

Chapter 4

Environmental Consequences

4.1 Introduction

The potential environmental consequences described in this chapter are based on the environmental effects that would result from the construction, operation and maintenance of the Proposed Action. A detailed discussion of the specifications and construction of the Proposed Action can be found in Chapter 2.

Impact Assessment

To identify project-related impacts, changes to the environment that would result from construction, operation and maintenance of the Proposed Action were compared to the existing environment as described in Chapter 3. Key resources, as identified during internal and external scoping and described in Chapter 3, are presented first in this chapter followed by additional resources that are potentially affected.

The types of impacts that could occur were defined, and impact locations were identified. Impacts can be direct or indirect, short-term or long-term. The impact locations were recorded by mile along the study corridors. This information is summarized in the resource sections that follow with data tables provided in Appendix D.

The exact location of each structure cannot be determined until final design is complete. Therefore, assumptions were made to determine impacts of the Proposed Action within a study corridor. The size of the study corridor varied by resource and is described in Chapter 3 and shown on resource maps in Appendix A. To quantify ground-disturbing impacts from the Proposed Action within the study corridor, the topography and existing land use were identified and categorized as part of the initial project design phase. Areas identified as having flat or gently sloping terrain and existing access roads were assumed to have fewer miles of ground disturbance than steep areas with few existing roads.

Disturbance was quantified for both temporary and permanent disturbance to estimate amount of acreage disturbed. Assumptions are summarized in Table 4-1. Using these assumptions, an estimated 165.5 acres would be permanently disturbed through the construction, operation and maintenance of the Proposed Action, while an additional 125.1 acres would be temporarily disturbed. Ground disturbance would be recalculated for the BLM Plan of Development when final design is complete and the exact locations of structures and roads are known.

Tables identifying ground-disturbing impacts for botanical, wildlife, visual, land use and water resources by mile are included in Appendix D.

Table 4-1 Ground/Access Disturbance Model

Ground Disturbance Level	Mileposts	Assumptions
1	0.0 to 3.5 6.0 to 26.0 28.0 to 36.0 42.0 to 48.0	Existing improved roads available for use as main access Slight to moderate slopes No improvements would be necessary to existing access roads New 800ft x 24ft spur roads would be built from access road to each structure Only lattice tower structures used- 5 per mile Permanent ground disturbance – 3.3 ac/mile Temporary ground disturbance – 2.8 ac/mile
2	26.0 to 28.0	Same as Level 1 except steel pole structures (8 per mile) used instead of lattice towers Permanent ground disturbance – 5.3 ac/mile Temporary ground disturbance – 4.2 ac/mile
3	36.0 to 42.0	Mostly two-track or narrow unimproved roads available as main access Slight to moderate slopes Existing roads and other disturbed areas would be improved (mowing/grading) to 24feet wide per mile of transmission line New 800ft x 24ft spur roads would be built per structure Only lattice tower structures used – 5 per mile Permanent ground disturbance – 4.8 ac/mile Temporary ground disturbance – 2.8 ac/mile
4	3.5 to 6.0	No existing access roads available Moderate to steep slopes 50ft wide x 1.2 miles of new access roads per mile of transmission line 24ft wide x 40ft of new spur roads per structure Only lattice tower structures used – 6 per mile Permanent ground disturbance – 8.7 ac/mile Temporary ground disturbance – 3.3 ac/mile

Mitigation Measures

Once impacts to environmental, cultural and human resources were identified for the Proposed Action, mitigation measures were examined to see if they could be effective in reducing or eliminating impacts. Management practices that would minimize or eliminate impacts to the environment that were part of the Proposed Action are listed in Chapter 2. Nevada Power committed to these measures on a nonspecific or plan-wide basis prior to impact assessments. These management practices were considered when assessing initial impacts. Mitigation consists of measures or techniques developed after impacts were identified and assessed.

Impacts remaining after applying any or all mitigation measures are termed residual impacts. Impacts and associated mitigation measures are discussed in detail within each resource section.

No Action

The no-action alternative, as described in Chapter 2, Section 2.2.1, would result in no construction of transmission facilities within the identified project area. Nevada Power’s purpose and need to increase transmission capacity between its Harry Allen Substation and Western’s Mead Substation would not be met.

If the no-action alternative were selected no impacts would occur to biological, water, air, visual or cultural resources as a result of the Proposed Action within the project area. However, the no-action alternative would likely impact Nevada Power’s ratepayers and the Las Vegas economy due to Nevada Power’s inability to provide greater reliability and capacity for their transmission system. Nevada Power could not meet existing and future energy demands or complete their contractual obligations to various power producers for transmission services.

The Las Vegas Valley could also experience economic impacts due to Nevada Power’s inability to import power to meet growing electrical demand in the Las Vegas area. The no-action alternative would inhibit Nevada Power from fulfilling their Refiled 2001 Resource Plan approved by the Public Utility Commission and Governor Guinn’s 2001 Nevada Energy Protection Plan, which not only helps stimulates business growth within the state but provides support against possible blackouts that have occurred elsewhere in this country

If the no-action alternative were selected, Nevada Power would be required to take additional measures to compensate for the anticipated shortfall in the supply of electric power for the Las Vegas Valley. Siting alternatives for a 500kV transmission system, as identified in Chapter 2, would not optimize the use of existing utility corridors, minimize environmental impacts or minimize engineering and constructability expense. An alternative 500kV transmission line location would be very difficult to identify and based on Nevada Power’s Siting Study results, would be longer than the Proposed Action. As such, siting alternatives would create more impacts to resources and higher cost and engineering difficulties for Nevada Power.

Use of 230kV voltage in place of the 500kV transmission system would reduce visual impacts of the individual structures. However, as discussed in Chapter 2, four new transmission systems and major upgrades to existing substations would be needed to provide the same level of transmission that the Proposed Action would provide. Results of utilizing a 230kV system would include greater impacts to all resources, a much higher cost to Nevada Power and a greater likelihood of power outages.

4.2 Key Resources

4.2.1 Botanical Resources

Introduction

Potential impacts to botanical resources associated with construction activities could include (a) crushing and/or removal of native vegetation, (b) grading and compaction of

soil, and (c) loss or displacement of individuals and/or habitat for sensitive species of plants.

Impacts to botanical resources were analyzed by mile within a 0.5-mile wide study corridor. Impacts to botanical resources at each tenth mile segment were assessed according to resource sensitivity and expected levels of ground disturbance. Mitigation measures were considered and a final estimate of residual impacts was made. Ground disturbance information (Table 4-1) enabled a calculation of the total number of acres potentially disturbed for the Proposed Action. Refer to Appendix D for a detailed impact assessment table.

In Chapter 3, plant species of special concern were identified for the plan area. Those plant species that were identified in Chapter 3 as not likely to occur in the plan area would not be impacted; therefore, they are not discussed in this section.

Impacts to Botanical Resources

This section describes the types of potential impacts that may occur to botanical resources in the plan area because of construction, operation and maintenance of the Proposed Action. Recent surveys were conducted during extreme drought conditions and although few plants were located, more plants could exist in the plan area. It was apparent as the survey was being performed that many plants were unable to germinate because of poor growing conditions. Consequently, survey information and the following impact assessment includes potential habitat for species of concern even though no plants were encountered.

A majority of the sensitive plants within the plan area are located in gypsum soils. Construction, operation and maintenance activities within the gypsum soil areas could cause an estimated 81.4 acres of permanent disturbance and 67.2 acres of temporary disturbance. The gypsum endemics are known for transplanting and seed germination problems; therefore, avoidance is the preferred mitigation for this species.

Sticky ringstem (Anulocaulis leioselinus)

Sticky ringstem was found between mileposts 16.4 and 19.8 within the Sunrise Management Area (SMA). Therefore, this plant species would be potentially impacted by the proposed project within this area. Like Las Vegas bearpoppy and Las Vegas buckwheat, sticky ringstem is a gypsum endemic, so potential habitat also occurs where gypsum soils exist.

As with the Las Vegas bearpoppy and buckwheat, avoidance is the preferred mitigation for this species. Impacts involve loss of habitat and/or loss of individuals during construction, operation or maintenance activities. Refer to Table 4-2 for proposed mitigation measures that would minimize ground disturbance and limit new or improved access by the public.

Las Vegas bearpoppy (Arctomecon californica)

The potential for loss of bearpoppy habitat occurs from mileposts 15.0 to 19.8. In addition, gypsum soils extend from milepost 14.0 to the Mead Substation, although these soils are patchy in some places. While the gypsum may be a known habitat feature for the

rare plants, aboveground plant distribution is not apparent in all locations and may vary year to year. However, for this report, all gypsum soils were identified and are considered potential bearpoppy habitat.

The proposed corridor also crosses the SMA. Areas within the SMA have been identified for protection of the bearpoppy (1,010 acres), along with restoration to improve survivability of the bearpoppy populations. The study corridor between mileposts 23 and 25 is in close proximity to one bearpoppy restoration area. However, this area is separated from the existing transmission road access by a steep ridge; thus, eliminating potential for impact to the bearpoppy restoration area.

The Proposed Action would create additional ground disturbance that could negatively impact the Las Vegas bearpoppy. Impacts involve loss of habitat and/or loss of individuals during construction, operation or maintenance of structures and roads. Refer to Table 4-2 for proposed mitigation measures that would minimize ground disturbance and limit new or improved access by the public.

Las Vegas buckwheat (Eriogonum corymbosum var. glutinosum)

No Las Vegas buckwheat was noted during 2002 surveys; however, the Proposed Action would traverse an estimated 14 miles of gypsum-based habitat and some known populations of Las Vegas bearpoppy.

Like the Las Vegas bearpoppy, avoidance is the preferred mitigation for Las Vegas buckwheat. Impacts involve loss of habitat and/or loss of individuals during construction, operation and maintenance activities. Refer to Table 4-2 for proposed mitigation measures that would minimize ground disturbance and limit new or improved access by the public.

Rosy two-toned penstemon (Penstemon bicolor ssp. roseus)

Although this species was not seen in 2002, previous surveys have located this plant within the plan area. Impacts involve loss of habitat and/or loss of individuals during construction, operation or maintenance activities. These activities would cause disturbance to ephemeral drainages throughout the project area, which are important habitat features associated with penstemon. However previous surveys identified only a small amount of habitat between mileposts 0-6, 22-23 and 38-39. Refer to Table 4-2 for proposed mitigation measures that would minimize ground disturbance, especially to drainage areas, and limit new or improved access by the public.

Yellow two-toned penstemon (Penstemon bicolor ssp. bicolor)

Like rosy two-toned penstemon, this species was not seen in 2002, but it has the potential to occur in the same areas as rosy two-toned penstemon. Impacts involve loss of habitat and/or loss of individuals during construction, operation or maintenance activities. Refer to Table 4-2 for proposed mitigation measures that would minimize ground disturbance and limit new or improved access by the public.

Threecorner Milkvetch (Astragalus geyeri var. triquetrus)

This species was not seen during 2002 surveys, possibly due to the dry conditions present during surveying. Only a small amount of habitat specific to this species has been identified within the plan area between mileposts 19 and 21. Other species that could also occur in this identified habitat include Nye milkvetch (*Astragalus nyensis*) and beaver dam breadroot (*Pediomelum castoreum*), neither of which was seen during 2002 surveys.

