

## APPENDIX G

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# Vegetation Restoration Strategy



# VEGETATION RESTORATION STRATEGY

The primary goal of the Vegetation Restoration Strategy is to improve vegetation conditions in the Sloan Canyon National Conservation Area (NCA) through the restoration of existing disturbances and the management and control of future disturbances. The overall objective of the restoration strategy is to improve habitat for sensitive species by restoring ecological processes and functionality. Consideration of recreation management, livestock grazing management, and wildlife habitat management, as well as vegetation and soils management, are necessary components of the restoration strategy.

Specific priorities for restoration, and objectives associated with each restoration priority, are outlined in Table G.1.

**Table G.1. Restoration Goals and Objectives**

Restoration Goals	Objectives of Restoration
Ecosystem Functionality	Water infiltration Hydrologic function Soil stability (including biological crusts) Vegetation structure and species composition
Habitat Restoration	Reducing fragmentation Increasing connectivity of native plant and animal populations
Route Camouflage	Restore natural vegetation community appearance Reduce inadvertent reuse of routes being restored
Aesthetics	Improve natural appearance of vegetation and meet VRM criteria
Existing Disturbance	Improve natural appearance of vegetation and meet VRM criteria

## BACKGROUND

The vegetation resource in the Sloan Canyon NCA is representative of the Mojave Desert ecosystem, corresponding to Bailey's American desert and semi-desert province (Bailey 1995 in the *Sloan Canyon Proposed RMP/FEIS* Reference List). The Vegetation Community Inventory of the Sloan Canyon NCA (BLM 2004 in the *Sloan Canyon Proposed RMP/FEIS* Reference List) categorizes the vegetation resource of the NCA as the Mojave Desert community with the four major vegetation associations. Distribution of these vegetation associations within the NCA is primarily related to geomorphic landform patterns and elevation and is associated with bajadas, slopes, dry washes, and mid-elevation slopes. The four vegetation associations identified within the NCA are described in the following paragraphs.

**Volcanic–Basalt Slope Association.** This association is primarily located on upper elevations of the NCA associated with the basalt “spine” of the McCullough Range. Isolated patches of this vegetation association also occur in the NCA, primarily on slopes in the southwestern portion. Primary components of the association are volcanic rock, and the primary vegetation components are bursage, ephedra, and creosote. Secondary vegetation components are barrel cactus, perennial grass, and annual and perennial forbs.

**Moderate Creosote Association (>%30 cover).** This association is dispersed throughout the NCA in relatively level areas with less well-developed desert pavement. The primary vegetation component of the association is creosote. Secondary vegetation components are bursage, annual and perennial forbs, and annual grass.

**Sparse Creosote/Bursage Mix Association.** This association is the most prevalent vegetation association within the NCA. It is found on lower to mid-elevation slopes and contains level areas with

well-developed desert pavement. The primary vegetation component of the association is creosote. Secondary vegetation components are bursage, annual and perennial forbs, and annual grass.

**Desert Wash Association.** This association is distributed in the lower elevations and level areas of desert washes. Slopes in this vegetation association are level with well-sorted gravels and sands. Primary vegetation components are creosote, perennial grass, and annual and perennial forbs. Secondary vegetation components are cactus species, ephedra, and bursage.

Because of the extremely dry climate, perennial vegetation establishment is usually limited to years when precipitation occurs in higher than normal amounts. Annual plant species comprise a large ephemeral portion of each plant association. Annual plants grow only during the years when precipitation falls at the correct time and in a greater than normal amounts.

Because of mountainous conditions, limited water resources, and the lack of mineral resources, the Sloan Canyon NCA has experienced little grazing, off-highway vehicle (OHV) use, or mineral activities. Although vegetation associations within the NCA have experienced physical and biological disturbance stemming from recreation use and past introductions of non-native plant species, erosion has been relatively low historically and vegetation cover is good. Disturbance to the vegetation resource in the NCA has increased in recent years because impacts from human activities related to urban expansion (e.g., recreational use such as hiking, OHV use, biking, including cross-country experiences) have continued to expand, increasing surface disturbance, vegetation loss, and the disruption of desert pavement. Surface disturbance occurring within the NCA increases the vulnerability of vegetation to invasive species infestation. Once colonized in disturbed areas, invasive species may be capable of out-competing native species, including Special Status Species in undisturbed areas.

