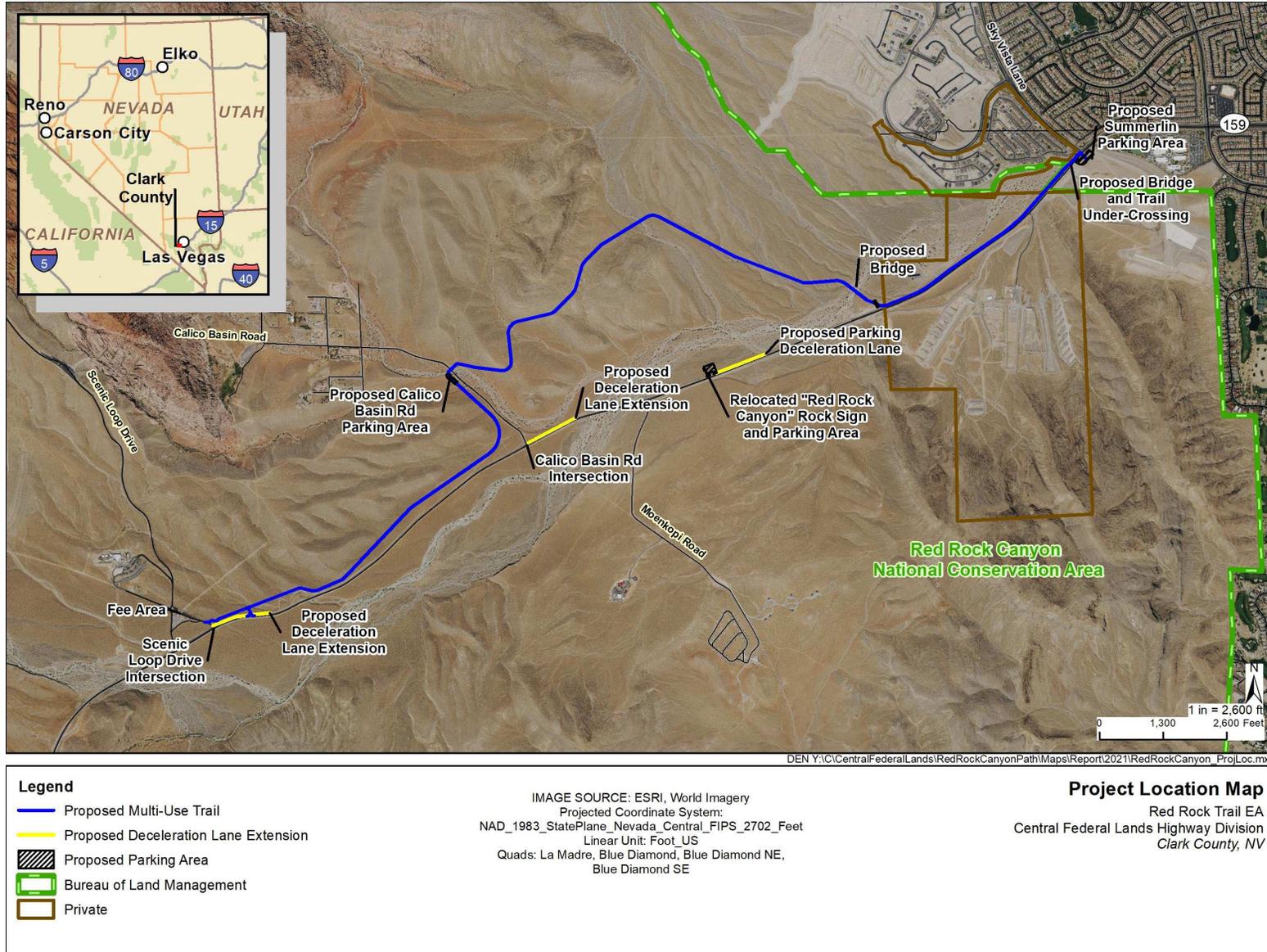


Figure 1. Project Area

Dominant species include rabbitbrush (*Chrysothamnus* spp.), desert almond (*Prunus fasciculata*), desert willow (*Chilopsis linearis*), and screwbean mesquite (*Prosopis pubescens*). Vegetation may also be a continuation of vegetation communities on adjacent terraces traversed by the wash.