Impacts to these three species include potential loss of a small amount of habitat and/or loss of individuals during construction, operation and maintenance activities. Refer to Table 4-2 for proposed mitigation measures that would minimize ground disturbance and limit new or improved access by the public.

Cacti and Yucca

In Nevada, cacti and yucca (families Cactaceae and Agavaceae) are protected by Nevada Revised Statutes (NRS 527.060 - .120). There is a potential for cacti and yuccas to occur in the entire study corridor; however, density and species vary tremendously along the study corridor. Below the 2,300-foot contour, cacti and yucca numbers tend to decrease rapidly. In some areas, cacti and yuccas are an insignificant part of the flora.

Nevada Power would meander new roads and work areas where feasible to avoid cacti and yuccas. Salvage of cacti and yuccas would occur for portions of the Proposed Action where they were encountered in substantial numbers. Where found, minimal impact to the resource occurs if they are salvaged and relocated. Refer to Table 4-2 for proposed mitigation measures that would minimize impacts to cacti and yucca.

Noxious Weeds

All temporary surface disturbances associated with construction, operation and maintenance of the Proposed Action could lead to a new or increased invasion of exotic or noxious weed species. In areas where ground disturbance is substantial or where re-contouring is required, such as construction of new roads and structure foundations, aggressive non-native weed species could become established. Once established, aggressive weedy species can invade adjacent native habitats and degrade the condition of the surrounding area.

Due to the small amount of disturbance that would occur at each structure site, the risk of exotic species invasion is expected to be low. An increase in exotic species invasion could occur at select access road construction locations. However, the final Plan of Development would include mitigation measures to minimize impacts from these activities. Mitigation measures may also call for the closing of new access roads not permanently required to minimize public travel and further spread of noxious weeds.

Mitigation Measures for Botanical Resources

Where impacts to botanical resources were possible as a result of construction, operation or maintenance of the Proposed Action, mitigation measures were developed to reduce or eliminate these potential impacts. Individually, the mitigation measures address specific resources, but taken together they are a substantive approach to minimizing effects to botanical resources.

Locations of plants identified during this survey would be flagged for avoidance where feasible. The BLM and cooperating agencies would develop a restoration plan as part of the final Plan of Development identifying methods to be used during and after construction to minimize impacts to botanical resources. A transmission line project restoration plan would typically include the following requirements:

- Plants would be salvaged from work sites for replanting after construction
- Topsoil and rocks would be separated and stabilized during construction in temporary disturbance areas
- Work areas would be recontoured with soil & rocks replaced
- Plants may be transplanted back onto the disturbance areas
- The area may be reseeded
- In critical habitat, additional requirements such as seed collection, shrub propagation and/or live shrub plantings may also be required
- All areas would be monitored to ensure success criteria are achieved

Because of the acreage of gypsum soils crossed by the Proposed Action, impacts to some gypsum-endemic plants such as Las Vegas bearpoppy, sticky ringstem and Las Vegas buckwheat would be likely, despite management practices and mitigation measures to minimize impacts. As required, appropriate incidental take permits would be obtained from the Nevada Division of Forestry (NDF).

Table 4-2 Mitigation Measures for Botanical and Resources

Botanical-1	No construction of new roads or upgrading of existing access roads would occur in areas identified for or adjacent to Las Vegas bearpoppy restoration.
Botanical-2	Minimal construction of new roads or upgrading of existing access roads would occur in areas identified as sensitive plant habitat.
Botanical-3	In designated areas, sensitive plants and/or habitat would be flagged and structures would be placed to allow spanning of these features, where feasible within limits of standard structure design.
Botanical-4	All new access roads not required for maintenance would be permanently closed using methods approved by the landowner/manager (e.g., stockpiling and replacing topsoil, or rock replacement).
Botanical-5	Temporary disturbance would be restored using cacti and yucca originally salvaged from the site. The material would be salvaged by an experienced contractor, stockpiled in an area approved by BLM within the right-of-way, and then transplanted to reclaimed sites. BLM's protocols for proper maintenance of the material would be followed. Restoration would be in accordance with a BLM approved plan.

4.2.2 Wildlife Resources

Introduction

Potential impacts to wildlife associated with construction activities could include loss or displacement of individuals and/or habitat features.

Impacts to wildlife were analyzed by mile within a one-half-mile-wide study corridor. Refer to Appendix A, Map 2: Biological Resources, for location of the study corridor. Mitigation measures were applied to these impacts and a final determination of residual

impact was made. Ground disturbance information enabled a calculation of the total number of acres potentially disturbed for the Proposed Action. An estimated 165.5 acres of potential wildlife habitat would be permanently disturbed through the construction, operation and maintenance of the Proposed Action, while an additional 125.1 acres would be temporarily disturbed. Refer to Appendix D for a detailed impact assessment table.

A biological assessment was prepared to address impacts to FWS listed species potentially affected by the construction, operation or maintenance of the Proposed Action to include desert tortoise, bald eagle, Yuma clapper rail, southwestern willow flycatcher, yellow-billed cuckoo and relict leopard frog. FWS will render a biological opinion (BO) that would state whether FWS concurs with BLM determinations of effect to the species and whether implementing this action would jeopardize the continued existence of the species. Any stipulations identified by FWS with regard to these species would be followed as part of the Final Plan of Development.

Impacts to Wildlife Resources

Threatened and Endangered Species

Desert Tortoise

Construction of facilities would potentially result in degradation of desert tortoise habitat due to a reduction in cover and forage and increased levels of noise, traffic, equipment movement and human presence. Watering the road for dust abatement during construction activities could attract tortoises to the roads, increasing potential for them being injured or killed by vehicles. Additional impacts include habitat fragmentation and introduction of non-native plant species. The Proposed Action would result in an estimated 165.5 acres of permanent disturbance and 125.1 acres of temporary disturbance, all of which is considered potential desert tortoise habitat. However, much of this area is already disturbed by previous construction activities or public use.

Maintenance activities could affect desert tortoise during periodic access to the plan area for routine inspection, repairs, structure replacement and other activities. Individual tortoises could be injured or killed by equipment or vehicles during these activities and tortoise burrows could be disturbed. However, maintenance activities occur infrequently (usually twice per year), so impacts from these activities would likely be minimal.

Long-term impact from the presence of the transmission line could increase predation on young tortoises from raptors concurrently using the transmission structures and line as a perch or for nesting. The Proposed Action would largely be adjacent to existing transmission lines; therefore, these opportunities for perching and nesting already exist. As such, impacts from predation on young tortoise would not likely increase from current conditions.

Federal agencies have developed a relatively standard set of mitigation measures for desert tortoise in the Las Vegas area during pre-construction, construction and post-construction phases, as well as compensation for loss of habitat. These recommendations are summarized below:

- Education in desert tortoise protection measures for construction personnel

- Surveys to remove tortoises from construction zones immediately before construction
- Implementation of a litter control program
- Construction monitoring by qualified biologists
- Payment of mitigation fees for habitat compensation

Bald Eagle

No identifiable impacts to bald eagles occur because there is no nesting or hunting habitat for bald eagles in the plan area. Bald eagles wintering at Lake Mead, or eagles migrating through the area in the spring or fall, could fly over the area occasionally, but the project's effect on these visitors is expected to be minor.

Southwestern Willow Flycatcher

Impacts to the southwestern willow flycatcher could occur within the Las Vegas Wash area between mileposts 26 and 27 (SNEI, 2002). The riparian habitat in these sections is potential habitat for southwestern willow flycatcher due to the Wetland Restoration Project. Direct impacts would be limited to temporary disturbance as the lines are strung across the wash. No riparian plants would be removed as a result of project construction and no new roads would be constructed within the riparian vegetation area. Because wetland features within the Las Vegas Wash would be spanned, little or no impacts to potential southwestern willow flycatcher habitat would occur.

The active season for the willow flycatcher is May through September; any disturbance during this period in the Las Vegas Wash area could have impacts to nesting or foraging birds. No construction activities would occur in the wash during this time as mitigation for this species. Refer to Table 4-3 for proposed mitigation measures.

Long-term impact of the presence of the transmission line could increase predation from raptors concurrently using the transmission line as a perch. The Proposed Action would be adjacent to existing transmission lines crossing the wash; therefore, these opportunities for perching already exist. As such, impacts from predation would not likely increase with the additional transmission lines.

Yuma Clapper Rail

Impacts to Yuma clapper rail habitat could occur within the Las Vegas Wash area between mileposts 26 and 27 (SNEI, 2002). As with the southwestern willow flycatcher, the riparian habitat being improved as part of the Wetland Restoration Project could be important for the Yuma clapper rail. However, its presence there has not been documented (SNEI, 2002). As such, impacts to this species are expected to be limited to temporary disturbance of the riparian habitat during transmission line installation. Refer to Table 4-3 for proposed mitigation measures that would benefit the Yuma clapper rail.

Species of Special Concern

Reptiles

Impacts to the chuckwalla could occur throughout the plan area where rocky outcrops occur. Potential impacts to Gila monsters would be limited to the numerous washes in the plan area. Direct and short-term impacts to the chuckwalla and the Gila monster could include loss of individuals and habitat during construction, operation or maintenance activities. Compliance with state law regarding handling of Gila monsters encountered during construction would help reduce these impacts. Some of the habitat would once again be available following construction, however the loss of native vegetation could reduce the quality of the habitat.

As with desert tortoise and other prey species, impacts could include increased predation by raptors perching and nesting on the transmission structures. Given the large number of transmission lines that already exist in the plan area, predation is not likely to increase substantially. Another potential indirect impact would be loss of individuals from illegal collection due to the increased access into previously undisturbed areas. Closure of roads may be necessary in some areas to protect from increased access. Refer to Table 4-2, Botanical Resources for this measure and Table 4-3 for proposed mitigation measures specific to wildlife resources.

Amphibians

No identifiable impacts to amphibians such as the relict leopard frog or the arroyo southwestern toad occur in the plan area, because there are no known occurrences of and little potential habitat for either species.

Birds

Impacts to sensitive bird species could occur in the plan area, especially in the vicinity of the Las Vegas Wash between mileposts 26 and 27. As described for threatened and endangered bird species, the Wetland Restoration Project in this area hopes to provide increased riparian habitat beneficial to many species. Spanning these sensitive areas, limiting development of roads and restricting construction during key periods would be the best method of mitigating impacts to sensitive birds. Refer to Table 4-3 for a complete list of these proposed mitigation measures.

The presence of overhead electrical transmission lines greater than 69kV has been documented to have only a small effect on raptor and other bird populations due to death by collision or electrocution (Avian Power Line Interaction Committee, 1996). Electrocution is less of a problem with higher voltage lines due to the increased space between live phases. Climate factors such as heavy rain and fog also contribute to increased raptor collision with power lines; however, these conditions rarely occur in southern Nevada. Nevada Power has an existing program to monitor migratory bird mortality as a result of line collision or electrocution. Since 1992, reports of bird mortalities with recommendations for actions are submitted to FWS on an annual basis. No reports of migratory bird collision or electrocution have been reported on Nevada Power's existing 500kV lines. If that were to change, Nevada Power would work with FWS to determine appropriate mitigation.

