

SECTION 6.0 - MITIGATION OF ENVIRONMENTAL CONCERNS

This section of the COM Plan provides an overview of potential key environmental concerns associated with the construction, operation, and maintenance of the projects and presents mitigation measures to address those concerns. Included in this discussion are the generic and selective measures proposed for the projects, and a description of key resource concerns and mitigation measures to address these concerns.

6.1 OVERVIEW OF ENVIRONMENTAL CONCERNS AND MITIGATION

Two types of mitigation measures were developed during the SWIP EIS process and were included as conditions in the ROD that approved the SWIP and subsequent right-of-way grant. These included generic mitigation and selectively committed mitigation measures, as described below.

Generic mitigation measures are those that apply to the projects as a whole and to some extent serve as part of the overall project description. These measures typically address specific environmental policies and regulatory requirements. Where warranted, on a case-by-case basis, mitigation beyond these generic measures has been recommended to reduce potential impacts, often in specific impact locations. These are called selective mitigation measures. Since the SWIP was approved in 1994, both generic and selectively committed measures have been reviewed, updated, and refined as a result of meetings with federal and state agency personnel in order to meet current best management practices. Tables 6-1 and 6-2 provide a list of generic and selective mitigation measures identified to reduce impacts to environmental resources. These measures have been generally categorized as they apply to three specific phases of the projects, including (1) Project Engineering and Design, (2) Project Construction, and (3) Maintenance and Operation of facilities.

Many of the mitigation measures that were determined to be applicable during the engineering and design phase of the SWIP have already been implemented or applied (locating structures to avoid sensitive features, selection of alternative structure types in selective locations, etc.). The Construction Contractor(s) will adhere to those measures identified during the engineering/design phase, as well as those measures identified herein to address construction and reclamation activities. The CIC will be responsible for the oversight of the implementation of these measures to ensure that the Project Proponent and Construction Contractor meet the 'intent' of the mitigation measures (identified below).

In addition to the information presented in Tables 6-1 and 6-2, key selective mitigation measures also are presented in conjunction with the mapped location of project facilities as illustrated in Map Set 2 of this COM Plan.

**TABLE 6-1
SWIP GENERIC MITIGATION MEASURES**

Mitigation Measure		Mitigation Application Phase		
		Engineering, Design, and Location	Construction	Operation and Maintenance
1	All construction vehicle movement outside the right-of-way would normally be restricted to predesignated access, contractor acquired access, or public roads.		●	●
2	The areal limits of construction activities would normally be predetermined, with activity restricted to and confined within those limits. No paint or permanent discoloring agents would be applied to rocks or vegetation to indicate survey or construction activity limits.		●	
3	In construction areas where recontouring is not required, vegetation would be left in place wherever possible and original contour would be maintained to avoid excessive root damage and allow for resprouting.	●	●	
4	In construction areas (e.g., marshalling yards, tower sites, spur roads from existing access roads) where ground disturbance is significant or where recontouring is required, surface restoration would occur as required by the landowner or land management agency. The method of restoration would normally consist of returning disturbed areas back to their natural contour, reseeding (if required), cross drains installed for erosion control, placing water bars in the road, and filling ditches.		●	
5	Watering facilities (tanks, natural springs and/or developed springs, water lines, wells, etc.) would be repaired or replaced if they are damaged or destroyed by construction activities to their predisturbed condition as required by the landowner or land management agency.		●	
6	Towers and/or ground wire would be marked with high-visibility devices where required by governmental agencies (Federal Aviation Administration).	●	●	●
7	On agricultural land, right-of-way would be aligned, in so far as practical, to reduce the impact to farm operations and agricultural production.	●		
8	Prior to construction, all personnel would be instructed on the protection of cultural and ecological resources. To assist in this effort, the construction contract would address: (a) federal and state laws regarding antiquities and plants and wildlife, including collection and removal; (b) the importance of these resources and the purpose and necessity of protecting them.	●	●	●
9	Cultural resources would continue to be considered during post-EIS phases of project implementation in accordance with the programmatic agreement that would be developed in conjunction with preparation of the EIS. This would involve intensive surveys to inventory and evaluate cultural resources within the selected corridor and any appurtenant impact zones beyond the corridor, such as access roads and construction equipment yards. In consultation with appropriate land managing agencies and state historic preservation officers, specific mitigation measures would be developed and implemented to mitigate any identified adverse impacts. These may include project modifications to avoid adverse impacts, monitoring of construction activities, and data recovery studies.		●	
10	The Project Sponsors would respond to complaints of line-generated radio or television interference by investigating the complaints and implementing appropriate mitigation measures. The transmission line would be patrolled on a regular basis so that damaged insulators or other line materials that could cause interference are repaired or replaced.			●
11	The Project Sponsors would apply necessary mitigation to eliminate problems of induced currents and voltages onto conductive objects sharing right-of-way, to the mutual satisfaction of the parties involved.		●	