Yellow two-tone beardtongue (*Penstemon bicolor* ssp. *bicolor*), a BLM sensitive plant species, is known to occur in the project area, but will not be directly impacted by project implementation.

Cactus and yucca are present within the project area. Approximately 422 cactus and 2,721 yucca plants will be directly impacted by the project. Table 1-1 shows the counts of each plant species within the temporary and permanent disturbance areas. Plants from the temporary disturbance areas will be salvaged and replanted in the new cut and fill slopes, landscape islands in the parking areas, and other temporary disturbance areas following completion of construction. An additional percentage of those species, determined in coordination with the salvage contractor and BLM, will be salvaged from the permanent disturbance areas to achieve 100 percent succulent survival success in temporary disturbance areas. Cacti and yucca will be outplanted in the same species distributions and densities as in reference sites along the trail.

**Table 1-1. Number of Cactus/Yucca Individuals within Each Disturbance Area**

Cactus or Yucca Species	Temporary Disturbance Area	Permanent Disturbance Area
Silver cholla ( <i>Cylindropuntia echinocarpa</i> )	37	72
Pencil cholla ( <i>Cylindropuntia ramosissima</i> )	11	82
Cottontop cactus ( <i>Echinocactus polycephala</i> )	8	88
Strawberry hedgehog cactus ( <i>Echinocereus engelmannii</i> )	8	22
Desert pincushion ( <i>Escobaria chlorantha</i> )	1	5
Barrel cactus ( <i>Ferocactus cylindraceus</i> )	12	32
Matted/dead cholla ( <i>Grusonia parishii</i> )	3	5
Beavertail cactus ( <i>Opuntia basilaris</i> )	7	29
Joshua tree ( <i>Yucca brevifolia</i> )	44	113
Mojave yucca ( <i>Yucca schidigera</i> )	795	1760
<b>Total</b>	<b>926</b>	<b>2208</b>

Temporary holding for salvaged plants must occur in weed-free area(s).

The Red Rock Canyon Trail and Intersections Improvements project falls under the Restoration Level 1 (R1) category as described in SNDO restoration guidance summarized in Attachment 1. Under this guidance, the restoration of R1 areas is considered successful if 100 percent of the cover, density, and species richness of the native perennial vegetation are achieved in a 6-year period. This restoration plan describes the restoration techniques, plant pallet, maintenance, monitoring, and project schedule for achieving the R1 performance standard in 6 years.

## 2.0 Project Impacts and Temporary Use Areas

Permanent and temporary impacts from the project will result in a Disturbance Level 3 (D-3) as defined by SNDO restoration guidance (BLM and Native Resources 2001), summarized in Table 2-1. The suite of approved restoration responses are summarized in Tables 2-2 and 2-3. Also included in Tables 2-2 and 2-3 are the measures that must be completed as part of this restoration project.

**Table 2-1. SNDO Restoration Guidance Definition Of Disturbance Levels**

D-1. Overland Drive and Crush.	D-2. Clear and Cut	D-3. Clear and Cut with Soil Removal
<p>Disturbance caused by accessing a site without significantly modifying the landscape. Vegetation is crushed but not cropped. Soil is compacted, but no surface soil is removed. Examples include utility line tensioning and pulling areas, tower pad sites, overland access to fiber optic meter sites, and spur roads to towers. Even though vegetation may be damaged and even destroyed, the surface soil and seed bank remains in place. Some crushed vegetation will likely resprout after disturbance ceases. These activities would result in minimal to moderate disturbance.</p>	<p>Disturbance caused by accessing the project site, but having to brush off all vegetation in order to improve or provide suitable access for other equipment. All vegetation is removed, soils are compacted, but no surface soil is removed. Examples include temporary access roads where the road is improved for access and could include some examples from D-1. Clear and cut activities would result in moderate disturbance.</p>	<p>Disturbance is caused by removing all vegetation in the impact zone, the soils are compacted and the surface soil is displaced, and for project requiring underground installation the subsurface soils are displaced as well. These activities result in heavy disturbance. Examples include pipelines, buried fiberoptic lines, access roads that require grading and filling.</p>