Impacts to the ferruginous hawk include loss of a small amount of wintering habitat and temporary disturbance of a larger area of wintering habitat. However, because this species is known to visit the plan area only infrequently, impacts would be minimal.

Potential impacts to the western burrowing owl include loss of habitat and, since this is a ground-nesting bird, could include disturbance of breeding birds. Loss of individuals including young is possible if construction occurs during the breeding season. The FWS recommends that burrows or roosting sites not be disturbed and the construction of artificial burrows nearby when development activities destroy active burrows or roosting sites. Mitigation measures implemented for the desert tortoise would also reduce impacts to the western burrowing owl. Implementation of mitigation measures to survey prior to construction and avoid any identified nests would reduce potential impacts. Refer to Table 4-3 for a complete description of these proposed mitigation measures.

Potential impacts to migratory birds include disturbance of nesting and loss of habitat. Pre-construction surveys and avoidance of any identified nests with an appropriately sized buffer area as identified in Table 4-3, ensures compliance with the Migratory Bird Treat Act.

Desert Bighorn Sheep and Mule Deer

Impacts to mammals in the plan area could occur with loss of habitat and disturbance during construction. Mule deer and desert bighorn sheep in the southernmost parts of the plan area may be disturbed by construction noise that would cause them to avoid the plan area. An estimated 51.2 acres of permanent disturbance would occur within areas identified as potential bighorn sheep habitat. Another 35.8 acres would be temporarily disturbed. This habitat would be available following completion of construction. Long-term impacts could also result from disturbance during periodic maintenance activities; however these activities occur infrequently (usually twice per year).

Some increased public access would likely result from road construction or improvements in areas previously undisturbed. This could increase hunting pressure and harassment of wildlife, but with construction occurring mainly within existing utility corridors, access is not expected to increase considerably.

The presence of the transmission lines could make it more difficult for the Nevada Division of Wildlife (NDOW) to conduct aerial surveys to monitor the bighorn sheep population in the area. However, careful placement of the proposed route, with NDOW consultation to identify the location of these key areas, should minimize this impact.

Other Mammals

The potential impact this project may have on bats is loss of, or disturbance to, a small amount of foraging habitat. Their nocturnal habits would mean that they are unlikely to be encountered during construction. Following construction, most of the habitat would once again be available to them. The presence of the transmission lines could lead to an increased risk of collision, but this impact is expected to be minor. The Nevada Bat Working Group lists the key human-induced threats facing bats in Nevada and none of these threats are related to collision with manmade structures (Altenbach et al., 2002).

Mitigation Measures for Wildlife Resources

Where impacts to wildlife were possible as a result of construction, operation or maintenance of the Proposed Action, mitigation measures were developed to reduce or eliminate these potential impacts (Table 4-3). In addition, measure No. 4, as provided in Table 4-3 Mitigation for Botanical Resources, to close unnecessary roads, would be beneficial to wildlife as well as botanical resources.

Table 4-3 Mitigation Measures For Wildlife Resources

Wildlife-1	Proposed mitigation measures were developed based on terms and conditions of other BLM biological opinions for the desert tortoise. Terms and conditions of the biological opinion rendered through formal consultation with the FWS would be implemented during all project related activities. These mitigation measures may include at a minimum: Education in desert tortoise protection measures for construction personnel; Surveys to remove tortoises from construction zones immediately before construction; Implementation of a litter control program; Construction monitoring by qualified biologist; Habitat compensation within the Las Vegas District of the BLM
Wildlife-2	In designated areas, structures would be placed to avoid sensitive wildlife and/or to allow conductors to clearly span the features, within limits of standard structure design.
Wildlife-3	If construction of the project is not begun until after the commencement of burrowing owl breeding season (mid March – August), all burrows, holes, crevices, or other cavities on the construction site would be collapsed after a qualified biologist thoroughly checks them for inhabitants. This would discourage owls from breeding on the construction site. If authorization for the plan is not provided until after the commencement of breeding season and burrowing owls can be seen within the area during surveys, behavioral observations would be done by a qualified biologist to determine their breeding status. If breeding behavior is observed, an area large enough to prevent disturbance to the adults (as determined by BLM) would be avoided until the chicks fledge to ensure the chicks do not abandon the nest.
Wildlife-4	In compliance with Nevada Administrative Codes regarding protection of the gila monster, standard NDOW protocols would be followed if a gila monster is encountered during construction activities.
Wildlife-5	Restrict construction activities in the Las Vegas Wash (milepost 26-28) from May-September to avoid active period for sensitive riparian bird species that could potentially occur in this area.
Wildlife-6	Outside of riparian areas, if construction must occur during the breeding season of migratory birds (March 15th - July 30th), the plan area would be surveyed for nests prior to implementation. If a migratory bird nest were found with nestlings present, the area would be avoided until birds fledge. Executive Order 13186 issued January 11, 2001 defines the responsibilities of the Federal Agencies to protect migratory birds; the Migratory Bird Treaty Act of 1918 and subsequent amendments (16 U.S.C. 703-711) state that it is unlawful to take, kill, or possess migratory birds. A list of those protected birds are in 50 C.F.R. 10.13.

4.2.3 Air Quality and Meteorology

Introduction

The construction of the Proposed Action would produce two types of air contaminants: exhaust emissions from construction equipment and fugitive dust generated because of soil movement. Pollution emissions that occur during construction are generally exempt from Prevention of Significant Deterioration (PSD) review because the PSD requirements are primarily for major stationary sources and specifically exempt temporary increases in these emissions.

Air Quality Impacts

Emissions

Construction impacts may be expected during each phase of transmission line installation. Emissions produced during grading and construction activities are of short-term duration and would cease upon completion of project construction. Exhaust emissions from construction equipment include those produced onsite as the construction equipment is used.

The anticipated emissions of CO and PM₁₀ pollutants associated with the Proposed Action were calculated based on construction equipment identified in Chapter 2 for the Proposed Action. Emissions from construction would be confined to daytime activity for the duration of the construction period.

The Proposed Action is a linear non-major source and does not violate any of the Net Emissions Increases of criteria pollutants. The calculated values for CO emissions due to projected vehicular construction traffic are expected to be approximately 30 tons per year (TPY), much less than the NAAQS requirement of 70 TPY for CO from non-major source non-attainment areas.

Fugitive Dust

Construction activities are a source of fugitive dust emissions that may have an effect on local air quality. Emissions are associated with land clearing, ground excavation, grading operations and construction of the structures. Road construction is the prevalent construction category with the highest emission potential. The cut and fill requirements for new and improved access roads would contribute to fugitive dust emissions.

Dust emissions vary substantially from day to day, depending on the level of activity, the specific operations and the prevailing weather. A large portion of the emissions would result from equipment traffic over unpaved roads to the structure sites. Total suspended particle concentrations of 1.2 tons of fugitive dust per acre of disturbance per month of grading activity for the project may be expected. Approximately 192 acres within the plan area may be subject to grading. This figure is based on the number of staging areas and structures estimated for the entire 48-mile transmission line corridor within the 200-foot transmission line right-of-way. Assuming an estimated one-year development period, with approximately 16 acres of soil disturbed monthly in the affected right-of-way, 50.74 tons of fugitive dust per year would be generated.

Application of fugitive dust control measures required by the Clark County Department of Air Quality Management (DAQM) permit for construction activities would (by rule) effectively reduce emissions by 80 percent, to approximately 10 tons of PM per year. This figure is below the 15 TPY of PM₁₀ general requirements for non-major sources as per the DAQM Section 12 (5/24/01). The following dust control measures must be applied singularly or in combination to maintain dust control on all disturbed soil and minimize particulate emissions:

- Soil must be maintained in a sufficiently damp condition to prevent visible fugitive dust emissions that exceed 20 percent opacity as set forth in Section 94.9

(CCHD rules), or prevent any dust plume from extending more than 100 yards, horizontally or vertically, from the point of origin

- The soil must be crusted over by water or other appropriate methods, as demonstrated by the drop ball/steel ball test
- The soil must be covered with clean gravel or treated with a dust suppressant

Mitigation Measures

Controls would be necessary to minimize potential particulate impacts from construction activities. As identified in Chapter 2, Table 2-3, management practices for dust control (e.g., watering and/or chemical stabilization) would be utilized. Management practices would effectively control dust to Clark County required levels for non-major sources.

4.2.4 Visual Resources

Introduction

Visual resource impacts that would result from the construction, operation and maintenance of the Proposed Action have been identified as they relate to sensitive viewpoints and from the effects to the aesthetic values of the landscape.

This analysis considers the potential visual impacts from the Proposed Action resulting in the following changes to the landscape:

- Views from planned or existing residences
- Views from planned or existing parks, recreation and preservation area viewpoints
- Views from travel routes
- Visual integrity of natural and developed areas

The visual impact assessment for the Proposed Action is based on the guidelines in the BLM's Visual Resource Management (VRM) 8400 Series (BLM, 1984) and previous transmission line impact assessment methods that have been completed for similar areas.

To assist in determining visual impacts, the guidelines below were used to evaluate whether the Proposed Action would cause:

- Substantial adverse effect on a scenic vista
- Damage to scenic resources, including, but not limited to, trees and rock outcroppings
- Substantial degradation to the existing visual character or quality of the site and its surroundings
- Creation of a new source of substantial light or glare that would adversely affect day or nighttime views in the area

In applying these guidelines to determine a level of impact, a variety of factors were taken into account including: (a) the extent of Proposed Action visibility from parks,

residential areas and recreation destination routes; (b) the degree to which various Proposed Action elements would contrast with or be integrated into the existing landscape; (c) the extent of change in the landscape's composition and character; (d) the number and sensitivity of viewers.

Photo Simulations

Areas identified through scoping as having a high concern or importance for visual resources were further evaluated using photographic simulation techniques. These views are referred to as Key Observation Points (KOPs). Simulations were used to evaluate the accuracy of the predicted visual impacts, to determine the effectiveness of recommended mitigation and to illustrate the expected impacts to the concerned agencies and the public. The photo simulations can be found in Appendix B, KOPs 1 through 9.

Impact Assessment Results

During construction, short-term visual impacts would result from the presence of equipment, materials and work crews. Although these impacts are short term, they would be noticeable to local residents.

As the route would depart from the Harry Allen Substation, sensitive viewers would see the Proposed Action from viewpoints along Interstate Highway 15 (I-15), U.S. Highway 93 and the assumed location of the Spanish Trail/Mormon Road. Visual impacts would result where the Proposed Action would have weak visual contrast along mileposts 0 to 2.6. Additional visual impacts would occur from mileposts 2.6 to 6.1, where strong visual contrasts would occur in all distance zones from both moderate and high sensitivity viewpoints. Visual contrast would also alter Class C (described in Chapter 3) scenic quality along these same mileposts resulting in a visual impact. See the Visual Impact Data Table located in Appendix D.

In areas where the Proposed Action would not parallel other transmission structures, visual contrast would be strong. This condition exists between milepost 2.6 heading southeast to milepost 6.1 and also between mileposts 39 and 40 heading south.