## PURPOSE AND NEED

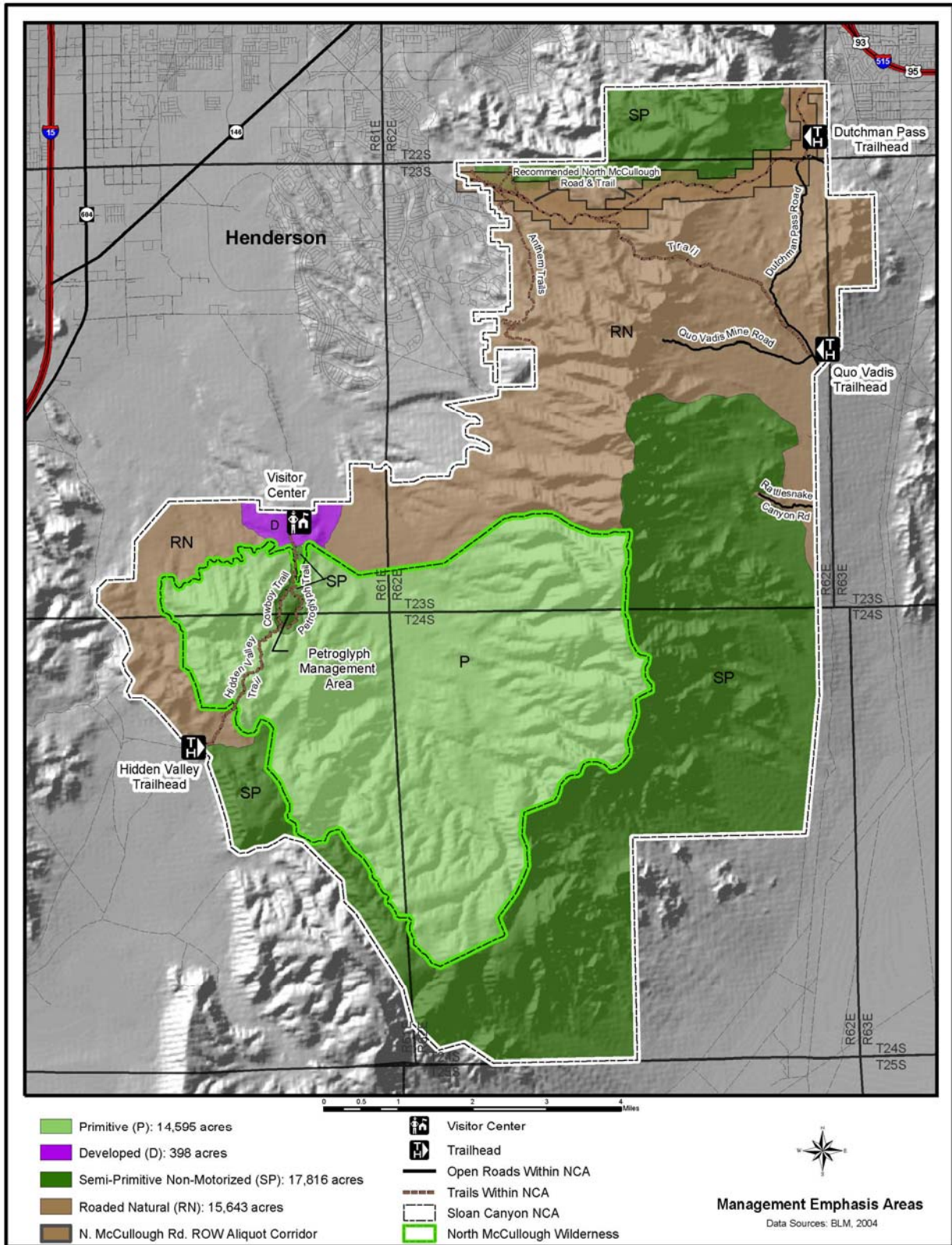
Vegetation in much of the NCA is relatively undisturbed. Restoration of existing disturbance and plans for controlling new disturbance are needed to direct restoration priorities within the Sloan Canyon NCA. By improving habitat for sensitive species and restoring ecological processes and functionality, the restoration strategy may result in the control of soil loss, maintenance of native plant associations, reduced vulnerability of vegetation associations to invasive species infestation, and enhancement of visual resources.