**Table 2-2. BLM Restoration Pre-construction Tasks for Project**

Tasks	Will Task Be Implemented on Trail and Intersections Improvements Project	Rationale
Salvage cactus and yucca and relocate outside of disturbance areas.	Yes	Salvage is necessary because cacti and yucca are present in the project area.
Salvage perennial vegetation, rocks, and vertical mulch.	Yes	Perennial plants will be salvaged and stockpiled outside of disturbance areas during construction and replanted in similar densities and species compositions in temporary disturbance areas.
Seed Collection	Yes	Reseeding is necessary for successful revegetation.
Conserve and stockpile 4 inches of topsoil in all disturbed areas.	Yes	A D-3 level of impact is expected. Conservation is necessary to ensure that existing topsoil can be used during revegetation effort, and no outside topsoil is required.

**Table 2-3. BLM Restoration Post-construction Tasks for Project**

<b>Tasks</b>	<b>Will Task Be Implemented on Trail and Intersections Improvements Project</b>	<b>Rationale</b>
Recontour site	Yes	A D-3 level of impact is expected. Natural topography will need to be restored.
Decompact soils	Yes	A D-3 level of impact is expected. Ripping using mechanized equipment will be necessary for decompaction.
Replace topsoil/vertical mulch	Yes	Topsoil is necessary for reclamation of all areas of surface disturbance.
Texture soil surface	Yes	A D-3 level of impact is expected. Imprinting, pitting, or other surface texturing techniques are required.
Process, remove, or color caliche	No	Not applicable.
Replant succulents	Yes	Cacti and yucca in temporary use areas will be salvaged and replanted in new cut and fill slopes, landscape islands in the parking areas, and other temporary disturbance areas at construction completion.
Reseed	Yes	Reseeding is necessary for successful revegetation.
Succulent outplanting	Yes	Cacti and yucca in temporary use areas will be salvaged and replanted in new cut and fill slopes, landscape islands in the parking areas, and other temporary disturbance areas at construction completion.
Stabilize surface soil	Yes	The use of chemical stabilizers is not approved on BLM lands in Southern Nevada District.
Permeon application	No	Not applicable.
Installation of restoration signs	Yes	"Restoration in Progress" signs are required at vehicular entry points.
Monitoring	Yes	Monitoring is necessary to determine if project success criteria have been achieved.
Reporting	Yes	Reporting over a 6-year minimum period is expected.

## 3.0 Restoration Actions in Detail

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The sequential actions for a restoration project include survey and planning, pre-construction restoration actions, post-construction restoration actions, and monitoring. For this project, survey and planning activities are included in the project EA and are not included in this plan. Pre-construction restoration actions, post-construction actions, monitoring, and reporting are included in this plan.

### 3.1 Pre-construction Actions

Pre-construction actions include perennial seed collection, succulent plant salvage, salvaging vertical mulch and rock, and salvage of surface and subsurface soils. The following restoration actions will begin and be performed by the BLM and the Contractor prior to construction of the project. Any changes to the protocol described here must be approved by BLM before implementation.

#### 3.1.1 Seed Collection

Seed for use in the restoration effort may be collected from the project site or adjacent BLM lands within the same provisional seed transfer zone. A seed mix for the project is provided (Table 3-1). Any changes must be approved by the BLM prior to application. Onsite seed collection activities will be conducted by a qualified seed company or other BLM-approved method (e.g., trained volunteers). Seed collection must be performed in a manner that minimizes environmental impacts. The protocol used must be approved by BLM prior to implementation. With prior approval, sites for seed collection can be anywhere on public lands within the Red Rock Field Office within the same provisional seed transfer zone(s). Only mature seeds will be collected. Pounds of seeds required will be based on the approved seed mix and estimate of acres of temporary disturbance for the project. No more than 20 percent of available seeds at the time of collection will be collected from any one population. Seeds will be collected, cleaned, tested for pounds live seed, certified weed free, and stored by the Contractor until they are ready for use, unless other arrangements approved by BLM are made. The contractor must obtain a commercial seed collection permit from BLM before seed collection. Seeds will be stored dry in containers, which will be labeled with exact location, date of collection, and collector. Containers must be located in a rodent- and insect-proof location.

