APPENDIX B
AVIAN PROTECTION PLAN

Avian Protection Plan

Prepared by

TRANSWEST EXPRESS LLC

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1.0 INTRODUCTION

TransWest Express LLC (TransWest) is an independent transmission developer committed to responsible practices across all aspects of transmission line siting, operations and design. Based in Denver, Colorado, the company guides its operations under environmental programs and principles led by a dedicated environmental team with over 50 years of experience in the energy development, generation and transmission industries. TransWest also retained independent consultants, ecologists and biologists to help the firm develop a comprehensive wildlife conservation strategy. Designed to avoid and minimize potential impacts on wildlife in general and avian species in particular, the strategy is based on science and best practices from the electric transmission industry and other appropriate sources.

TransWest is developing the TransWest Express Transmission Project (the TWE Project or Project), an extra high-voltage, direct current regional electric transmission system. The TWE Project will reliably deliver cost-effective renewable energy produced in Wyoming to the Desert Southwest region (California, Nevada, Arizona), ultimately helping contribute to a cleaner world, strengthen the electric grid, and provide much-needed electricity to millions of homes and businesses every year. The TWE Project will deliver enough clean, sustainable energy to power nearly 2 million homes and reduce greenhouse-gas emissions equivalent to taking 1.5 million cars from the road.

Major components of the TWE Project include a ±600 kilovolt (kV) DC transmission line and two alternating current (AC)/ direct current (DC) converter stations - a Northern AC/DC Converter Station (Northern Terminal) to be located near Sinclair, Wyoming and a Southern AC/DC Converter Station (Southern Terminal) to be located at the Marketplace Hub in the Eldorado Valley, approximately 15 miles south of Boulder City, Clark County, Nevada. The TWE Project will also include, among other facilities, two ground electrode systems and a low voltage overhead line to connect the ground electrode system to each AC/DC converter. The low voltage overhead line will be similar to a 34.5 kV subtransmission line.

2.0 BACKGROUND

TransWest is committed to protecting avian species that occur within the vicinity of its facilities. This Avian Protection Plan (APP) has been developed to protect resident and migrant birds that may interact with the TransWest Express Transmission Project (TWE Project or Project). TransWest is committed to maintaining the reliability of the TWE Project in a cost effective manner while meeting the regulatory requirements to conserve avian species.. The responsibility of effectively improving avian safety and minimizing avian risk at its facilities lies with both TransWest management and its employees.

To this end, TransWest will:

- Implement this APP;
- Ensure that its actions comply with the most recent applicable laws, regulations, and permits, and incorporate as applicable Avian Power Line Interaction Committee (APLIC) guidelines;
- Document bird mortalities; problem structures or locations; and problem nests;
- Provide information, resources, and training to improve its employees' knowledge and awareness of avian protection and the implementation of the TransWest avian protection program;
- Identify key TransWest personnel responsible for ensuring accountability and compliance with this APP;

- Identify key U.S. Fish and Wildlife Service (USFWS) personnel responsible for reporting and permitting; and
- Maintain the integrity of the transmission line and repair or retrofit structures as necessary if impacts to avian species are detected.

The purpose of this APP is to establish a program to manage avian safety on the TWE Project. This APP has been developed consistent with APLIC's principles of avian protection (APLIC 2005) to support TransWest's commitment to reduce impacts to avian resources. This APP supports compliance with the Migratory Bird Treaty Act (MBTA) of 1918 (16 United States Code [U.S.C.] §§703 – 712), the Bald and Golden Eagle Protection Act (BGEPA) of 1940 (16 U.S.C. §§668 – 668d), and the Endangered Species Act (ESA) of 1973, as amended (16 U.S.C. §§1531 – 1544), and appropriate state requirements. Plans, methods, and direction are outlined to ensure that birds are protected on TransWest facilities associated with the TWE Project, providing a framework for documenting the success of TransWest's good-faith efforts to protect avian species and to comply with the laws and regulations discussed in Section C2.1.