## Project Prioritization

This vegetation restoration strategy would be applied to the entire NCA, including the North McCullough Wilderness. BLM would work with various local organizations and agencies to promote education and assist in preventing the establishment of invasive species. Furthermore, scientific research and monitoring of Special Status Species would be encouraged and facilitated through the development of partnerships with universities and other educational groups for research and monitoring of Special Status Species.

Priority for restoration projects would be focused in the Semi-Primitive Non-Motorized, Roaded Natural, and Developed Management Emphasis Areas (MEA) (Figure G.1) to restore or improve conditions in native plant associations. Areas of special concern where restoration projects would be considered include habitat for Special Status Species, areas with a high risk of wildfire (e.g., wildland-urban interface areas), and the North McCullough Wilderness. For example, restoration projects to remedy wilderness intrusions or incursions in sensitive species habitat and areas of entry would take priority.

Figure G.1. Management Emphasis Areas



## RESTORATION METHODS

This section addresses the general strategy for the control methods that are appropriate to achieve vegetation restoration objectives. Methods focus on restoring existing disturbance and controlling new disturbances by activities managed by BLM within the NCA.

Under this strategy, future disturbance from activities with the NCA, including the North McCullough Wilderness, should be minor. Any impacts from activities on sensitive vegetation habitat should be minimized. Disturbance from development of visitor facilities or new rights-of-way (ROW) within the NCA should be minimized, and the potential spread of non-native species into such disturbed areas should be reduced. Overall, vegetation management included under this strategy should move vegetation associations toward potential natural conditions by reducing habitat fragmentation, improving species diversity, increasing structural diversity, and maintaining the long-term viability of the vegetation associations.

As strategy and policy are implemented, new methods would be considered and included in the strategy (e.g., biological control for tamarisk and Sahara mustard). BLM would evaluate new methods for their appropriateness and use within the NCA including the North McCullough Wilderness.

### Existing Disturbance

BLM would apply the following strategy to maintain or improve the condition of vegetation on areas in the NCA currently affected by surface disturbance from OHV or other uses and development. The strategy emphasizes the improvement of protective ground cover and soil-holding capability in previously disturbed areas, which would reduce soil erosion and loss, reduce habitat fragmentation, and decrease the vulnerability of vegetation associations to invasive species infestation. About 100 miles of disturbance from roads, OHV trails, and foot trails have been identified within the NCA (see Figure G.2).