#### 3.1.2 Succulent Plant Salvage

All the cacti and yucca that are subject for removal will be identified onsite with flagging tape. The north orientation for all cacti will also be marked. During the survey, all yucca clusters will be counted as separate plants. A list describing quantity and species will be provided to the BLM upon completion of the task. For R1, all succulents, irrespective of size, will be salvaged.

Prior to any ground disturbance, an organized accessible and secure nursery site of appropriate size will be identified and established. This nursery will provide ease of care and maintenance for the plant material. Site-specific nursery requirements may be applicable but should be designed to minimize any additional disturbance to the project site. All salvaged plant material will be replanted in vertical trenches that have a depth of 18 inches or larger. A BLM-approved cacti and yucca salvage contractor with a minimum of 3 years of experience will be used for the salvage operation. Yuccas should be planted with 1-foot spacing. All succulents will be dug bareroot and replanted within 24 hours at the nursery site. Yucca clusters will be broken into individual stems prior to replanting at nursery. All cacti will be planted with the same north orientation as they organically grew (+/- 15 degrees). All small cacti will be watered thoroughly one time upon being replanted to the nursery. Several waterings will take place after planting to remove or minimize any air pockets and assure proper soil compaction. Care should be taken to properly compact all soil around roots of plants that are directly transplanted in the nursery. Additional watering will occur during hot months.

Cacti and yucca from permanent disturbance areas that will not be used for replanting will be relocated to a BLM storage area by the proponent.

### 3.1.3 Native Shrub Salvage

All shrubs in temporary disturbance areas, as well as a proportion of other perennial plants from permanent disturbance areas, will be salvaged and housed in an onsite nursery as described previously. Salvage of these plant materials will assist in meeting restoration targets of 100 percent. Shrubs will be watered and maintained as necessary to ensure their survival.

### 3.1.4 Salvage of Vertical Mulch and Rock

For areas that require clearing and cutting, any vegetation not salvaged will be mechanically windrowed to an area outside disturbance boundary to create vertical mulch. Large rocks and boulders will also be removed to the side. Care should be taken to prevent the disturbance of the natural patina or desert varnish of these rocks.

### 3.1.5 Salvage of Surface and Subsurface Soils

After required plants have been salvaged from the site, conduct topsoil salvage by removing the top 4 inches (plus or minus 2 inches) of soil, including all rocks and vegetation. Rocks greater than 6 inches can be removed and stockpiled outside the disturbance areas but within the right-of-way. This topsoil should be labeled as such and protected from erosion and inadvertent use as fill. Topsoil will never be mixed with subsoil. When stockpiled, topsoil will be treated with a vegetable-based tackifier to a 2-inch wetting depth to minimize erosion. If bedrock close to surface will not allow for full salvage, salvage what is available. Different soil types, such as gypsum and sand, will be stockpiled separately. Overall handling should be kept to a minimum.

**Table 3-1. Seed Mix for RRCNCA Trail and Intersections Improvements Project**

Scientific Name (Common Name)	Target number of live seeds per square meter of revegetation site	Acceptable seed sources
<i>Achnatherum hymenoides</i> (Indian ricegrass)	50	From appropriate PSTZ within RRCNCA
<i>Sphaeralcea ambigua</i> (desert globemallow)	50	From appropriate PSTZ within RRCNCA
<i>Ambrosia dumosa</i> (white bursage)	100	From appropriate PSTZ within RRCNCA
<i>Atriplex canescens</i> (four-wing saltbush)	50	From appropriate PSTZ within RRCNCA
<i>Larrea tridentata</i> (Creosote)	100	From appropriate PSTZ within RRCNCA
<i>Plantago ovata</i> (Indian desertwheat)	50	From appropriate PSTZ within RRCNCA
Total	<b>400</b>	<b>Not Applicable</b>

Notes:

Number of pounds needed for 5 acres to be calculated by the Project Biologist and/or seed vendor based on the target number of live seeds per square meter provided percent purity of the seed lot, percent germination of the seed lot and number of seeds per pound in the seed lot.

PSTZ = provisional seed transfer zone

RRCNCA = Red Rock Canyon National Conservation Area

## **3.2 Post-construction Actions**

The following subsections describe actions that are implemented by the Contractor after the completion of construction activities, which include: earthwork, reseeding, and signage.