This APP has been written with consideration to and guidance from the data and suggestions presented in APLIC's Mitigating Bird Collisions with Power Lines: The State of the Art in 2012 (APLIC 2012), Avian Protection Plan Guidelines (APLIC 2005) and Suggested Practices for Avian Protection on Power Lines: The State of the Art in 2006 (APLIC 2006). In addition, existing information on bird use in the Project area will be combined with pre-construction Project-specific survey information to effectively address avian safety specific to the long-term operation of the TWE Project. The protective measures and methods described in this document provide a mechanism for implementing and tracking mitigation measures to operate the TWE Project in the most avian safe manner possible.

The key TransWest staff member responsible for ensuring accountability and compliance with this APP is the APP Program Coordinator. The APP Program Coordinator may be contacted at 303-298-1000.

The key USFWS personnel shall be the Region 6 Migratory Bird Program Office. The office may be contacted at 303-236-7905.

2.1 Scope and Limitations

This APP presents the framework for developing a program of specific actions implemented comprehensively to support avian safety on the TWE Project. It is not to be considered a delineation of legal requirements. Instead, it provides guidance for achieving and maintaining legal compliance under the regulations related to avian protection, minimizing avian-related interruptions in service, and documenting efforts to improve avian safety.

TransWest has set the overall goal of advancing progress toward an avian safe transmission system. Through a policy of avian protection, TransWest will improve its service to customers, ensure regulatory compliance, reduce costs, and document good-faith efforts to diminish risks to avian species. As such, this plan is considered a "living document" and is intended to be revised and updated as goals are achieved, innovative solutions are developed to mitigate impacts, agency guidance is adjusted, and conditions of the TWE Project warrant.

3.0 AVIAN PROTECTION PLAN PURPOSE AND NEED

Under certain conditions, power lines may present risk to avian species (APLIC 2006). However, empirical data is highly limited and usually site-specific, which allows for broad estimates of risk based on a series of assumptions. While the exact risk or level of impacts may be difficult to quantify,

the most obvious risks from power lines are associated with birds directly contacting facilities and being killed either by electrocution or impact. In addition, birds nesting on utility structures may face increased risk of mortality by regularly maintaining close contact with transmission structures. Such risks also become costly to the utility company because of the risk of outages due to fault-triggering electrocutions, contact of nesting material with energized elements, prey falling on live equipment, and flashover caused by bird waste (streamers). Regulatory agencies and utilities recognize that avian interactions can be ecologically significant events and have worked collaboratively (through organizations such as APLIC) for several decades to reduce both system and avian impacts.

One mechanism for utilities to cooperatively engage agencies on operational avian safety issues is the APP. This APP exclusively addresses TransWest's avian protection program for construction as well as operations and maintenance (O&M), and initiates an avian safety framework for the life of the TWE Project.

The TWE Project is a ±600 kilovolt (kV) extra-high voltage (EHV) direct current (DC) transmission system extending from south-central Wyoming to southern Nevada. The TWE Project begins at a northern terminal near Sinclair, Wyoming and terminates at a southern terminal at the Marketplace Hub in the Eldorado Valley near Boulder City, Nevada. At each of the terminals, there will be an alternating current/direct current (AC/DC) converter station designed to convert the DC current carried by the TWE Project to AC current to be carried on the western United States AC electrical grid (the northern and southern terminals). The TWE Project is planned to interconnect into the Eldorado Substation, the McCullough Switching Station, the Marketplace Substation and the Mead Substation.

The TWE Project area spans approximately 750 miles of four western states. It passes through landscapes considered ecologically diverse because of their species' richness and endemicity. The extreme northeastern portion of the Project crosses the Central Flyway, a north south migration flyway along the eastern slope of the Rocky Mountains. The remainder of the Project occurs within the Pacific Flyway (USFWS 2012). Southern Utah and Nevada, with their mild climate, is a wintering destination for many migrant birds.

As a responsible corporation, TransWest strives to protect ecosystems and safeguard wildlife. Stewardship of the West's natural resources is the impetus for this avian protection program. There are four factors underlying the development of the program which are briefly presented in this section:

- Federal and State laws and regulations
- Conditions of approval and requirements identified in the right-of-way grants and special use authorizations for the Project
- Reliability
- Customer relations

3.1 Applicable Laws and Regulations

Most birds are protected under one or more state or federal regulations. Below is a brief summary of laws and other regulations governing avian protection applicable to the TWE Project.