**TABLE 6-1
SWIP GENERIC MITIGATION MEASURES**

Mitigation Measure		Mitigation Application Phase		
		Engineering, Design, and Location	Construction	Operation and Maintenance
12	The Project Sponsors would continue to monitor studies performed to determine the effects of audible noise and electrostatic and electromagnetic fields in order to ascertain whether these effects are significant.	●	●	
13	Roads would be built as near as possible at right angles to the streams and washes. Culverts would be installed where necessary. All construction and maintenance activities shall be conducted in a manner that would minimize disturbance to vegetation, drainage channels, and intermittent or perennial stream banks. In addition, road construction would include dust-control measures during construction in sensitive areas. All existing roads would be left in a condition equal to, or better than, their condition prior to the construction of the transmission line. Towers will be sited with a minimum distance of 200 feet from streams.		●	
14	All requirements of those entities having jurisdiction over air quality matters would be adhered to and any necessary dust control plans will be developed, and permits for construction activities would be obtained. Open burning of construction trash would not be allowed unless permitted by appropriate authorities.		●	
15	Fences and gates would be repaired or replaced to their original undisturbed condition as required by the landowner or the land management agency if they are damaged or destroyed by construction activities. Temporary gates would be installed only with the permission of the landowner or the land management agency; and would be restored to their original undisturbed condition following construction.		●	
16	Transmission line materials would be designed and tested to minimize corona. A bundle configuration (three conductors per phase) and larger diameter conductors would be used to limit the audible noise, radio interference (RI), and television interference (TVI) due to corona. Tension would be maintained on all insulator assemblies to assure positive contact between insulators, thereby avoiding sparking. Caution would be exercised during construction to avoid scratching or nicking the conductor surface which may provide points for corona to occur.	●		
17	During operation of the transmission line, the right-of-way would be maintained free of non-biodegradable debris. Slash will be left in place or disposed of in accordance with requirements of the land management agency.		●	●
18	The primary focus of Paleontological mitigation efforts should be areas of greatest disturbance and areas likely to have significant fossils. Preconstruction surveys of such areas may be conducted as agreed upon by the land-managing and lead federal agency.	●	●	
19	Mitigation measures that will be developed during the consultation period under Section 7 of the Endangered Species Act (1974) will be adhered to as specified in the Biological Opinion of the USDOI Fish and Wildlife Service.		●	●
20	Hazardous materials shall not be drained onto the ground or into streams or drainage areas. Totally enclosed containment shall be provided for all trash. All construction waste including trash and litter, garbage, other solid waste, petroleum products, and other potentially hazardous materials shall be removed to a disposal facility authorized to accept such materials.		●	

**TABLE 6-1
SWIP GENERIC MITIGATION MEASURES**

Mitigation Measure		Mitigation Application Phase		
		Engineering, Design, and Location	Construction	Operation and Maintenance
21	Pre-construction surveys for plants and wildlife species, designated as sensitive or of concern will be conducted in areas of known occurrence or habitat, including noxious weed surveys as stipulated by the land-administering agency during the development of the Construction, Operation, and Maintenance Plan once the transmission line centerline, access roads, and tower sites have been located and staked in the field.	●		
22	Prior to construction, a Noxious Weed Management Plan will be developed in accordance with BLM standards. Included in the noxious weed plan will be stipulations regarding construction, restoration and operation (use of weed free materials, washing of equipment, etc.).		●	●