### **3.2.1 Earthwork**

Includes burying subsurface soils (including caliche), applying surface soils, and decompacting soils. For projects that disturb surface and subsurface soil, the segregated topsoil is typically windrowed on one side of the trench and should be replaced back into the trench in order with the subsurface below the surface soils.

Topsoil salvage is a requirement on this project. If significant caliche is encountered during excavations, it will be crushed into fine material before replacing back into the trench. Small amounts of caliche may be replaced into the trench, however there must be sufficient finer material to achieve natural terrain contours. After recontouring to natural grade and loosening the subsurface soil, surface soils will be replaced over the top of the subsurface materials.

Where any compaction exists, the surface will be scarified, tilled, or harrowed to a depth of 6 inches, as appropriate (e.g., not applicable to rock faces, severe slopes, or cliff areas). Depth of compaction relief will depend on site-specific conditions. Decompacting and ripping will be conducted to avoid "corn rows." Cross-ripping is preferable and care should be taken to prevent inverting the soil layers. The surface soil will be redistributed following site recontouring and preparation through decompaction and ripping. Small pieces of surface caliche may be buried to a minimum of 24 inches deep. Large pieces of caliche will be completely removed and disposed of in an appropriate landfill. Soil will be wet to a depth of 2 inches to prevent further erosion. The site will be left adequately rough after surface soil placement to provide micro sites for seed germination and to reduce soil movement. Unless determined to be necessary by a qualified biologist or restoration ecologist, deep sandy soils do not need to be decompacted and will not be ripped.

Replaced surface soil will be left in an unscreened condition in an effort to minimize erosion. In case of shortage, it is better to replace a shallower depth in all areas than none in a few places. Additional erosion control and soil stabilization may be required to minimize soil movement, especially for heavily sloped areas or for fine-textured soils. Surface soil will not be handled excessively during windy conditions.

### **3.2.2 Replanting**

Cacti, yucca, shrubs, and other perennial plants will be replanted in natural patterns and densities within the temporary disturbance areas of the project. These plants will be watered, as needed, to ensure a minimum of an 80 percent survival standard. Additional plants salvaged from the permanent disturbance areas will be used to replace any mortality of plants that occurs. All plants must survive a minimum of 1 year after supplemental watering is ceased before any site release can be considered.

### **3.2.3 Seeding**

Broadcast seeding after surface preparation using an imprinter or soil pitter, or drill seeding are appropriate methods. One of these techniques will be used on this project using the seed mix and rates described in Table 3-1.

### 3.2.4 Signing

All restoration areas will have signs installed at regular intervals to deter vehicular damage to the site. The proponent will purchase and install restoration signs and t-posts that meet BLM specifications.

## 3.3 Monitoring

The long-term goal for restoration on BLM lands is to facilitate the recovery of ecosystem structure and function on disturbed sites in a way that will eventually lead to the establishment of self-sustaining native plant communities through natural processes. Both qualitative and quantitative monitoring will be conducted by the BLM per the schedule described in Table 3-2. Both quantitative and qualitative monitoring data will be used to evaluate recovery and identify the need for additional remediation.

Monitoring of pre-construction restoration actions, such as plant salvage and seed collection, will be performed under the supervision of a qualified biologist or restoration ecologist.

**Table 3-2. Restoration Monitoring Schedule**

Monitoring	Tasks	Year 1	Year 2	Years 3-5	Year 6
Qualitative	Site inspections/visual assessments	Monthly	Quarterly	Biannually	Annually
Qualitative	Photo monitoring	Biannually	Annually	Annually	Annually
Quantitative	Transect/plot monitoring	Annually	Annually	Annually	Annually

### 3.3.1 Qualitative Monitoring

Qualitative monitoring will be conducted by the BLM and used to inform the proponent, contractors, and BLM regarding the trajectory of recovery and identify potential problems at an early stage so that corrective actions can be taken before the overall project timeline is adversely affected. Qualitative monitoring will include documentation via photograph points, site inspections, and visual assessments made by the Project Biologist or Restoration Ecologist. A site-specific qualitative monitoring form should be developed and used to provide consistency throughout the monitoring period. The goal of qualitative monitoring is to document site conditions and evaluate the need for remediation to ensure that sites are progressing toward the success standard.