3.1.1 Federal

Migratory Bird Treaty Act (MBTA)

The Migratory Bird Treaty Act (MBTA) is the cornerstone of migratory bird conservation and protection in the United States. The MBTA implements four treaties that provide for international protection of migratory birds. It has been described as a strict liability statute, meaning that proof of

intent, knowledge, or negligence is not an element of an MBTA violation. The statute's language is clear that actions resulting in a "taking" or possession (permanent or temporary) of a protected species, in the absence of an USFWS permit or regulatory authorization, are a violation of the MBTA.

The MBTA states, "Unless and except as permitted by regulations . . . it shall be unlawful at any time, by any means, or in any manner to pursue, hunt, take, capture, kill . . . possess, offer for sale, sell . . . purchase . . . ship, export, import . . . transport or cause to be transported . . . any migratory bird, any part, nest, or eggs of any such bird . . . . [The Act] prohibits the taking, killing, possession, transportation, import and export of migratory birds, their eggs, parts, and nests, except when specifically authorized by the Department of the Interior." *16 U.S.C. § 703.* The word "take" is defined by regulation as "to pursue, hunt, shoot, wound, kill, trap, capture, or collect, or attempt to pursue, hunt, shoot, wound, kill, trap, capture, or collect." *50 C.F.R. § 10.12.*

USFWS maintains a list of all species protected by the MBTA at 50 C.F.R. § 10.13. This list includes over one thousand species of migratory birds, including eagles and other raptors, waterfowl, shorebirds, seabirds, wading birds, and passerines. The MBTA does not protect introduced species such as the house (English) sparrow, European starling, rock dove (pigeon), Eurasian collared-dove, and non-migratory upland game birds. The USFWS maintains a list of introduced species not protected by the Act. *See* 70 Fed. Reg. 12,710 (2005).

The MBTA provides criminal penalties for persons who commit any of the acts prohibited by the statute in Section 703 on any of the species protected by the statute. *See 16 U.S.C. § 707.*

Endangered Species Act

In addition to the MBTA, some at risk bird species in the United States receive further protection under the Endangered Species Act of 1973 (16 U.S.C. §§1531-1544, as amended) (ESA). The ESA protects federally listed threatened or endangered species and their habitats from unlawful take, where "take" is defined as "to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct." It also prohibits the illegal import, export, carrying, transport, or shipment of any listed species without authorization from the Secretary of the Interior. With a submitted conservation plan, the Secretary may permit exceptions for scientific purposes, the propagation or survival of the affected species, or for instances where "taking is incidental to, and not the purpose of, the carrying out of an otherwise lawful activity." Violations of the ESA can result in civil penalties or, criminal violations.

Bald and Golden Eagle Protection Act

Under the authority of the Bald and Golden Eagle Protection Act (BGEPA), 16 U.S.C. §§ 668–668d, bald eagles and golden eagles are afforded additional legal protection. BGEPA prohibits the "take, sale, purchase, barter, offer of sale, purchase, or barter, transport, export or import, at any time or in any manner of any bald or golden eagle, alive or dead, or any part, nest, or egg thereof." *See 16 U.S.C. § 668.* BGEPA also defines take to include "pursue, shoot, shoot at, poison, wound, kill, capture, trap, collect, molest, or disturb," 16 U.S.C. § 668c, and includes criminal and civil penalties for violating the statute. *See 16 U.S.C. § 668.* USFWS has further defined the term "disturb" as agitating or bothering an eagle to a degree that causes, or is likely to cause, injury, or either a decrease in productivity or nest abandonment by substantially interfering with normal breeding, feeding, or sheltering behavior. *See 50 C.F.R. § 22.3*. BGEPA authorizes the USFWS to permit the take of eagles for certain purposes and under certain circumstances, including scientific or exhibition purposes, religious purposes of Indian tribes, and the protection of wildlife, agricultural, or other interests, so long as that take is compatible with the preservation of eagles. *See generally, 16 U.S.C. § 668a.*

3.1.2 State

State-specific regulations regarding species addressed in this APP have not been identified at this time.