**TABLE 6-2
SWIP SELECTIVE MITIGATION MEASURES**

Mitigation Measure		Mitigation Application Phase		
		Engineering, Design and Location	Construction	Operation and Maintenance
1	No widening or upgrading of existing access roads would be undertaken in the area of construction and operation, except for repairs necessary to make roads passable, where soils and vegetation are very sensitive to disturbance.	●	●	●
2	There would be no blading of new access roads in the area of construction and operation. Existing crossings would be utilized at perennial streams, National Recreational Trails, and irrigation channels. Off-road or cross-country access routes would be used for construction and maintenance. This would minimize ground disturbance impacts. These access routes must be flagged with an easily seen marker and the route must be approved in advance of use by the Authorized Officer.	●	●	
3	The alignment of any new access roads or overland route would follow the designated area's landform contours where possible, providing that such alignment does not additionally impact resource values. This would minimize ground disturbance and/or reduce scarring (visual contrast).	●		
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 or land manager (e.g., stock piling and replacing topsoil, or rock replacement). This would limit new or improved accessibility into the area.		●	●
5	Modified tower design or alternate tower type would be utilized to minimize ground disturbance, operational conflicts, visual contrast, and/or avian conflicts.	●	●	
6	In designated areas, structures would be placed so as to avoid sensitive features such as, but not limited to, riparian areas, water courses, and cultural sites, and/or to allow conductors to clearly span the features, within limits of standard tower design. This would minimize amount of sensitive feature disturbed and/or reduce visual contrast.	●		
7	Standard tower design would be modified to correspond with spacing of existing transmission line structures where feasible and within limits of standard tower design. The normal span would be modified to correspond with existing towers, but not necessarily at every location. This would reduce visual contrast and/or potential operational conflicts.	●		
8	At highway, canyon, and trail crossings, towers are to be placed at the maximum feasible distance from the crossing, to reduce visual impacts	●		
9	Nonspecular conductors would be used, where specified by the Authorized Officer, to reduce visual impacts.	●		
10	"Dulled" metal finish towers would be used to reduce visual impacts.	●		

**TABLE 6-2
SWIP SELECTIVE MITIGATION MEASURES**

Mitigation Measure		Mitigation Application Phase		
		Engineering, Design and Location	Construction	Operation and Maintenance
11	With the exception of emergency repair situations, right-of-way construction, restoration, maintenance, and termination activities in designated areas would be modified or discontinued during sensitive periods (e.g., nesting and breeding periods) for candidate, proposed threatened and endangered, or other sensitive animal species. Sensitive periods, species affected, and areas of concern would be approved in advance of construction or maintenance by the Authorized Officer.		●	●
12	Helicopter placement of towers would be used to reduce ground disturbance impacts (e.g., soil erosion).		●	
13	Construction and/or post-construction monitoring, and treatment in selective areas will occur in accordance with Section 106 Compliance (see Generic Mitigation Measure 9), Paleontological Resources (see Generic Mitigation Measure 18), Section 7 of the Endangered Species Act (see Generic Measure 19), or as specified by the land management agency and state or county authority. Mitigation measures identified will be included in the Construction, Operation, and Maintenance Plan.		●	●
14	To minimize disturbance to timber resources and reduce visual contrast, clearing of trees in and adjacent to the right-of-way will be minimized to the extent practicable to satisfy conductor-clearance requirements (National Electric Safety Code and 10 years of timber growth). Trees and other vegetation will be removed selectively (e.g., edge feathering) to blend the edge of the right-of-way into adjacent vegetation patterns, as practicable and appropriate.		●	

6.2 SPECIFIC ENVIRONMENTAL CONCERNS AND APPLICABLE MITIGATION MEASURES

This section of the COM Plan briefly describes environmental resource concerns identified in previous studies, and through field investigations and surveys conducted for the projects. This is followed by a general description of key mitigation measures that have been identified to address these specific resource concerns through the Engineering/Design, Construction, and Operation and Maintenance phases of the projects. Additional information in support of this discussion is found in the appendices to this COM Plan.

6.2.1 Land Use

Land use impacts include those that would displace, alter, or otherwise physically affect existing or planned land use. Since the transmission line is located almost entirely on BLM land, these impacts are associated primarily with effects to recreational users, potential conflicts with special designated use areas (Areas of Critical Environmental Concern, etc.), and disturbance to grazing allotments. Temporary impacts are expected to occur during construction as a result of activity within the right-of-way, and long-term impacts are primarily associated with the potential for increased access. Appendix D – Other Special Resource Considerations and

Mitigation Measures provides additional information on land use concerns and mitigation. Key mitigation measures designed to minimize impacts to land use include, but are not limited to, the following:

Applicable Mitigation Measures	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
Generic	●	●		●	●		●								●							
Selective	●	●		●	●	●																

6.2.2 Air Quality

Construction of the transmission line and related facilities will cause a temporary increase in fugitive dust. Ambient levels of nitrogen oxides, hydrocarbons, and carbon monoxide near the construction zone also will be temporarily increased due to emissions from heavy construction equipment. Air quality control measures are intended to minimize fugitive dust and air emissions and to maintain conditions as free from air pollution as possible. Emissions produced during grading and construction activities are of short-term duration and will cease upon completion of construction. Dust will be minimized by application of water to disturbed areas, and a dust permit issued by the Clark County Department of Air Quality Management will be obtained prior to start of construction. Construction will comply with all the requirements of that dust permit. Appendix A5 – Erosion, Dust Control, and Air Quality Plan addresses this in greater detail. Key mitigation measures designed to minimize impacts to air quality include, but are not limited to, the following:

Applicable Mitigation Measures	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
Generic														●								
Selective																						

6.2.3 Noise

Some increased level of noise will result from the construction and maintenance of the transmission line. During construction, noise would be generated from equipment used for grading (e.g., access roads, staging areas and tower sites), tower construction activities, helicopters, vehicle movement along the corridor, and blasting. Additionally, noise will be generated during post-construction rehabilitation. These noise levels will be temporary in nature and be isolated to areas of construction. Some low levels of residual audible noise may result from the conductors, a phenomenon referred to as corona-generated noise. Key mitigation measures designed to minimize noise impacts include, but are not limited to, the following:

Applicable Mitigation Measures	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	
Generic										●		●											
Selective																							

6.2.4 Earth Resources and Soils

The principal type of impact associated with earth resources is the potential for increased soil erosion. Some short-term soil compaction and stream sedimentation could also occur as a result of heavy construction equipment traveling along access roads. Specific mitigation measures that address erosion are described in greater detail in Appendix A5 – Erosion, Dust Control, and Air Quality Plan. Key mitigation measures designed to minimize impacts to soils include, but are not limited to, the following:

Applicable Mitigation Measures	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	
Generic				●																			
Selective		●	●	●																			

6.2.5 Water Resources

No substantial impacts are anticipated for surface and ground water resources, and the impacts associated with the projects will be covered under Nationwide Permit Number 12 (for jurisdictional waters). Water used for dust control, during construction of the transmission line, will be obtained from commercial sources to be identified by the Construction Contractor.

Construction activities in proximity to ephemeral washes and drainages may cause short-term impacts to storm-water runoff characteristics; however, no major diversions or long-term disturbance to drainages are expected as a result of the projects. The release of hazardous materials, such as diesel fuel, gasoline, oil, hydraulic fluid, or other fluids and substances from vehicles and equipment, during construction, could flow into nearby washes and drainages or infiltrate the soil. There is potential that this could degrade surface water quality in the event of storm-water run-off; however, impacts are expected to be minimal as all hazardous waste spills will be attended to immediately. Appendix A7 – Hazardous Materials Management Plan addresses this in greater detail. Key mitigation measures designed to minimize impacts to water resources include, but are not limited to, the following:

Applicable Mitigation Measures	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
Generic					●								●							●		
Selective	●	●	●	●	●	●																

6.2.6 Visual Resources

Visual impacts associated with the construction of the projects include, the effects to the quality of scenic resources, as well as the views from sensitive land use and recreation areas or sites and from sensitive and scenic travel routes. Visual impacts that are expected to occur as a result of the projects are based primarily on the introduction of new facilities in the landscape when visible from these sensitive locations. Through the selective location of facilities, the use of dulled-metal finish on all tower structures, and the use of non-specular conductors, these impacts will be minimized. Appendix D – Other Special Resource Considerations provides additional information on visual resource concerns and mitigation. Key mitigation measures designed to minimize visual impacts include, but are not limited to, the following:

Applicable Mitigation Measures	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
Generic	●	●	●	●																		
Selective	●	●	●	●	●	●	●	●	●	●				●								

6.2.7 Wastes, Hazardous or Solid

The contractor will comply with applicable laws pertaining to proper usage and disposal of potentially hazardous materials. Trash and solid waste, generated from construction activities, will be stored in closed containers and disposed of in accordance with regulatory requirements. Any spills will be immediately reported to the CIC and construction inspectors so that cleanup can be implemented immediately. The Construction Contractor will notify the appropriate authorities (i.e., CIC and BLM) if a spill occurs. All spill materials will be labeled and stored at the contractors designated facility, off the right-of-way, for accumulation and disposal. Appendix A7 – Hazardous Materials Management Plan presents the handling of hazardous materials in greater detail. Key mitigation measures designed to minimize impacts related to hazardous waste include, but are not limited to, the following:

Applicable Mitigation Measures	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
Generic																	●			●		
Selective																						

6.2.8 Cultural and Paleontological Resources

Direct, adverse physical impacts could occur to cultural and paleontological resources during construction, while indirect impacts could result after construction due to increased erosion or increased public access to sites along the transmission right-of-way. Adverse visual effects may occur to cultural sites with high aesthetic or interpretive values.

Based on the results of the cultural inventory that was conducted an HPTP has been developed to specifically address direct and indirect impacts that may result from the construction of the projects. Refer to Confidential Appendix C1 – Historic Properties Treatment Plan for detailed information.