The Proposed Action would use steel lattice structures throughout the plan area to reduce visibility of the Proposed Action in the foothill and occasional mountainous landscape found along the proposed route. Lattice structures are typically less visible than steel single-pole structures when viewpoints are located further than one mile from the proposed route and foothills and/or rolling hills form a backdrop behind the structures.

Dispersed recreationists within the Muddy Mountains Wilderness would see middle ground and background views of the transmission line. These viewers would see the transmission line in the vicinity of mileposts 12 and 13 where the Proposed Action would be more than 2.5 miles away from the nearest western edge of the wilderness boundary. Combining the moderate sensitivity of dispersed recreation viewpoints, weak visual contrast and the middle ground and background views of the Proposed Action area, a visual impact would occur along mileposts 12 and 13. These initial impacts would be minimal with the use of steel lattice towers, which weather over time to reduce light reflection or glare from the metal surface of the towers.

Foreground views of the transmission line would occur from residences and golf course recreation areas on the Lake Las Vegas Resort from mileposts 25.5 to 27.5 along the proposed route. Foreground views would also occur from residences located near the proposed route from mileposts 28 to 30. Both the residences and the viewers at the golf course have a high sensitivity to change in their visual environment. These initial impacts would be minimal with the use of steel lattice towers, which weather over time to reduce light reflection or glare from the metal surface of the towers.

Scenic quality of the landscapes found along the proposed route near mileposts 25.5 to 30 is both Class A and C. Residual impacts to scenic quality would be minimal in areas where two large existing lattice structure 500kV transmission lines parallel the Proposed Action in the Rainbow Gardens vicinity.

BLM Visual Resource Management Classes and Objectives

Of the nine KOPs, two occur on BLM land. KOPs No. 1 and 5 are located on VRM class III land. All other KOPs are located on non-BLM land. This condition reflects the actual distribution of viewers that occur in the Las Vegas Valley. Developed recreation sites, residential homes and motorists traveling highways were considered the viewers most sensitive to change nearest the Proposed Action. Of these viewer types, only motorists traveling I-15 would see the Proposed Action where Visual Resource Management policies exist.

As identified in the Las Vegas Resource Management Plan (RMP), Objective VS-1 is to “Limit future impacts on the visual and aesthetic character of the public lands.” Also, the RMP directs (VS-1b) that areas identified as Class III (RMP Map 2-9) be managed for partial retention of the existing character of the landscape. In these areas, authorized actions may alter the existing landscape, but not to the extent that they attract or focus attention of the casual viewer. The RMP also directs (VS-1c) that areas identified as Class IV (RMP Map 2-9) be managed to allow activities involving major modification of the landscape’s character. Authorized actions may create significant landscape alterations and would be obvious to casual viewers.

The results from KOP No. 1 indicate the characteristic landscape would be altered because of the proposed action. This alteration, however, is not an introduced form or line not already seen throughout the characteristic landscape. A casual viewer’s attention is already drawn and focused to multiple 230kV and 345kV corridor nearby. The proposed action would not be a new element introduced that would be out of context with the surrounding visual condition. Hence, the Proposed Action meets the RMP objectives and management direction at KOP No. 1’s location.

The results from KOP No. 5 also indicate that the characteristic landscape would be altered as a result of the proposed action. The simulation shows the effectiveness of lattice tower placement in front of complex topography nearby. The topography behind the lattice towers forms a backdrop that makes the structures less visible. A casual viewer’s attention is already drawn and focused to multiple 230kV and 345kV corridors nearby. The proposed action would not be a new element introduced that would be out of context with the surrounding visual condition. Hence, the Proposed Action meets the RMP objectives and management direction at KOP No. 5’s location as well.

The RMP objectives and management direction would also be met where the Proposed Action would cross VRM class IV lands. This is due to management that allows activities involving major modification of the landscape’s existing character. Authorized actions may create significant landscape alterations and would be obvious to casual viewers. Essentially, the goals for VRM class IV lands are more tolerant of visual impacts. Since the impacts levels are low enough to not violate VRM class III objectives, class IV objectives would also be met.

As for the overall objective of VS-1 in the RMP, the Proposed Action would limit future impacts on the visual and aesthetic character of the public lands because the visual impacts would be concentrated to one substantial, existing utility corridor. Additionally, visual impacts wouldn’t extend into other areas that are devoid of visual impacts.

Mitigation Measures

Mitigation measures would be effective in reducing visual impacts along visually sensitive portions of proposed route in areas where the Proposed Action would be located greater than ¼ mile from the viewer. In areas where the transmission line would be visible from distances less than ¼ mile, the Proposed Action would be dominant and would potentially result in long-term visual impact (i.e., for the life of the Proposed Action).

Potential initial visual impacts would be effectively reduced through implementation of the proposed management practices. For a complete list of proposed management practices refer to Table 2-3 in Chapter 2.

The recommended mitigation to further reduce the impact of the Proposed Action on visual resources includes the following measures as shown in Table 4-4. The locations of mitigation measure recommendations are listed in the Visual Impact Data Table in Appendix D.

Table 4-4 Selectively Recommended Mitigation Measures For Visual Resources

Visual-1	Temporary disturbance would be restored using cacti and yucca originally salvaged from the site. The material would be salvaged by an experienced contractor, stockpiled in an area approved by BLM within the right-of-way and then transplanted to the reclaimed site. BLM’s protocols for proper maintenance of the material would be followed. Restoration would be in accordance with a BLM approved plan.
Visual-2	Dulled finish structures would be used to reduce visual impacts. Single pole structures would be painted a medium gray with the following specifications: Carboline primer, number 621, polyurethane zinc, Aliphatic polyurethane, color number 0729, medium gray.
Visual-3	Minimal widening or upgrading of existing access roads would be undertaken in the area. This would minimize ground disturbance and limit new or improved access ability. This measure can also be applied to limit the disturbance at tower sites and staging areas.
Visual-4	All new access roads not required for maintenance would be permanently closed using the most effective and least environmentally damaging methods appropriate to that area with concurrence of the landowner (e.g., stockpiling and replacing topsoil, or rock replacement). This would limit new or improved accessibility in the area.

4.2.5 Cultural and Ethnographic Resources

Introduction

Construction and installation of the transmission line would result in surface disturbance from pole emplacements, pole relocations, borings, new push-road construction, improving existing but currently unmaintained access roads, lay-down or pulling-and-tensioning stations and other attendant facilities and activities. Archaeological properties are fragile and non-renewable resources; as such, construction activities on or near significant sites may affect them.

Impacts to Cultural Resources

Preliminary project plans indicate that 12 of 19 prehistoric and the five historic-period significant properties would be affected and would require some form of mitigation or treatment. Six prehistoric properties may be successfully avoided through project redesign or access road restrictions. Effects would be limited to a non-sensitive portion of one prehistoric property. These sites are summarized in the cultural resources impact table in Appendix D.

Potentially affected prehistoric sites include four of the five Complex Features/Artifact Assemblage Sites identified in the study corridor and eight of the 10 Complex Feature/Artifact Assemblage Fragile Pattern sites. Potentially affected historic-era properties include both of the Hoover Dam-related squatter campsites and segments of three separate railroads.

Mitigation Measures

An Historic Properties Treatment Plan would be developed and subject to review as defined in the Programmatic Agreement between BLM, Western, USBR, Nevada Power Company and the Nevada SHPO. That plan would describe the specific impacts that each property would sustain and the mitigation measures appropriate for each affected property. As general guidance, for prehistoric sites significant for their data potential (NRHP Criterion D), the goal of data recovery would be to realize the National Register-value of each of the historic properties through a combination of (a) field investigations to recover a sample of archaeological materials from the deposit at each property; (b) field investigations that document the structure and determine the nature of the features present at the properties; (c) archival research; and (d) analysis of pre-existing collections and records from the properties.

Mitigation measures for Gypsum Cave (NRHP eligible under criteria A, B and D) would include analysis of the 1930s collection housed at the Southwest Museum, a public education/outreach program and nomination of this property to the NRHP. In addition, consultation with Tribes would continue, so that additional information may be gained concerning this cave's traditional significance. Elders' perspectives and observations concerning the existing collection at the Southwest Museum is a necessary component of the analysis. A contemporary excavation would receive consideration, given the advances in geomorphological analyses, dating techniques and artifactual recovery techniques that have developed since 1930.

Regarding the historic-era properties, the historic context and treatment plan developed by Furnis (2003) for depression-era, Hoover Dam-related squatters camps would serve to guide investigations at the two potentially affected properties of this type. In designing mitigation measures for the three significant railroads that would potentially be affected, a public education/outreach program would be considered. This measure is in addition to historical research and detailed recordation/documentation of specific engineered structures and features that would be affected; the degree to which these linear historical properties are physically altered or impacted by the proposed project would dictate the amount and focus of the mitigative effort, adhering to guidelines provided in Appendix H of the State Protocol Agreement between BLM and the Nevada SHPO.

Consultations with tribal representatives and Elders provided a range of possible mitigative alternatives for the preservation and long-term management of Gypsum Cave. Key aspects include: continued consultations with Tribes, nomination of Gypsum Cave to the NRHP; a preservation plan under the BLM Las Vegas Field Office’s Resource Management Plan that is informed by tribal perspectives regarding this property; limiting access to the site through road closures; installing a bat grate that both protects the bats that live in the recessed chambers of the cave and blocks human entrance into these chambers; and educating the public about this location’s importance to Native American peoples and its value as an important archaeological and paleontological site. These alternatives would continue to receive consideration during on-going Native American consultations. Specific measures that would be implemented would be restated in the Historic Property Treatment Plan.

4.3 Additional Resources Assessed

4.3.1 Land Use

Introduction

The impact assessment corridor is based on the proposed 200 foot-wide transmission line right-of-way (100 feet either side of the assumed centerline). Maps identifying land jurisdiction and land use are included in Appendix A.

Potential impacts to land uses were assessed along the assumed centerline of the Proposed Action for the inventoried land use categories described below. The impact types identified for the land uses along the centerline of the proposed route are characteristically direct and long-term and include any impact that affects the following:

- Existing, developing or planned land use or activity
- Applicable general and regional plans and/or approved, adopted or officially stated policies, goals or operations of communities or governmental agencies
- Existing or planned air facility or air travel-related activity
- Established, designated or planned park, recreation, preservation or educational use area or activity

The impact data tables show the milepost location of potential impacts, the access level (ground disturbance level), the land use feature, the recommended mitigation measure(s) and the residual impacts.

Impact Assessment Results

Existing Land Use

The majority of potential impacts to existing land uses would result from the proposed transmission line's direct physical effect on existing land use. Indirect impacts on existing land uses could also occur after construction of the transmission line. For example, construction of new buildings or additions to existing structures could be precluded by the right-of-way to avoid conflicts with the transmission line maintenance activities and to ensure safety.

Construction activities would involve the crossing of various roadways. Generally, spanning the travel route and using traffic and safety controls during construction (e.g., flagmen, guard structures) would create only minimal traffic delays at these crossings. Appropriate agreements or permits would be acquired from the administering agency for the crossing of road rights-of-way.