Qualitative monitoring should include observations regarding the germination and establishment of species included in the seed mix; estimates of the success parameters (cover, density and richness of perennial vegetation); and estimates of the density and richness of native annuals. Other site characteristics that should be observed and noted include soil erosion, natural recruitment of native plant species, reproduction, nonnative plant species abundance, animal use, and patterns of establishing vegetation (i.e., presence of large interspaces).

### 3.3.2 Quantitative Monitoring

Quantitative monitoring will be conducted by the BLM and used to objectively evaluate whether the project has achieved sufficient progress so that it can be considered restored to a point where natural processes will complete recovery. As part of quantitative monitoring, success parameters are measured on restored sites in the sixth growing season (or sooner if deemed appropriate) and compared to undisturbed reference areas to determine if the restoration standards have been met.

Sample locations within both the reference area and reclaimed area need to be randomly selected. Sample size adequacy should be calculated to ensure a sufficient number of samples are taken to estimate the means for success parameters with a given level of confidence. If the mean for a given success parameter is less than the standard (i.e., 70 percent of the reference area mean) a statistical comparison is made with a

one sample, one-sided t-test (with  $\alpha=0.10$  and  $\alpha=0.20$ ). Failure to reject the null hypothesis that the reclaimed area value is greater than or equal to 70 percent of the reference area value for each parameter (cover and density) indicates that the site has been successfully reclaimed.

Species richness is evaluated by comparing the total number of native perennial plant species encountered in the measured area of the reclaimed site to that of the reference area. Species richness of the reference area is based on the same amount of area that was sampled within the restored site. Because species richness is based on the entire measured area of a site, there is no measure of variation, and therefore no statistical test can be performed. Therefore, a comparison of the absolute numbers of species to the reference area must be made.

**3.3.3 Quantitative Performance Standards**

Under SNDO restoration guidelines, restoration will be considered successful if plant cover, density, and species richness of the dominant native perennial vegetation is equal to or exceeds a designated percentage of the values for these parameters in undisturbed reference areas. The standards required for the four BLM land management designations are: 100 percent for R1, 70 percent for R2, and 60 percent for R3 and R4 (Attachment 1).

The project is considered R1; therefore, the final performance standard is 100 percent. The annual performance targets in Table 3-3 are recommended to evaluate annual progress toward achieving the final standard. If progress substantially differs from these performance targets, remedial measures could be necessary to bring the project back on schedule.

**Table 3-3. 6-Year Performance Targets for the RRCNCA Trail and Intersections Improvements Project Site**

Performance Targets and Final Standard	Year	Transplant/ Container Survival	Native Perennial Species Cover	Density of Native Perennial Species	Richness of Native Perennial Species	Noxious Weed Cover
<b>Recommended Performance Targets</b>	1	80%	10%	>100%	60%	<sup>a</sup>
	2	80%	20%	80%	60%	<sup>a</sup>
	3	80%	30%	60%	60%	<sup>a</sup>
	4	80%	40%	60%	60%	<sup>a</sup>
	5	80%	50%	60%	60%	<sup>a</sup>
<b>Final Performance Standard</b>	6	80%	100%	100%	100%	<sup>a</sup>

<sup>a</sup> Less than reference site (see weed plan)

**3.4 Project Maintenance and Reporting**

Regular maintenance and reporting are essential for project success. Regular maintenance includes weeding and maintaining fencing, if constructed. Maintenance and reporting will be performed by the BLM as described in Table 3-4.

**Table 3-4. 6-Year Restoration Maintenance and Reporting Schedule for the RRCNCA Trail and Intersections Improvements Site**

Action	Task	Year 1	Year 2	Years 3-5	Year 6
Maintenance	Weeding (including herbicide use)	Monthly	Monthly	Quarterly	Quarterly
Maintenance	Trash removal	Monthly	Monthly	Quarterly	Annually
Reporting	Upon completion of construction	As-Built	Not Applicable	Not Applicable	Not Applicable
Reporting	Progress reports via email	Quarterly	Quarterly	Biannually	Not Applicable
Reporting	Annual report	Yes	Yes	Yes	Yes