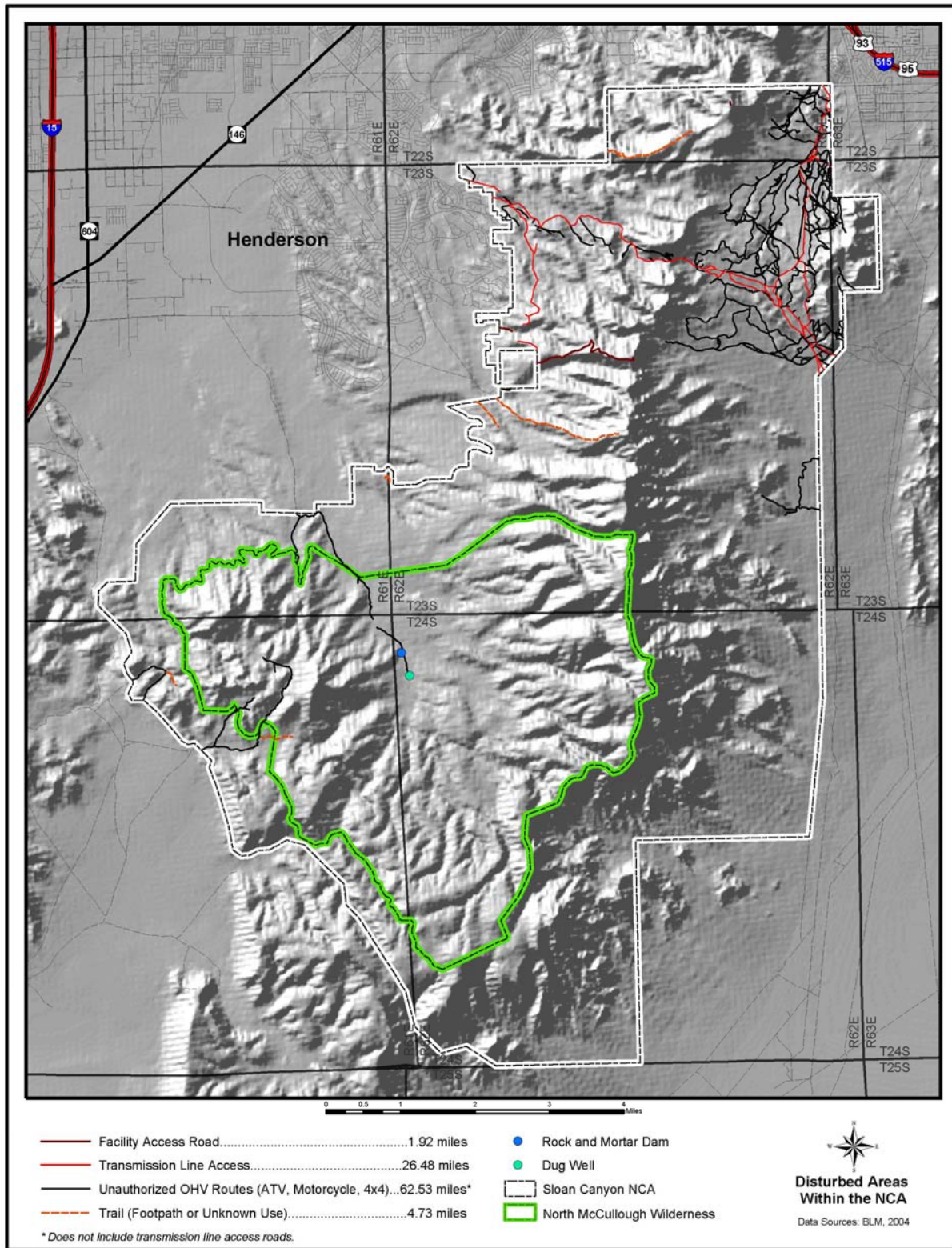
### Non-Wilderness

Vegetation would be managed in all MEAs to promote native plant associations and restore species diversity and structure in disturbed areas. Restoration (i.e., rehabilitation, reclamation, and revegetation) of existing disturbances would be managed for optimum species diversity by seeding native species, except where non-native species are appropriate.

Trails established without BLM approval would be evaluated and may be restored to natural conditions or adopted into the trail system. The restoration of nonauthorized trails established within the NCA would not only decrease the likelihood that these disturbed areas would become dominated by invasive plant species but also improve the condition of the vegetative resource by reducing fragmentation of vegetation associations and improving population viability over the long term. Priority for restoration projects would be focused in Semi-Primitive Non-Motorized and Roaded Natural zones to restore or improve conditions in native plant associations.

Special Status Species habitats would be maintained and protected to ensure suitable habitat conditions and population viability. Scientific research and monitoring of Special Status Species would be encouraged, and partnerships with universities and other educational groups would be developed to facilitate research on and monitoring of Special Status Species.