The potential effects of the Proposed Action upon public use airports would require notification and a hazard determination with the Federal Aviation Administration (FAA). As a part of the Proposed Action, Nevada Power would file a Notice of Proposed Construction or Alteration form with the FAA (FAA Form 7460-1). Nevada Power would install high-visibility devices where required by the FAA. Nevada Power would also contact the owner/operator of private airports and airstrips potentially affected by the Proposed Action.

Active mining claims were identified within the plan area and would be crossed by the Proposed Action. However, the construction of the proposed transmission line would have no identifiable impact on mining claims.

Planned Land Use

Residual impacts would occur for a total of 1.8 miles from the proposed route crossing planned areas associated with the following features: Lake Las Vegas Resort and Clark County Regional Flood Control District Flood Control Facility (N.E. C-1 Detention Basin).

Parks, Recreation and Preservation Areas

Recreation use, including off-highway vehicles, would be displaced from the lands occupied by the Proposed Action. Generally, impacts to the recreation experience result in minor impacts to the scenic or aesthetic qualities of the surrounding landscape (refer to Visual Resources, Section 4.2.4).

Legislative action allows Nevada Power to cross the BLM Sunrise Mountain Instant Study Area within a defined corridor (refer to Chapter 3 – Land Use for details regarding this corridor). Unfortunately, existing access roads, which could be used to minimize the need for new access roads, are located outside the designated 500-foot utility corridor;

therefore, a new access road would be required. Boundaries of this area would be surveyed and/or verified to ensure proper placement of project facilities. Boundaries of the proposed construction activities would be clearly marked with flagging, exclusion fence, signage or other distinctive markings to avoid construction crews straying onto adjacent areas during construction.

Potential impacts to BLM-managed Special Recreation Management Areas (SRMAs) and Extensive Recreation Management Areas (ERMAs) are not anticipated. Although construction of the proposed 500kV transmission line would require coordination with any scheduled activities, use of the area would not be curtailed.

Residual impacts would occur from the Proposed Action crossing the following land use features:

- Old Spanish National Historic Trail
- BLM Rainbow Gardens ACEC
- BLM River Mountains ACEC
- BLM Sunrise Mountain Natural Area
- Clark County Potential Trail Alignment
- UNLV Rainbow Gardens Geologic Preserve
- Clark County Wetlands Park
- Proposed Clark County Wetlands Park Trail Corridor
- City of Henderson Proposed Bike Lane
- City of Henderson Proposed Shared-Use Trail
- City of Henderson Proposed Park (Park A)
- City of Henderson Proposed Bike Route
- Rivers Mountains Loop Trail
- Clark County Proposed New Candidate Trail Corridor

Mitigation Measures

Management Practices proposed as part of the Proposed Action were developed with the intention of minimizing potential impacts to land use. Refer to Chapter 2, Table 2-3 for a list of these practices.

Mitigation measures identified for biological and visual impacts could be applied to further minimize potential land use impacts resulting from the construction, operation and maintenance of the Proposed Action (refer to Table 4-2, 4-3 and 4-4). Two of these measures were designed to minimize the effects of new access roads by requiring that existing access be utilized wherever possible and by closing new access roads where feasible.

4.3.2 Socioeconomics

Introduction

The study corridor for the Proposed Action is largely in undeveloped rural areas; however, construction activities would cause periods of disturbance and the line would introduce a new facility to the area. Construction of the transmission line would have transitory effects on people living near the right-of-way. The following is a discussion of the effect of the alternative routes on the communities along the corridor, describing their potential for affecting the social and economic welfare of the area's residents.

Impact Assessment Results

Population Effects

The figure of merit for assessing the construction phase's socioeconomic impacts is population. Population was delineated in terms of the census tracts as part of the Chapter 3 inventories through or along which the Proposed Action is located. The total population for the plan area in 2000 was 30,756 and the total number of housing units was 12,811.

None of the census tracts (CT) in the plan area have a majority of their residents represented by minority groups. Whites comprise the majority race, ranging upwards of 93 percent (near Henderson and Boulder City) to a low of about 53 percent in CT 59.02 at the northern end of the proposed route. The population of this tract, which totaled about 1,500 persons in 2000, is widely dispersed, with Hispanic/Latinos and Native Americans accounting for most of the minority group population in the tract. CT 59.02 is vast, extending across the entire northern side of the metropolitan area; it includes both the Moapa River Indian Reservation at the eastern end of the tract and the Las Vegas Paiute Indian Reservation at the western end.

Environmental Justice

The criteria for a finding of possible environmental justice problems is the occurrence in the area of influence of the Proposed Action of more than 50 percent of the population being minority or low-income. The Proposed Action was evaluated and there were no occurrences of disproportionately high percentages of minority or low-income populations who might be impacted.

Economic Effects

The Las Vegas area's population and economy is large, diverse and dynamic; therefore, the economic effects of constructing the transmission line would have little discernable effect on the overall levels of personal income and employment in the region. The construction phase would likely employ between 100 and 140 workers over the course of 1.0 to 1.4 years. Their aggregate gross wages are estimated to be nearly \$7 million.¹

¹ Manpower estimate based on *The Plan of Development for the Harry Allen – Northwest 500kV Transmission Line* (Power Engineers, 2001), scaled to the length of the preferred alternative alignment for the HA-Mead line (approximately 50 miles versus 36 for the HA-NW project). Wages

The latest available data for total personal income in Clark County is for 1999, amounting to \$37.3 billion. At current growth rates, the figure for 2002 would exceed \$42 billion.² Accordingly, the Proposed Action would make a relatively small contribution to the overall economy of the region. More substantial, in the longer term, would be the benefits of maintaining reliable electric power service to the residents and industries of the region in the face of its ever-growing demand.

Apart from the benefits of reliable service to customers in general, benefits would also accrue to jurisdictions along the route in the form of property taxes. However, lacking estimates of capital costs, it is not possible to estimate assessed values or property taxes for the Proposed Action. Payments would also be made to Federal jurisdictions providing right-of-way easements.

Some positive effects would also come during construction, not only in the form of direct employment, but also from procurements of construction materials and services from local suppliers and businesses.³

Mitigation Measures

Proposed management practices (Chapter 2, Table 2-3) to avoid or reduce environmental impacts and protect public safety along the selected right-of-way would greatly reduce any disturbance to daily living patterns occasioned by construction activities. Mitigation measures proposed for these resources would also minimize impacts to the public. As such, no additional socioeconomic mitigation for the Proposed Action is recommended.

4.3.3 Health and Safety

Introduction

This section describes the types of impacts that would likely occur to public safety due to hazardous materials and electrical effects associated with the Proposed Action.

estimate by Power Engineers based on average wage of \$25 per hour x 2,080 hours per year x 100-person fulltime equivalent workforce for 1.4 years (50 miles/36 miles x 1.0 years). Wage rate based on range of wages reported for electrical workers, operating engineers and helpers in Clark County (Nevada Labor Commissioner, 2001)

² Estimate based on a 6 percent average annual growth rate.

³ Estimates of construction costs have not been released by the Nevada Power, so it is impossible to estimate the value of local procurements. The figure would likely run into several millions of dollars, however, and would support secondary employment in the wholesale, retail and service sectors of the local economy.

Impact Assessment Results

Electrical and Magnetic Fields

Induction

As explained in Chapter 3, a large conducting object that is well insulated from the ground might present an opportunity for a perceptible shock if it is in a strong enough electric field. Structures near the 500kV line may be quite large, e.g., barns and large storage buildings. Since electrical induction effects generally increase with the size of the object, there could be perceptible currents or sparks caused by the Proposed Action interacting with these structures. However, such objects are often naturally grounded, which would considerably reduce the magnitude of currents or sparks that a person can receive due to electric field induction. A person is also reasonably well grounded if standing on grass or dirt, particularly if the earth is damp and the person is wearing leather-soled shoes. However, a person can receive a shock within the right-of-way, which although not hazardous, could still be annoying or startling.

Buildings and storage sheds would not be permitted within a right-of-way, so induction should not be an issue.

Fires

The proximity of the 500kV transmission line to conductive and/or combustible objects in or near the right-of-way could result in a risk of fire because of one of the following effects:

- A direct current flashover from the conductor to the object if the object is less than a minimum clearance, causing an electric arc between the line and the object
- A spark discharge on the object because of an increase in voltage between the object and ground

Air has a very high electrical insulation value (capable of sustaining up to 30,000 volts per centimeter) which aids in reducing the susceptibility of an arc discharge occurring. It has been determined that to cause wood (such as a tree) to burn, the wood object must be less than 10 feet from the line. Given the lack of tall natural objects in the plan area, this type of fire risk would not be a safety impact.

There is, however, a risk of wildfire from construction equipment or a possibility of a live line or conductor falling to the ground igniting a wildfire. Workers would be instructed not to drive or park vehicles where catalytic converters can ignite dry vegetation. Vehicles would carry water and shovels or fire extinguishers during times of high fire hazards. Fire protective mats or shields shall be used during grinding or welding. Workers would be instructed to exhibit care when smoking in natural areas. Fueling of a vehicle would take place outside of the 500kV transmission line right-of-way.

EMF Impacts

Recent studies have concluded that magnetic fields do not themselves have the energy to directly cause cellular DNA damage that lead to leukemia or other cancers (Lloyd 2003).

However, in light of some uncertainty, Nevada Power designs and constructs their circuits to reduce EMF to the maximum extent feasible.

Hazardous Materials

The presence of hazardous materials or hazardous wastes within the study corridor only becomes an issue when either (a) these substances are improperly stored or handled or (b) these substances are encountered when excavated during construction resulting in inadvertent releases to the environment (e.g., spills, leaking tanks, disposal to the ground or water).

All construction, operation and maintenance activities would comply with all applicable Federal, state and local laws and regulations regarding the use of hazardous substances. The construction or maintenance crew foreman would be responsible for maintaining compliance with all applicable laws and regulations. In addition, an onsite inspector would be present during construction to make sure all hazardous materials are used and stored properly. A handling plan would be developed as part of the Plan of Development during the engineering and pre-construction phase of the transmission line.

Mitigation Measures

The sensitive receptors in terms of hazardous materials and electrical effects are residential areas, schools, commercial properties, industrial buildings and construction workers in proximity to the line. Management practices proposed in Chapter 2 to improve safety and minimize environmental impacts (Table 2-3) would be implemented to reduce potential impacts associated with hazardous materials and EMF.

4.3.4 Water Resources

Introduction

This section describes the types of impacts to water resources that would potentially occur from construction, operation and maintenance of the Proposed Action. Water resources considered include surface waters (perennial and intermittent waterways), wetlands and floodplains. These resources were inventoried and are described in detail in Chapter 3.

In assessing the potential impacts to water resources that would result from the Proposed Action, the following factors and potential effects were considered:

- Proximity of Proposed Action relative to sensitive water features
- Level of ground disturbance for Proposed Action (as described in Section 4.1)
- Surface water discharges that would impair the beneficial uses of surface water adjacent to the Proposed Action as set forth in the Nevada Administrative Code Chapter 445.1350, 445.1352, 445.1354 and 445.1356
- Development within the 100-year floodplain (Executive Order 11988)

- Substantial alteration of floodwater flow resulting from onsite flooding substantially different from the existing 100-year flood standard (Executive Order 11988)
- Generation of onsite runoff that exceeds the capacity of existing storm drain systems

The results of the impact assessment and mitigation planning process are discussed in the following paragraphs and are summarized in the water resources impact data table in Appendix D. The impact data table shows, by mile location of potential impacts, the ground disturbance level, the water resource feature, the initial impact level, the recommended mitigation measure(s) and the residual impact level.