### 3.4.1 As-Built Report

Within 30 days of the completion of project construction, the As-Built report will be submitted by the Contractor to the BLM for approval. Once approved, the 6-year monitoring, maintenance, and reporting period will begin. The purpose of the As-Built report is to document implementation of the pre- and post-construction restoration tasks described in Table 1-2 and describe any changes made during implementation. At a minimum the As-Built report will include the following:

- Discussion of how the project was implemented, key personnel responsible for the project, any problems encountered, and how they were resolved
- A chronology of the implementation with dates and names of contractors and key personnel responsible for implementing restoration tasks
- Photograph documentation of all milestone restoration tasks (i.e., earthwork, seeding, signage)
- Copies of field notes or log entries from biological monitors present
- A map of the restoration site indicating treatment locations, the location of photo points, quantitative reference sites, and monitoring sites
- Scans of the seed tags or any germination viability testing performed on wild collected seed used for seeding
- Copies of dated invoices from contractors and subcontractors that provided services for the project
- Baseline data collected for quantitative monitoring

### 3.4.2 Progress Reports

Progress reports will be provided to the BLM using the schedule described in Table 3-4. The purpose of the progress reports is to document regular site monitoring by BLM personnel. Progress reports are not expected to be extensive and are anticipated to be delivered in an email or similar format. At a minimum, the progress reports will include the following:

- The dates and name(s) of the biological monitor(s) completing the site assessments
- A brief discussion of site conditions
- A discussion of problems encountered with recommendations for corrective actions, if necessary
- The dates and a brief description of all maintenance activities completed during the monitoring period

### **3.4.3 Annual Reports**

Annual reports will be provided to BLM using the schedule described in Table 3-4. The annual report will be provided to BLM by December 31 of each calendar year. The purpose of the annual report is to summarize maintenance and monitoring activities for the year, document wildlife activity of the site, report the results of the annual qualitative and quantitative monitoring activities, compare current seasons findings with the baseline and previous years to evaluate project progress toward meeting annual performance targets of the final performance standards, identify potential problems, and, if necessary, recommend corrective actions.

### **3.5 Corrective Actions**

If the recommended annual performance goals are not achieved, corrective actions will be necessary. Making corrective actions early in the project during the first or second growing season is particularly important to keeping the project on schedule for completion in the 6-year timeframe. Corrective actions could include, but are not limited to, reseeding, weed treatments, installing and maintaining container plantings, and installing protective fencing or wire cages to protect individual plants.

### **3.6 Final Project Release**

The restoration will be considered successful when the final performance standards have been met. If the minimum levels are not achieved, then corrective actions or additional growing seasons will be necessary. If the project has not achieved the performance standards within the 6-year timeline, the BLM or its contractor will be responsible for continuing project maintenance monitoring and reporting until the standards are achieved.

## 4.0 Responsibilities

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### 4.1 Owner/Project Proponent

The BLM, FHWA-CFLHD, and the construction contractor are jointly responsible for implementing this plan, specific to the phase of the project. FHWA-CFLHD is responsible for providing detailed construction drawings, project timelines, and written project specifications in conformance with this plan. The BLM is responsible for funding long-term maintenance, monitoring, reporting, and remedial actions as determined necessary. The FHWA-CFLHD is responsible for coordination between the grading contractor and the Project Biologist to ensure this restoration plan is implemented on schedule.

The BLM and FHWA-CFLHD will manage project activities in the interest of meeting the restoration goals. The BLM and FHWA-CFLHD are responsible for administration of project contracts. The BLM and FHWA-CFLHD have the authority in decisions to suspend payment or terminate contracts for all phases of project implementation including installation, maintenance, monitoring, and reporting. The BLM and FHWA-CFLHD may replace contracted parties at any time.

### 4.2 Project Biologist/Restoration Ecologist

The Project Biologist/Restoration Ecologist will guide the owner by providing the technical skills and experience needed to successfully implement the activities described in this restoration plan. The Project Biologist/Restoration Ecologist may be a restoration ecologist or other natural resource specialist with a minimum of 3 years' experience managing and implementing restoration/revegetation/reclamation projects in the Mojave Ecoregion. The Project Biologist working on this project must have a solid understanding and demonstrated experience with the following:

- Mojave desert plant ecology
- Seed biology as it pertains to the collection and propagation of Mojave species
- Arid land restoration/revegetation/reclamation techniques
- Vegetation monitoring and analysis

The Project Biologist/Restoration Ecologist responsibilities include the following:

- Consult with project contractors on activities that could disrupt project mitigation measures and restoration efforts.
- Attend pre-construction and construction meetings to consult and educate the Owner/Project Proponent and construction contractors on the restoration goals and habitat sensitivity.
- Manage and provide quality control/quality assurance for native plant seed collections, native seed purchases, container plant propagation, and container plant installations.
- Provide technical assistance, implement, or oversee implementation of project maintenance, monitoring, and reporting as described in this plan.