3.2 Conditions of Approval and Requirements

TransWest has filed an application for Transportation and Utility Systems and Facilities on Federal Land (SF 299) for the TWE Project with the Bureau of Land Management (BLM) for the right-of-way grants necessary to construct, operate and decommission the TWE Project on federal land. The BLM determined that responding to TransWest's right-of-way application required the preparation of an Environmental Impact Statement (EIS) under the National Environmental Policy Act of 1969, as amended (NEPA). Western Area Power Administration, a Federal power marketing administration within the United States Department of Energy (Western), is acting as a joint lead agency with the BLM in the preparation of the EIS. Western is TransWest's development partner under its Transmission Infrastructure Program. The EIS contains a description of the environment in which the TransWest Project will be built and discloses potential impacts to resources that may be affected by the construction, operation and development of the TWE Project, including avian species. The EIS presents general practices for wildlife protection as well as conservation measures specifically addressing issues of avian protection. BLM's and Western's Records of Decision for the TWE Project may impose additional avoidance, minimization and mitigation measures for avian species beyond those set forth in this APP. If so, this APP will be updated as appropriate.

3.3 Reliability

Avian interactions with transmission systems have the potential to cause outages, result in equipment failures, shorten the lifespan of equipment, increase maintenance costs, and create safety issues. An avian-safe system increases reliability, results in fewer outages, reduces the exposure to risks for company personnel that respond to outages, and leads to less replacement of expensive equipment.

3.4 Customer Relations

The public places a high value on reliable electric service. TransWest, through implementation of this APP, seeks to minimize potential service disruptions and outages caused by avian interactions with TWE Project facilities. Communicating a program of avian protection administered in a cost conscious manner improves customer relations and makes good business sense.

4.0 PRINCIPLES OF AVIAN PROTECTION

The roots of APLIC avian protection planning lie in the development of system-wide avian safety programs to direct new-builds, implement remedial actions and track success, expenditures and incidents. Under this framework, twelve elements of avian safety were identified (APLIC 2005):

- Corporate policy
- Training
- Permit compliance
- Construction design standards
- Nest management
- Avian reporting system
- Risk assessment methodology

- Mortality reduction measures
- Avian enhancement options
- Quality control
- Public awareness
- Key resources

As originally conceived by APLIC, these principles served as an outline for an effective plan. However, not all APPs need to contain information about all twelve principles, as each document should be specific to an individual utility's operations, site-specific avian issues, and agency collaboration history. The TWE Project is a new project constructed to current APLIC construction recommendations, sited and designed to ameliorate potential avian risk within the constraints of feasibility and the Project purpose and need. There are no elements of the Project involving rebuilding or retrofitting activities. In addition, there is neither history of avian safety issues nor mortality data from which to conduct a risk assessment. In the following sections, background information is provided where appropriate on how each component is relevant to the Project and how it will be implemented. As a "living document," as circumstances change, sections will be added to future revisions of this Plan.

5.0 AVIAN INTERACTIONS AND POTENTIAL ISSUES

Though power lines and associated facilities may provide some benefit to avian species through increased perching, roosting and nesting opportunities, the addition of power line structures with electrical elements also presents the potential risk of direct mortality through electrocutions and collisions. Risk of direct mortality to individual birds and local populations varies with project characteristics as well as a number of natural factors. These include bird size, flight characteristics, behavior, habitat, weather conditions, time of day, and topography. The TWE Project traverses a diverse landscape ranging from flat desert scrub, rolling chaparral, steep mountains, ridgelines, cliffs, large water bodies, streams, wetlands, and forests. In the resulting mosaic of habitats, a rich avian fauna is present with an assortment of resident and seasonally transient species. The potential exists for system elements, avian behavior, and environmental factors to interact in complex ways resulting in varying levels of risk to birds throughout the Project area. As a new project, TransWest considered risks to avian species and sought to enhance their safety through routing, siting, and design decisions. Through this APP, TransWest and agencies can continue to work collaboratively to actively minimize risk and adaptively manage the TWE Project to proactively respond to specific issues that may arise.

5.1 Avian Electrocutions

Avian electrocution may occur because of a combination of biological and electrical design factors (Janss and Ferrer 2001). Biological factors such as habitat, prey, and species, are those that influence avian use of structures. Raptors often use structures for perch-hunting, an energy-saving foraging behavior utilized by many species (APLIC 2006). Raptors and other species will use poles and towers for nesting, especially in open areas or areas where there are few natural nesting locations (Bevanger 1994; APLIC 2006).