Impact Assessment Results

Short-term impacts are generally the result of construction activities. Construction activities in proximity to any waterway may impact natural channel flow, specifically discharge and morphology. Spills of petroleum products, solvents or other construction-related materials near a water resource feature could impact water quality. The movement of soil, and the exposure of soil to rain and surface runoff would increase the erosion potential and cause increased sedimentation.

Overhead transmission line construction requires excavation, scraping and grading and soil stockpiling. The overhead transmission line and access roads would cross one perennial and numerous intermittent waterways. Surface water quality could be diminished because of (1) access road and foundation excavation near sensitive water resources; (2) vehicular traffic, scraping and grading and material laydown at pull sites/laydown areas; and (3) scraping and grading, construction of culverts in waterways and construction of new permanent access roads. If sediment-laden runoff enters nearby drainages, it could potentially increase turbidity, increase channel siltation and reduce the flood-carrying capacity of downstream waterways. Direct water quality impacts from soil erosion downstream sedimentation would be minimized or eliminated by the implementation of a stormwater pollution prevention plan (SWPPP). Any residual impacts would be short term and would cease when construction activities are completed and the site is stabilized.

At each lattice tower site, four concrete foundations approximately three feet in diameter and up to 28 feet deep would be constructed. Placing impervious material would restrict stormwater infiltration rates. However, this impact would be negligible for either the lattice tower foundation or the steel pole, because the total area along the transmission line route impacted by foundations of either structure amounts to less than 0.1 acre.

The proposed route crosses approximately 1.8 miles of FEMA-defined 100-year floodplains at six separate locations (Appendix A, Map 3: Biological Resources). An effort would be made to avoid placing any structures within the 100-year floodplains. Final structure locations would not be known until final design is completed. Only one floodplain location at milepost 32 is wide enough to pose a problem for spanning. If placement of structures within the floodplain cannot be avoided, structures would be reinforced and engineered to withstand flood events. No changes would occur to the drainage patterns of the floodplains crossed.

There is a possibility that some relatively minor drainage diversions would be created due to the grading for the Proposed Action. These minor drainage diversions would be evaluated as part of the final engineering design and constructed such that drainage facilities are adequate to handle increased flows.

Long-term impacts would generally be associated with the operation and maintenance of the Proposed Action. Long-term impacts to surface water quality would persist due to the use and maintenance of access roads and resultant soil erosion potential; however, given the infrequency of maintenance activities (twice annually), these impacts to water resources would be minimal to not identifiable.

A total of 10.3 miles of floodplains and ephemeral drainages are crossed. An estimated 49.8 acres of permanent ground disturbance would result and 30.4 acres of temporary disturbance. Most of this acreage is due to the vast network of small ephemeral drainages crisscrossing many parts of the study area. Most of these drainages, with the exception of those immediately adjacent to the Las Vegas Wash, do not have a continuous surface connection with a Waters of the US designated waterway. The potential short-term impacts to water resources identified for proposed construction activities include the following:

- Accelerated soil erosion and sedimentation with impacts to perennial water sources limited to construction sites immediately adjacent to the Las Vegas Wash.
- Localized alterations to runoff characteristics and drainage patterns
- Surface water and groundwater quality degradation, if there were an accidental release of gasoline or oil from vehicles and equipment

Mitigation Measures

The construction and operation of the Proposed Action would require very little consumptive use of water resources and thus no impacts to water quantity are anticipated. Furthermore, all potential impacts to water resources identified in this assessment would be minimal with the implementation of management practices identified as part of the Proposed Action in Chapter 2, Table 2-3. Management Practices that are anticipated to lessen impacts to water resources are summarized below:

- Restriction of movement outside the right-of-way
- Preservation of original contours and vegetation where possible
- Reseeding and installing erosion control devices
- Construction of roads at right angles to washes and installation of culverts where necessary
- Proper storage, use and disposal of waste including hazardous and potentially hazardous materials
- Dust control

It was determined that these management practices, in conjunction with a site-specific SWPPP, would be sufficient to eliminate or minimize impacts to water resources.

4.3.5 Geology and Soils

Introduction

In general, impacts to geology and soils from various development projects or earth moving activities could include any of the following:

- Damage to geologic sites of major public interest
- Excessive sedimentation or erosion
- Destruction of potential mineral, geothermal or oil and gas resources
- Disfigurement of the natural landscape
- Alteration of natural drainage features

Impacts from construction of transmission lines would primarily be related to right-of-way clearing, road building or road improvements, installation of structures and conductor stringing operations. The predominant impacts from such activities would include localized increases in erosion, disfigurement of the natural landscape from bench roads located along hillsides, or restricted or removal of access to mineral resources.

Impact Assessment Results

Geology

Several sections of the alternative routes are located in rugged mountainous terrain with slopes ranging from 15 percent to more than 30 percent and a few places with slopes exceeding 30 percent. Access to tower sites in these regions would be achieved by using existing bench roads where available or constructing new bench roads along the slopes and clearing areas for the transmission towers. Impacts to geologic features in these areas would include permanent scarring of the hillside and an increase in slough loading below the bench roads.

These impacts would most likely occur at locations along the Proposed Action within the steep areas where existing access roads are not adequate and new roads would be necessary.

Mineral development is ongoing at the sand and gravel operation located at approximately milepost 43 within the southern portion of the plan area. Construction of the proposed transmission line may result in short-term impacts to access and development of the quarry. Assuming that the Proposed Action would also span the quarry, these impacts would be incurred only during construction. Once construction is complete, the impact would be reduced or eliminated.

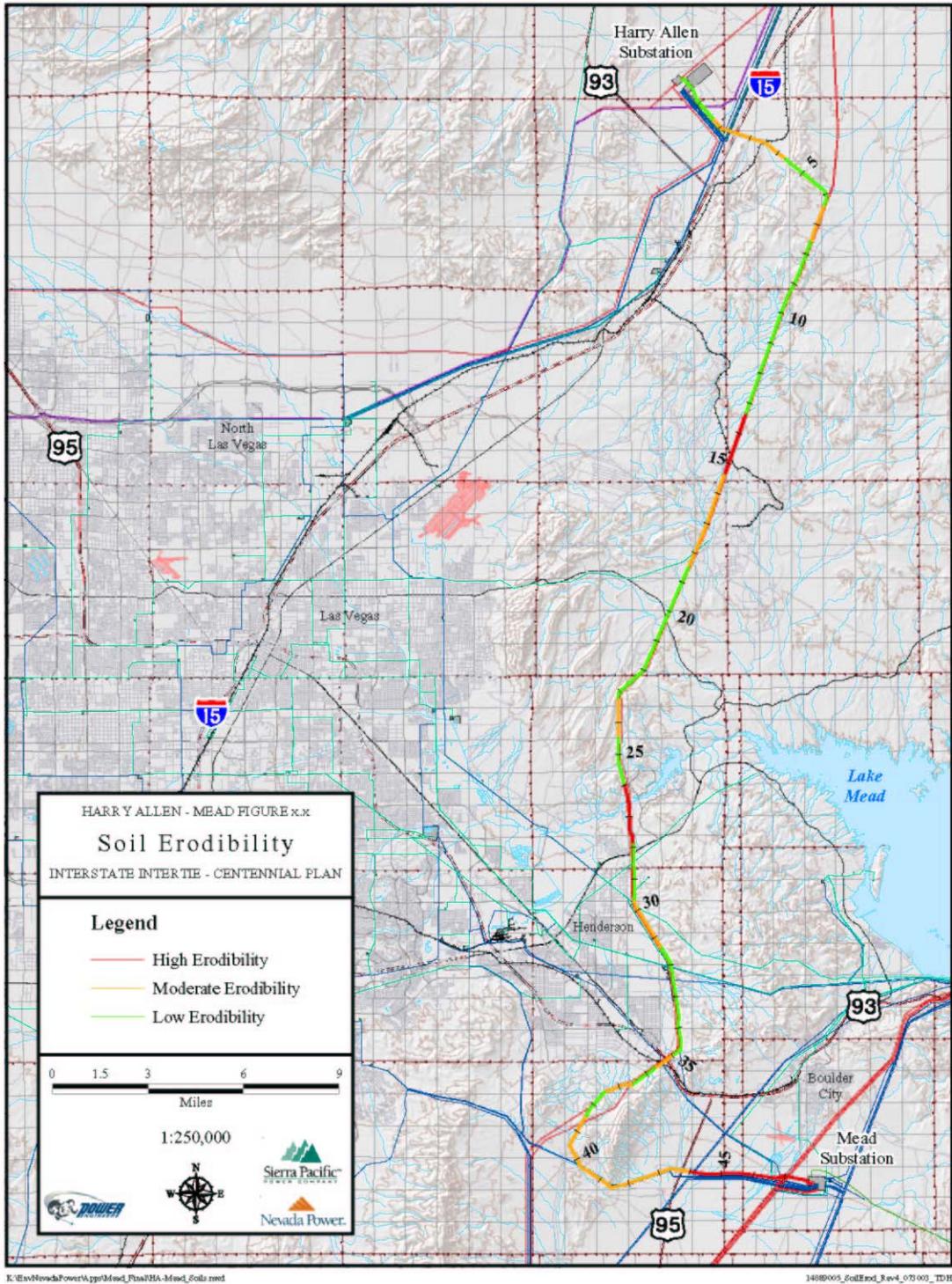


Figure 4-1 Erodibility of Soils

Soils

Overhead transmission line construction requires excavation, grading and possibly soil stockpiling. Construction activities that remove vegetation and cause soil surface disturbance would likely result in increased soil erosion rates. Erosion rates would depend on site-specific characteristics including soil type, disturbance mitigation measures and climatic conditions. Water erosion would generally be associated with localized precipitation events.

The potential for wind erosion would generally be highest between the months of November through February. Erosion could result in some loss of productive potential. Soil erosion impacts would be short term in duration. The majority of detailed soil mapping units in the plan area has wind and water erosion potentials. Refer to Figure 4-1 for a map identifying soil erodibility within the plan area.

Soil compaction could occur as a result of construction activities associated with the Proposed Action. Rubber-tired vehicles generally compact soils more than tracked vehicles. The extent of compaction would depend in large part on soil moisture content and the physical characteristics of a particular soil type. Compaction tends to be most severe when soils are moist to wet. Very dry and very wet soils generally would not compact as severely. Compaction impacts would generally be short term in duration, but would have the potential to affect soil resources in the long term.

Relocation of soil resources would occur during construction activities. Road improvement, new road construction and transmission tower foundation placement would result in the displacement of soil resources. These impacts would be localized and limited in terms of the effects on overall plan area soil resources. Though limited in extent, impacts associated with soil relocation would be long term in duration.