Figure G.2. Disturbed Areas within the NCA



## North McCullough Wilderness

Throughout the North McCullough Wilderness, existing disturbances and developments would be rehabilitated within 4 years of the Sloan Canyon NCA Approved Resource Management Plan Record of Decision using appropriate methods determined through a minimum requirement/minimum tool analysis for each project. Active rehabilitation would take place on those areas not currently rehabilitating naturally or located within washes.

Active rehabilitation would include methods/processes designed to remove and obscure the known disturbances. Methods/processes such as breaking up compacted surfaces; recontouring to original grade; seeding and/or planting of vegetation native to, and currently occurring within, the Wilderness; and placement of dead vegetation and rock, collected near the site, to mimic the form and texture of the surrounding landscape. In the interim, all access routes would be blocked using signs and/or natural barricades located outside the wilderness boundary.

Rehabilitation of existing disturbances and developments would be prioritized based on potential for continued use. Priority would be given to the two-track vehicle routes accessing the Wilderness from Hidden Valley, and vehicle routes, despite postings, that could continue to be used for unauthorized access into the Wilderness and are anticipated to be a management issue until such time that signs of their presence is obscured through rehabilitation. Although last priority for attention, in order to utilize the existing access and prevent damage to prior restoration efforts, removal and rehabilitation of the dug well and rock dam would be necessary prior to the rehabilitation of other two-track disturbances.

The visible portions of social trails not desired for future designation, modification, or use would be rehabilitated utilizing the same methods/processes previously identified for existing disturbances. The non-visible portions of these social trails would be left to rehabilitate naturally. Continued use of a restored social trail would be dispelled by dispersing visitation to other locations using methods such as area closures, barriers, and visitor information.

## Transportation

Methods for restoring existing disturbance could be applied to restoring existing roads and transportation routes. For example, roads and unauthorized parking areas may be restored to natural conditions and revegetated with native vegetation species.

## FUTURE DISTURBANCE

Restoration would be used to remediate future vegetation disturbance. The threshold of disturbance before minimizing impacts to native plant associations for each MEA could be as follows:

- **Primitive MEA.** Any surface disturbing activity that may alter natural vegetation community processes or reduce the viability of species populations within the NCA.
- **Semi-Primitive Non-Motorized MEA.** Any surface disturbing activity that may have a short-term impact on natural vegetation community processes or reduce the viability of species populations within the NCA.
- **Roaded Natural, Roaded Developed, Developed MEA.** Any surface disturbing activity that may have a long-term impact on natural vegetation community processes or have a long-term impact on species populations within the NCA.



Ongoing efforts to map, monitor, and eradicate invasive plant species would be continued. BLM would work with various partners to promote education and assistance in preventing the establishment of invasive species. In addition, landscaping of all developed areas within the NCA would use only plant species native to the NCA.

BLM would maintain and protect sensitive species habitats to ensure suitable habitat conditions and population viability. Scientific research and monitoring of Special Status Species would be encouraged and facilitated through the development of partnerships with universities and other educational groups for research and monitoring of Special Status Species.

Special Status Species critical habitat would be avoidance areas for disturbance or development in order to maintain suitable habitat conditions and population viability. Site-specific surveys for Special Status Species habitat would be required before any development activities.

## **Transportation**

Methods for the management of future disturbance from construction of new ROWs, roads and transportation routes would be similar to those described above. Applications for new ROWs would be considered on a case-by-case basis if evaluation shows that the ROW would benefit the NCA.

## **NOXIOUS AND INVASIVE WEEDS**

Noxious and invasive weeds would be managed under integrated weed management principals, including following BLM's *Partners Against Weeds—An Action Plan for the BLM* (BLM 1996 in the *Sloan Canyon Proposed RMP/FEIS* Reference List) and the general restoration strategy for the BLM Las Vegas Field Office.

## LITERATURE CITED

Bailey, R.G. 1995. Description of the Ecoregions of the United States. Second Edition.

Bureau of Land Management (BLM). 1996. Partners Against Weeds—An Action Plan for the BLM.

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