Power lines electrocute birds when they simultaneously contact two conductors, or an energized conductor and a ground wire or grounded hardware (Bevanger 1998). Wet feathers raise the risk of electrocution for a bird by increasing conductivity. Wet feathers can conduct dangerous amperages beginning at around 5 kV, whereas dry feathers require currents greater than 70 kV before they will begin conducting current (APLIC 2006).

Body size (wingspan and perching height) and behavior, such as perching and roosting on poles or wires, are the keys to understanding why and how birds become electrocuted. Generally speaking, some species are more prone to mortality from electrocution than from collision, primarily birds of prey and ravens (Bevanger 1998). Because of the greater vertical and horizontal spacing required on higher voltage lines, the majority of raptor electrocutions occur on lines that are energized at voltage levels of 69 kV and below. The risk of electrocution from lines energized above 69 kV is highly unlikely on properly designed and maintained facilities (APLIC 2006). An APLIC avian-safe line has horizontal spacing that has considered the "wrist-to-wrist" wingspan distance for the largest bird species likely to be at risk in the area (APLIC 2006). The TWE Project transmission line is a high voltage transmission line and therefore presents a low avian electrocution risk. Even for the largest avian species present in the Project area (California condor), the proposed vertical and horizontal separation distances between energized components and between energized components and grounded elements exceed APLIC recommendations of the "wrist-to-wrist" measurements.

The overhead ground electrode line will be designed to APLIC recommendations by ensuring that vertical and horizontal separation distances between energized components and between energized components and grounded elements meet or exceed APLIC recommendations of the "wrist-to-wrist" measurements of the largest bird that may occur within the local vicinity of the Project (golden eagles in the north and California condors in the south). The terminals for the TWE Project will also be designed to be avian safe.

Based on the above discussion, avian electrocutions on the TWE Project do not present a significant risk and will not be addressed further in this APP.

5.2 Avian Collisions

Avian collisions with transmission lines may be a major cause of avian mortality. Factors that influence collision risk can be divided into three categories: those related to the biology of the avian species, those related to the environmental conditions, and those related to the configuration and location of transmission lines (APLIC 2012, 2006; Savereno et al. 1996).

5.3 Biological Factors Related to Bird Collisions

Biological factors include body size, flight behavior, age, sex, habitat use, and flocking behavior. These relate to the bird's ability to detect and avoid a power line. Birds that spend an abundance of time in the air may face a greater risk of collision than those that are predominantly ground-based (Bevanger 1994). For example, swallows swarming after insects may be more likely to collide with a power line than grouse (Sporer et al. 2013). A bird's flight manner has been shown to be one of the most important factors determining the chances of collision with a transmission line, perhaps more important than the sheer frequency of birds flying near the lines (Janss 2000). Juvenile birds, which are not as familiar with their surroundings and are less experienced in both flight and landing can be expected to have a greater likelihood of colliding with transmission lines (Bevanger 1994, 1998; Dorin and Spiegel 2005). In general, birds are quick-moving, visual-orienting animals that are very adept at identifying and avoiding obstacles in their flight paths; however, large-bodied birds with low maneuverability and birds that are distracted by specific behaviors (e.g., foraging, flocking, territorial displays, competition, courtship, soaring) tend to be more likely to collide with power lines. In addition, birds that are unfamiliar with an area and its power lines (such as migrants) may be at elevated risk.

5.3.1 Environmental Factors Related to Bird Collisions

Environmental factors influencing collision risk include the effects of weather and time of day; transmission line visibility; surrounding land use practices that may attract birds; and human activities that may flush birds toward transmission lines. Overcast weather and thick fog tends to cause birds to lower their flying altitudes. Likewise, headwinds generally cause birds to fly lower, whereas tailwinds

may cause birds to fly higher (Bevanger 1994; Perdeck and Speek 1984). High winds may cause some species, especially waterfowl, to fly at lower elevations (Hunting 2002). If winds are blowing perpendicular to conductors, this can also increase collision possibility (Hunting 2002). Weather conditions may also make transmission lines more difficult to see, thus increasing the likelihood of a collision (Mathiasson 1992). Visibility can also be affected by the time of day. Additionally, lines become increasingly difficult to see at times with poor lighting, such as night, dawn, or dusk. Hunting (2002) observed increased transmission line strikes occurring at night or during poor weather. Further studies by Stout and Cornwell (1976) also emphasize the risk of power line collision that poor visibility poses to waterfowl.