Mitigation Measures

Applying management practices as identified in Chapter 2, Table 2-3, would lessen construction-related impacts to geology and soils from construction and operation of the Proposed Action. Mitigation measures identified for biological and visual resources would also minimize further impacts to geologic resources that may be incurred by road building, road improvement or general disturbance associated with construction activities.

4.3.6 Paleontological Resources

Potential impacts to nonrenewable significant paleontological resources associated with construction activities could include crushing, destruction and removal.

Impacts to Paleontological Resources

Impacts to paleontological resources were analyzed for the entire project area and the sensitivity ranking (high, low, undetermined) for the entire project corridor is defined by milepost. Locations with significant paleontological resources were identified by milepost and geological formation. The results of this study and recommendations are

summarized in the paleontological impacts table in Appendix D. Mitigation measures were considered and a final estimate of residual impacts was made.

Mitigation Measures

The paleontological resources literature research and field inventory has been completed, and a formal, agency-reviewed plan that addresses the treatment of paleontological resources discovered during construction has been completed. At this point, the following specific Paleontology Actions (PAs) constitute the treatment plan. They are summarized by milepost and locality in the paleontological impacts table in Appendix D.

- PA-1: Prior to construction, orientation workshops would be prepared and presented that explain paleontologic mitigation guidelines and procedures to construction personnel and other environmental monitors.
- PA-2: Prior to construction, all exposed paleontologic resources and associated contextual data identified during the field inventory would be recovered. This recovery would be conducted by qualified professional vertebrate paleontologists with regional experience, under permit from the Nevada BLM, to recover exposed fossils and associated contextual data identified during the field survey.
- PA-3: During the construction phase, there would be full-time monitoring in rock units that have high paleontologic sensitivity while units of undetermined sensitivity would be spot-checked monitored. Monitoring would be conducted by qualified professional vertebrate paleontologists with regional experience, under permit from the Nevada BLM. Significant fossils discovered would be salvaged. Salvage would include recovery of exposed significant paleontologic resources, removal and/or molding of exposed trackways and sampling where necessary to recover microfossil remains.
- PA-4: Significant fossil resources that cannot safely be recovered would be stabilized, documented and conserved.
- PA-5: Paleontologic resources recovered would be prepared to permit their identification and permanent preservation. This includes stabilization of large remains and screen washing of fossiliferous sediments to recover significant microfossil remains.
- PA-6: Recovered fossils would be analyzed, including (but not limited to): identification to genus/species, element, etc.; interpretation of species abundance and diversity; determination of sex ratios and the relative abundance of ontogenetic age groups; dating of remains as appropriate; evaluation of potential taphonomic factors; and comparison with other vertebrate faunas from the Mojave Desert and the southwestern United States.
- PA-7: Recovered significant fossils would be preserved and curated, including all associated contextual data, at a Federally recognized, accredited repository with long-term retrievable storage.
- PA-8: A final report, including an itemized and accessioned inventory of recovered specimens, would be prepared by a professional vertebrate

paleontologist and distributed to the appropriate lead and cooperating agencies. This report shall include documentation of any and all significant fossil vertebrate localities and/or fossil plant localities.

- PA-9: During and following excavation, information obtained as a result of the paleontologic investigation would be appropriately disseminated. Such dissemination should include publication of results in professional scientific journals. As deemed appropriate by the BLM, this may also include public presentations, classes, videos and other forms of outreach and education. On-site exhibits may be considered if appropriate.

4.4 Irreversible and Irretrievable Commitment of Resources

Resources committed to the Proposed Action would be material and nonmaterial, including financial. Irreversible commitment of resources for the purposes of this section has been interpreted to mean that those resources once committed to the Proposed Action would continue to be committed throughout the 40-year life of the plan. Irretrievable commitment of resources has been interpreted to mean that those resources used, consumed, destroyed or degraded during construction, operation, maintenance and abandonment of the Proposed Action could not be retrieved or replaced for the life of the plan or beyond. The irreversible and irretrievable commitment of resources for the Proposed Action is summarized in Table 4-5.

Table 4-5 Irreversible and Irretrievable Commitment of Resources

Resource	Type of Commitment/Reason for Commitment	Irreversible	Irretrievable
Geology/Soils	Sands and gravels used for concrete foundations	Yes	Yes
Surface Water	Grading during construction	No	Plan lifespan
Biological	Disturbance to and/or loss of vegetation, habitat and wildlife species	Yes	Plan lifespan
Air Quality	Degradation of air quality during construction	Yes	Yes
Visual	Viewshed and Scenic Quality alteration Construction and operation	Yes	Plan lifespan
Land Use	Exclusion of other uses and Construction and operation	Yes	Plan lifespan
Cultural	Potential disturbance of cultural sites during construction and operation	Yes	Yes
Paleontologic	Potential disturbance of sites during construction and operation	Yes	Yes
Socioeconomic	Slight Increased regional and local employment and revenues	No	Plan lifespan

4.5 Cumulative Effects

4.5.1 Introduction

Cumulative impacts result “from the incremental impact of an action when added to other past, present and reasonably foreseeable future actions.” The impacts of past and present actions combine to form existing conditions—considered in the Affected Environment sections of Chapter 3.

Cumulative impacts can result from individually minor, but collectively significant, onsite or offsite actions occurring over a period of time (40 CFR 1508.7). Those actions within the spatial and temporal boundaries (project impact zone) of the Proposed Action are considered in this EA. The spatial and temporal boundaries vary depending on the type of action proposed.

The areas of cumulative effects analyses are based generally on the 212 airshed boundary, watershed basins, aquifer boundaries, ecological regions and highway locations. This document utilizes the BLM Environmental Assessment Number NV 050-2003-89 developed for the sale of BLM managed public lands within the disposal boundary of Southern Nevada Public Lands Management Act (SNPLMA) of 1998, as amended, Public Law 105-263, 112 Stat 2343, (BLM, 2003). This area has been identified as the primary area of future development within the Las Vegas Valley.

4.5.2 Impact Assessment Methods

Unless otherwise noted, this analysis considers impacts that could occur over the potential 40-year life of the Proposed Action. This timeframe includes the estimated period for completion of activities, along with a period of institutional control of lands and resources.

Identification of the affected environment or baseline condition is detailed in Chapter 3 and will not be revisited in this section. In addition to the BLM land sale EA described above, the following environmental documents were utilized for identifying cumulative impacts:

- Moapa Paiute Energy Center FEIS (BIA and BLM, 2002)
- Harry Allen—Crystal 500kV Transmission Line EA (BLM, 2001)
- Harry Allen—Northwest 500kV Transmission Line EA (BLM, 2002)
- Harry Allen—Apex 500kV Transmission Line EA (BLM, 2002)

4.5.3 Existing Energy Systems

The Proposed Action has been sited within a BLM-designated corridor for 40 miles of the 48-mile route. Outside the corridor, the route was sited adjacent to existing transmission lines wherever feasible. Although the Proposed Action lies outside of the SNPLMA for all but approximately 1-1/2 miles, the Las Vegas Valley includes many existing transmission lines, substations and generation plants owned and operated by Nevada

Power, Los Angeles Department of Water and Power, Western Area Power Administration, Basic Management Inc., Colorado River Commission and Valley Electric. Refer to the Land Use section in Chapter 3 for further information on existing features.

The cumulative effect that these facilities have is based on the need to supply electric power to the community based land developments within the SNPLMA boundary.

4.5.4 Reasonably Foreseeable Future Actions

The following energy facilities relating to generation, substations and transmission are currently being planned by Nevada Power to meet their mandate of providing for energy needs within their service area.

Generation Facilities

The following proposed generation facilities are required in 2006 and 2007 to serve forecasted load growth within the SNPLMA boundary in the Las Vegas Valley and to better balance Nevada Power’s portfolio of purchase power contracts versus company-owned generation facilities.

Schedule

- Simple cycle combustion turbine at Harry Allen - 2006
- Combined cycle plant at Harry Allen - 2007
- Undetermined amount of additional generation at existing facilities - 2010

Substation Facilities

Distribution substations act as the load service hubs for the distribution system. The distribution substations listed are all planned for the Las Vegas Valley and are driven by new load growth. The distribution substations are either 138/12kV or 69/12kV.

Transmission substations provide a redundant source for the lower voltage (138 and 69kV) transmission system. The transmission substations listed are all planned for the Las Vegas Valley.

Schedule

- 3 distribution substations - 2004
- 5 distribution substations - 2005
- 2 distribution substations/1 transmission substation - 2006
- 5 distribution substations/2 transmission substations - 2007
- 5 distribution substations - 2008
- 2 distribution substations - 2009
- 2 distribution substations - 2010

Transmission Facilities

Additional transmission facilities will be required to integrate new substations into the existing transmission network. Line lengths would vary from approximately two hundred yards to several miles. These projects would be within the Las Vegas Valley but not necessarily within the SNPLMA boundary.

Various reconductor/modifications of existing transmission facilities would be required to accommodate higher demand due to load growth and/or provide added reliability. These projects would be within the Las Vegas Valley.

Additional transmission systems from Harry Allen Substation to Crystal Substation to Eldorado/Marketplace substations would provide interconnections to future generation resources and/or increase transmission capability between western regions for added energy interchange. This project would likely follow the existing 500kV corridor.

A 500kV transmission line extending from Ely, Nevada to the existing Harry Allen Substation (Harry Allen–Gonder) would provide added import capability for Nevada Power and Sierra Pacific Power and offer interconnection between the desert southwest and northwest. The line would follow existing transmission corridors in Nevada such as the SWIP corridor.

Additional 230/500kV interconnections would provide support for future generation at existing generation sites, such as Harry Allen. The likely transmission routing would be along the existing 230kV transmission corridor from Reid Gardner to Harry Allen substations.

Additional 230kV transmission from Northwest Substation to Mercury Substation would provide transmission to support future load growth and/or generation expansion at the Nevada Test Site or Valley Electric Association. The line would likely follow the existing Northwest–Mercury 138kV transmission line.

Additional 230kV transmission from Harry Allen Substation to Pecos/Winterwood substations would provide transmission from existing/future generation in Apex to load centers within the Las Vegas Valley. The likely line route would follow existing 230kV lines to the Las Vegas Valley and 138kV lines within the Las Vegas Valley.

Schedule

- Transmission extensions for the planned (27) distribution substations and (3) transmission substations - 2004-2010
- Various reconductor/modifications to existing transmission lines – 2004-2010
- Harry Allen–Crystal–Eldorado/Marketplace 500kV line - >2010
- Harry Allen–Gonder 500kV line - >2010
- 230/500kV lines to new Nevada Power generation (e.g. Reid Gardner) - >2010
- Northwest–Mercury 230kV line - >2010
- Harry Allen–Pecos/Winterwood 230kV - >2010

Other Facilities

The addition of the generation plants, transmission lines and substations listed above would provide the ability for growth to continue within the SNPLMA boundary thereby increasing the level of cumulative impact to the resources within the Las Vegas Valley. Clark County has the responsibility of permitting development within the SNPLMA boundary and the entire Las Vegas Valley. Local planning departments would work to reduce these impacts as they are identified.

The population within the Las Vegas Valley grew steadily over the last decade. Population growth fuels land development, such as the construction of residential, commercial, industrial and public service facilities and improvements. These developments can result in loss of habitat, as well as construction related air quality and other impacts. Community based land development tends to have more permanent and more concentrated impacts than that of energy projects, particularly with respect to biological, cultural, air and water quality resources.