Based on the field reconnaissance and literature review a Paleontological Treatment Plan has been developed to specifically address direct and indirect impacts that may result from the construction of the projects. Appendix C2 – Paleontologic Resources Literature Review and Treatment Plan provides additional detailed information on paleontological concerns and mitigation. Key mitigation measures designed to minimize impacts to cultural and paleontological resources include, but are not limited to, the following:

Applicable Mitigation Measures	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
Generic	●	●						●	●									●				
Selective	●	●	●							●			●									

6.2.9 Biological Resources

Potential impacts to biological resources include effects on threatened, endangered, or protected species, rare or unique vegetation types, migration corridors for wildlife, areas of low re-vegetation potential, or highly productive wildlife habitat. The impacts would generally be associated with the removal of vegetation and habitat caused by construction and operation activities, and from human activity and increased access into remote areas. The presence of the transmission towers also could increase the potential for long-term predation of Sage Grouse by Golden Eagles on adult and immature birds in certain northern portions of the alignment. Additional towers also could provide roost/hunting sites for Ravens and Magpies, thereby affecting the Desert Tortoise in the southern part of the alignment which traverses Critical

Desert Tortoise Habitat and the associated Coyote Springs Area of Critical Environmental Concern. Following is a summary of the potential key concerns and the mitigation measures associated with biological resources including wildlife and vegetation. Detailed information regarding mitigation associated with biological resources also is presented in Appendix B1 – Biological Opinion, Appendix B2 – Biological Protection Plan, and Appendix B3 – Noxious Weed Management Plan.

Wildlife

Issues for wildlife species and important wildlife habitats are related primarily to increased public access into remote areas and/or ground disturbance. Ground disturbance caused by construction of the transmission line may result in habitat loss and degradation, and increased public access into remote areas during and following construction may result in increased take of certain species. Increased public access also may result in habitat damage from off-road vehicle use, accidentally set fires, and direct mortality of individual animals resulting from increased or higher speed vehicular traffic. Additionally, the introduction and presence of the transmission towers in an area of low vegetation would increase the potential for long-term avian predation of sensitive wildlife species by providing roosting/hunting perches.

The SWIP EIS and subsequent studies have identified that impacts to the Desert Tortoise, the Greater Sage Grouse (leks and habitat), and critical big game habitat (e.g., Mule Deer and Desert Bighorn Sheep) could occur. Mitigation has been developed to minimize the extent of these potential impacts. Through the selective location of facilities, modified tower design, seasonal timing of construction, the limiting of ground disturbance, and the use of biological monitors, these effects will be reduced. Appendix B1 – Biological Opinion and Appendix B2 – Biological Protection Plan present additional, detailed information regarding wildlife concerns and associated mitigation. Key mitigation measures designed to minimize impacts to wildlife include, but are not limited to, the following:

Applicable Mitigation Measures	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
Generic	●	●	●		●			●					●		●				●	●	●	●
Selective	●	●		●	●	●					●		●									

Vegetation

Prior to construction, all protected plants present in the access roadways and work areas will be transplanted to a safe location within the right-of-way in accordance with Appendix F – Right-of-Way Preparation, Rehabilitation and Restoration Plan. Pre-construction surveys were conducted to identify the locations of special status species habitats and plants and these locations will be flagged and avoided during construction, in accordance with Appendix B2 – Biological Protection Plan. Mitigation measures that minimize and contain the level of disturbance will assist in minimizing impacts to vegetation, and areas of temporary disturbance will be restored in accordance with Appendix F – Right-of-Way Preparation, Rehabilitation and

Restoration Plan. Key mitigation measures designed to minimize impacts to vegetation include, but are not limited to, the following:

Applicable Mitigation Measures	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
Generic	●	●	●	●				●					●				●			●	●	
Selective	●			●		●																

Noxious Weeds and Invasive Species

Noxious weeds and invasive species tend to spread readily, and they typically displace native plant species or bring about changes in species composition, community structure, and/or ecological function. The State of Nevada Department of Agriculture has identified a group of noxious weeds and invasive species that occur within the state and some of these species are known to be present in the proposed transmission corridor. Pre-construction surveys have identified noxious weeds and invasive species in the project areas. When noxious weeds are encountered within the construction area, mitigation measures will be instituted in consultation with the BLM botanist or as agreed to in Appendix B3 – Noxious Weed Management Plan. Following construction, right-of-way monitoring and abatement also will be conducted as defined in the Noxious Weed Management Plan. Key mitigation measures designed to minimize effects of noxious weeds include, but are not limited to, the following:

Applicable Mitigation Measures	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
Generic	●	●						●									●			●	●	●
Selective	●			●									●									