Wetlands, lakes, and streams all have potential for avian risk if they are located near power lines. Because water is often used by birds for foraging, nesting and roosting activities, adjacent power lines can pose collision risks to birds that utilize these areas (APLIC 2012). Stout and Cornwell (1976) found that in a review of reported non-hunting mortality of wild waterfowl from 1930 to 1964, 65% of collision mortalities were due to telephone and power lines.

Disturbance of birds perched near power lines can pose a risk. If birds are startled into leaving a water body or feeding area adjacent to power lines, the likelihood of a bird flying into the lines increases. Wetlands tend to have a high concentration of birds nesting, feeding, roosting, and shuttling back and forth among use areas, thus adding to the collision risk with nearby transmission lines (Bevanger 1994).

Anthropogenic land use may attract birds into areas that contain transmission lines. For instance, a section of highway may be an attractant to vultures or similar scavenging species because of the presence of road-killed animals. Agriculture activities may attract birds and raptors to certain areas for foraging opportunities. Birds avoiding urban area may be funneled into transmission corridors and be exposed to the risk of collision.

5.3.2 Power Line Factors Related to Bird Collisions

Power line factors that may relate to avian collisions include the type of structures supporting the transmission line and their placement in the landscape. Equipment placed on the structure and the manner that conductors are arranged also influences risk. While it is believed that flat-line configurations are less of an avian risk than vertical configurations (Bevanger 1994), power line structure design has not been sufficiently analyzed to determine a specific correlation with bird collisions (Janss 2000). However, there seems to be a positive correlation between the presence of a static wire and the number of bird collisions (Bevanger 1994; Savereno et al. 1996; APLIC 2012). It is thought that when a bird sees the larger conductor wires, it increases its altitude to avoid them, and subsequently collides with the thinner, less-visible static wire. This has been supported by studies that have demonstrated an average mortality decline of 50 to 60% when markers are placed on static wires in relation to wires left unmarked (Savereno et al. 1996).

Transmission line location may also influence the risk of collision for birds. Generally, there is more of a risk in placing a transmission line corridor in an open area than against an existing obstruction; however, the visual contrast of the conductors against the background is a consideration (Bevanger 1994). The risks to birds flying across a single corridor in an open space become dependent not only on the line's visibility, but on the altitude of the bird and its ability to first see the transmission line wires, and then change its flight pattern to avoid them. On the other hand, lines are grouped with existing lines or against a landscape reference such as tall trees are theoretically easier to avoid. Multiple lines in one corridor allow birds to avoid several sets of lines at once (Bevanger 1994). The perpendicular placement of transmission line corridors relative to avian flyways can increase the risk posed by the lines. There is also a greater risk of collision when lines are in between areas used by birds, such as between foraging and roosting areas (APLIC 2012). The problem is compounded when the areas are close enough that only a short, low level flight is required (Bevanger 1994).

Lines placed near a ridgeline also can create a hazard. When horizontal winds get deflected upward by ridgelines, the resulting updrafts attract raptors that seek to gain elevation for gliding and soaring purposes (Pope et al. 2006). Passes or valleys may act as funnels for migrating birds crossing mountain ranges. River courses are also followed by migrants. Power lines spanning passes, valleys and rivers create a risk of collision.

It is difficult to predict the frequency of collision-caused bird mortality without long term information on bird species activity and both daily and seasonal movements in the Project area. These data are not available for the TWE Project; however, it is generally expected that collision mortality would be greatest where the movements of susceptible species are the greatest (e.g., near open bodies of water, wetlands, nesting habitats, ridgelines). It is possible that birds will strike the new transmission lines, but it is not expected to result in a substantial increase from current conditions. TransWest has also utilized existing transmission corridors to a large extent, including the West-Wide Energy Corridor (WWEC) and corridors identified in various BLM Resource Management Plans. By placing the Project in existing transmission corridors, collision-related impacts will be reduced.