Many new commercial and housing projects are planned, approved and currently under construction in the Las Vegas Valley, some in the areas planned for future substation and distribution expansion. These projects would require new permanent roads and other infrastructure.

Some of the more notable planned and proposed major commercial/industrial projects affecting the entire Las Vegas Valley include the Southern Nevada Water Authority second-source water pipeline, the Water Treatment Plant discharge project, the Hoover Dam Bypass and Boulder City Corridor, Ivanpah Energy Center, Ivanpah Valley flood control structure, Ivanpah airport and widening of U.S. Highway 95.

The cumulative effects analysis done as part of the Las Vegas RMP identified the potential for development within the SNPLMA boundary in the Las Vegas Valley including 25,540 acres of public land disposal and 54,000 acres of private land. Using information obtained from the Clark County Department of Comprehensive Planning, the BLM predicted that over a 20-year period, development of this land would occur at an estimated rate of 4800 acres per year within the Las Vegas Valley. Land development would be a mix of residential, commercial and recreational. The following breakdown of the 4800 acres of annual development was identified in the Las Vegas Land Sale EA (2003):

- Single Family Homes – 65% (3120 ac)
- Apartment Complex – 15% (720 ac)
- Office Building – 13% (624 ac)
- Moderate Size Casino – 3% (144 ac)
- Convenience Store – 2% (96 ac)
- City Park – 2% (96 ac)

When considered with Clark County’s expected 4800 acres of annual development, the Proposed Action would not contribute substantially to cumulative effects since it lies

outside of the SNPLMA boundary for all but 1-1/2 miles. However, it would permanently disturb an additional 165.5 acres and temporarily disturb another 125.1 acres.

4.5.5 Cumulative Effects on Environmental, Cultural and Human Resources

The following sections identify cumulative effects to key resources (biological, air quality, visual and cultural resources) as well as other resources potentially affected by the Proposed Action (land use, geology, soils, water and paleontological resources).

Cumulative Impacts to Key Resources

Biological Resources

Cumulative effects on biological resources are generally additive and proportional to the amount of ground disturbance within specific habitat areas. The Clark County Department of Comprehensive Planning in cooperation with the FWS has addressed the cumulative effects on biological resources for development and construction activities on a countywide basis. As a result, the Multi Species Habitat Conservation Plan (MSHCP) was developed to address sensitive and protected biological resources on private and public lands in Clark County.

The development of energy facilities with their emphasis on utility line infrastructure on public lands may potentially impact some of these sensitive species. Sensitive species in the Las Vegas Valley that are covered under the MSHCP include several species of plants and animals, as discussed earlier in chapters 3 and 4 of this EA. Some of these species are also Federally listed as threatened or endangered. Mitigation measures would be implemented to lessen or eliminate potential impacts to biological resources.

In general, constructing transmission lines can result in minimal long-term effects to both botanical and wildlife species. Unlike concentrated developments, such as mines, shopping malls, residential development or parking lots, transmission lines are often constructed in desert environments with little grading, except for roads needed to construct the lines and maintain them over the life of the project. Areas around transmission structures need only be graded if relatively flat areas are not available for construction workers and equipment to assemble and erect the structures.

Speed limits are imposed on these roads to limit dust and protect special status species (e.g., desert tortoise). Where roads exist, or where a new transmission line is located adjacent to an existing line, new roads are not constructed along the centerline. Spur roads (short road segments from an existing road to the structure locations) are favored in such cases.

Long-term direct impacts to plants and animals can be attributed to fragmentation caused by new access roads. The botanical and wildlife habitat in Clark County is being increasingly fragmented by new development causing populations to be separated from critical food and water sources and other populations of the same species. However, some species benefit from the construction of transmission lines by forming relatively undeveloped corridors for animals to travel from one habitat to another.

Opening up areas to casual vehicular access by the public causes indirect impacts. Increased hunting, wildlife harassment, vehicle collisions and spread of noxious weeds can result in areas that had previously been unroaded. Other indirect effects to wildlife result from providing additional perching and/or nesting structures for birds that may prey on juvenile tortoises and other sensitive species.

Increasing access to wildlife habitat areas also increases the chances for human/wildlife encounters and conflicts on the fringes of the Las Vegas Valley. These interactions lead to an increased work load for wildlife managers who must deal with resolving these conflicts both on an individual basis and on a large scale, through negotiations and consultation with other government agencies and private corporations (Roddy Shepard, NDOW, personal communication, September 2003).

A Restoration Plan is being developed as part of the Final Plan of Development that would include mitigation measures to reduce or eliminate impacts to biological resources.

Air Quality

Construction-related Effect

The main priority pollutants on this project are CO and PM. They relate to this Proposed Action through the effects of vehicle emissions and fugitive dust respectively. CO is the primary contributor from vehicle exhaust and PM is the primary contributor from land disturbance.

The State Implementation Plan (SIP) projects the amount of future pollutants including CO and PM that are likely to result from Clark County sources. The SIP for CO is available to the public, however, the SIP for PM is undergoing revision and is not yet available (S. Day, Clark County DAQM, personal communication, October 24, 2003). The draft SIP Appendix B currently projects that Clark County will create 276.48 tons per day of PM pollutants for controlled PM emissions for the year 2003 on a Valley wide basis. The CO projected tons per day obtained from the SIP, Appendix A, Table 7.2 was projected at 387.16 for the year 2000.

The Proposed Action contributes only a small amount of these pollutants and mainly on a short-term basis during the construction phase, but would add temporarily to the cumulative effect within the SNPLMA boundary in the Las Vegas Valley, should multiple activities occur simultaneously. Most of this pollutant load is due to vehicle/equipment use and wind blowing across disturbed land during the construction activities. These effects would be mitigated by Clark County regulations for dust control and CO emissions.

Visual Resources

Project-specific visual impacts from some of the energy facilities would likely be reduced through mitigation in the type of structures and color selection of the proposed facilities. Many of the energy facilities would be located in or adjacent to designated utility corridors and right-of-ways, which have been zoned for these types of facilities. However the development of 4,800 acres of land per year within the SMPLMA boundary in the Las Vegas Valley would add considerable amounts of manmade elements to the

environment. These manmade elements would cumulatively impact the visual resources of the area by introducing contrast to the existing natural landscapes.

Normally, the first constructed objects in a natural setting cause the most noticeable change because of the contrast of form, line, color and texture with the surroundings. Each successive change becomes less noticeable than the first. However, the sum of all the changes (e.g., form, line, color and texture) is more evident to the casual observer. Therefore, the first transmission line in a natural area normally causes the greatest incremental change, but the cumulative visual impact of a corridor increases with the addition of each new line. Hence, a multi-transmission line corridor would be more visible at greater distances than a single transmission line because of the cumulative contrast with the natural landscape.

The significance of the cumulative impact would depend on the level of visual contrast between the existing surroundings and the Proposed Action and whether the scenic quality of the surroundings would be diminished. The Proposed Action in conjunction with the other projects discussed above involving the addition of constructed objects into natural settings, could cause cumulative impacts to residential viewers, highway viewers and to some recreation viewpoints in several areas. The route would have cumulative effects on scenic quality where it parallels existing transmission lines or is adjacent to housing developments, commercial and industrial facilities and other utility facilities within the SNPLMA boundary.

Cultural and Paleontological Resources

Construction and installation of the transmission line in concert with other past, present and future project in the Las Vegas Valley would contribute to cumulative damage to cultural and paleontological resources. Surface disturbance from ground-disturbing construction activities and new and improved access roads would allow for disturbance of prehistoric and historic properties as well as paleontologic resources that are fragile and non-renewable resources. Opening up areas to vehicular access by the public can cause indirect cumulative impacts to cultural resources through illegal “pot hunting” and inadvertent damage to these sites. However, the proposed transmission line would be located mostly within an existing utility corridor, thus minimizing new impacts to undisturbed sites. In addition, this project and other future projects in the Las Vegas Valley would be required to consult with appropriate agencies and tribal representatives and provide appropriate mitigation for the discovery and collection of important cultural and paleontologic resources. Therefore, the Proposed Action would not contribute measurably to cumulative impacts on these resources.

Cumulative Impacts to Other Resources

Land Use

Approximately 165.5 acres of public and private lands would be permanently removed from multiple use by the presence of tower foundations and access roads for the Proposed Action. For this cumulative analysis, it was assumed there would be 4800 acres of land developed each year for the next 20 years within the SNPLMA boundary in the Las

Vegas Valley. Public and private lands would be impacted by this future development as they have been impacted by past and present projects.

The Las Vegas Valley is experiencing the highest rate of growth in the country causing a fast rate of urbanization of the rural landscape. If power remains readily available in keeping with Nevada Power's mandate and there are no other limiting factors, areas may experience a continued increase in development. This new development would impact the quantity of lands available for other uses such as open space and wildlife habitat.

The miles of additional roads that would result from the Proposed Action and other development would impact land use by increasing the access opportunities to areas previously inaccessible or less accessible to motorized vehicles. Increased access can lead to increased recreational activities such as hunting/shooting, wildlife viewing and off-road vehicle use. This increased use would impact the ability of land managers to maintain land for preservation or natural habitat. As the number of developments continues to increase, the ability to successfully preserve the archaeological, cultural and natural resources of the area may decrease.

Socioeconomics

Environmental Justice

The Proposed Action would have no effect on environmental justice and therefore, would not contribute to cumulative impacts within the Las Vegas Valley.

Public Safety

The construction of additional transmission lines would have a cumulative electric and magnetic fields effect within a right-of-way. This impact would be reduced by design modifications, such as arrangement of conductors. Therefore, there would be little or no difference in EMF levels at the edge of the corridor caused by adding one or more transmission lines to an existing corridor.

The amount of hazardous materials needed to construct the Proposed Action is negligible and would be managed by implementing chemical handling and storage plans. Spill prevention plans would be required and would include construction of chemical handling and containment facilities. In addition, staff would be trained in hazardous materials safety, handling, clean up and removal. With implementation of these measures, the Proposed Action would not contribute to cumulative impacts with the Las Vegas Valley from hazardous materials.

Water Resources

Drainage studies containing information on site-specific changes in the timing and amount of surface water flows resulting from the project would be required for each project. Drainage studies and grading plans would evaluate both the onsite and offsite effects. These would have to be reviewed and approved by the Clark County Department of Public Works before the projects could legally proceed.

Chapter 4—Environmental Consequences

All facilities would be required to obtain discharge permits. Adherence to standard and site-specific permit conditions for construction and operation of the facilities would minimize individual or collective impacts to surface water quality.

The Proposed Action would use water for dust control during construction only and would place no long-term demand on groundwater. As a result, this project would not contribute to cumulative impacts on groundwater within the SNPLMA boundary in the Las Vegas Valley.

Geology and Soils

The Proposed Action would contribute only site-specific and localized individual ground surface changes. The projects collectively would not substantially alter prevailing topography and/or surface relief within the SNPLMA boundary in the Las Vegas Valley. Therefore, the cumulative impact to surface contour features would be minor.