### 4.3 Maintenance Contractor

The BLM will select a maintenance contractor with a minimum 2 years of experience performing restoration/revegetation/reclamation projects in the Mojave Ecoregion. The Maintenance Contractor will be responsible for implementing the tasks outlined in this plan under the supervision of the Project Biologist.

The Maintenance Contractor responsibilities include the following:

- Implement and maintain the site as outlined in this plan.
- Perform corrective actions as prescribed by the Project Biologist and approved by the BLM.

## 5.0 References

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Bureau of Land Management (BLM). 2005. *Red Rock Canyon National Conservation Area Resource Management Plan and Record of Decision*. May 20. <https://www.blm.gov/programs/national-conservation-lands/nevada/red-rock-canyon/management-and-planning/rmp>.

Bureau of Land Management (BLM) and Native Resources. 2001. *Restoration Plan for Energy Projects in the Las Vegas Field Office Bureau of Land Management*. September.

Science Applications International Corporation (SAIC). 2001. *Restoration Success Standards and Monitoring Plan*. Draft. Submitted to Bureau of Land Management Las Vegas Nevada. November 30.

Attachment 1  
Summary of SNDO Restoration Levels and  
Performance Standards

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**Attachment 1. Restoration Level and Performance Standard Summary**

Restoration Level	Performance Standard
<p>SNDO guidance defines four levels of restoration effort (R1 through R4) that are based on land management designations. Special and unique habitats (such as Bureau special status species) can occur in any of the above areas and may require a higher effort of restoration to insure their long-term viability. Additionally, these restoration categories pertain to authorized actions for approved projects and do not include trespass or unauthorized land disturbing actions. Details of each area are provided in the following rows.</p>	<p>Restoration will be considered successful if plant cover, density, and species richness of native perennial vegetation is equal to or exceeds a designated percentage of the values for these parameters in undisturbed reference areas. The standards required are:</p>
<p>R1. Red Rock/Sloan Canyon NCA. Management of this land is oriented toward actions which promote its scenic, cultural, and biodiversity values. This area will require state-of-the-art restoration techniques and methodologies available to achieve a “no residual impact” level for projects. In this area, replanting would involve 100 percent cover and diversity of shrubs and perennial grasses.</p>	<p>100 percent for R1</p>
<p>R2. High Priority Recovery Areas. Management on these lands is oriented toward actions which reduce human impacts to the landscape for the purposes of recovery of Federally listed or special status species (Desert tortoise, Las Vegas bearpoppy), preservation of scenic values, or protection of cultural property. Examples include visual resources classes 1 and 2, desert tortoise critical habitat, and Areas of Critical Environmental Concern. In the R-2 category the outplanting would be more limited and located in areas that could be accessed for plant maintenance.</p>	<p>70 percent for R2</p>
<p>R3. Medium Priority Recovery Areas. Management on these lands limits, either spatially or temporally, the range of uses on lands to protect sensitive resources. Examples include herd management areas for wild horses and burros, and crucial habitat for desert bighorn and mule deer.</p>	<p>60 percent for R3</p>
<p>R4. Multiple Use Areas. Multiple use areas are lands on which human activities are not precluded. Nonetheless they support significant areas of undisturbed natural vegetation and provide important connectivity with more intensively managed areas. Additionally, at least six of BLM’s most sensitive plant species occur in these multiple use areas, and their habitat may require a higher level of restoration.</p>	<p>60 percent for R4</p>

Source: Bureau of Land Management and Native Resources. 2001. *Restoration Plan for Energy Projects in the Las Vegas Field Office Bureau of Land Management*. September.

BLM = Bureau of Land Management

NCA = Nature Conservation Area

SDNO = Southern Nevada District Office

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