6.0 CONSTRUCTION DESIGN STANDARDS

All aspects of the Project were designed to meet APLIC construction recommendations both in the State of the Art, 2006 and Reducing Avian Collisions, 2012 documents. No further action is directed in this APP. Attachment D, Design Standards includes the design specifications for the Project.

For areas TransWest identifies as posing a high-risk for avian collisions (e.g., near open bodies of water, wetlands, nesting habitats, ridgelines) or in areas of high collision mortality identified through post-construction reporting, TransWest may install flight diverters or line markers as appropriate. Preferred flight diverters and markers are shown in the attached Exhibit D, Design Standards.

7.0 TRAINING / MONITORING, DEVELOP TRAINING MATERIALS

TransWest supervisors, construction crews, linemen, environmental contractors, and any other transmission-related field personnel will undergo avian protection awareness training prior to beginning work on the TWE Project. Ensuring that Project personnel are knowledgeable and aware of the protocols and methods outlined in this APP will decrease the likelihood of avian interactions with the transmission line and increase the likelihood of quick and efficient responses to incidents. Personnel will undergo a Worker Environmental Awareness Program (WEAP) that places emphasis on TransWest's avian protection policy. Also addressed are any ongoing Project permits that may be issued for avian protection; special-status avian species that could occur and where they would be most likely to occur. Workers will be instructed in how to identify these species; their natural histories where relevant to areas of probable occurrence; and what steps to take should an avian injury or mortality occur. Training will also include a discussion of the law and the consequences for non-compliance with this APP and/or with applicable permits or regulations. All new transmission-related personnel will be required to undergo WEAP training prior to conducting any construction or O&M work on any TWE Project components. As part of the WEAP training all workers will be instructed on the proper protocol for contacting the APP Program Coordinator for any assistance in circumstances of uncertainty. For a more explicit discussion of how newly discovered nests or avian incidents will be reported, see Section 9.0 Nest Management, and Section 10.0 Adaptive Management.

Summary

- All TransWest supervisors, construction crews, linemen, environmental contractors, and any other transmission-related field personnel will undergo an avian protection awareness training prior to beginning work on the Project.
- All TransWest on-site personnel will undergo WEAP training with emphasis on avian protection prior to the start of construction.
- All new contractors will undergo WEAP training before they begin work.

8.0 AREAS OF RESPONSIBILITY AND PERMIT COMPLIANCE

The APP will be administered by designated TransWest staff members under the direction of the APP Program Coordinator. A list of additional responsible persons, chain of responsibility, and contact information will be established prior to project construction and appended to this APP.

TransWest management tasks all line crews, field engineers, operators, foremen, and design personnel with understanding this plan and complying with its direction.

Currently, TransWest does not possess federal or state permits pertaining to migratory birds, eagles or federal ESA listed avian species. It is not authorized to capture injured birds, remove inactive eagle or colonial bird nests, disturb active nests of any bird species, or remove or store carcasses. Any such activity will be conducted by the USFWS or under their direct supervision. This APP will be modified if TransWest obtains a permit in the future.

Should it be warranted in the future, TransWest may apply for federal or state permits. The following permits are described to inform the APP Program Coordinator in making decisions regarding future permits. It does not imply that TransWest possesses these permits or may conduct any covered action described below.

- **Incidental Take Permits** – Incidental take permits are issued to allow the unintentional take of specified individuals per the conditions within each permit.
    - **Section 7 Incidental Take Statement** – None of the federally listed avian species known to be in the Project area are at an elevated risk for collision or mortality. Because of the voltage of TransWest transmission lines and the large separation distance that will be required, electrocution is highly unlikely.
    - **Bald and Golden Eagle Act Permit** – Based on known occurrences and activities in the vicinity of the Project area, both species could occur in various locations along the Project route. Should any eagle electrocution or collision incidents occur during construction or should an eagle nest be discovered that will be impacted by construction, TransWest construction crews will carry out measures described in Section 9.0, Nest Management, and Section 10.0, Adaptive Management, and immediately notify the APP Program Coordinator.
- **Collection/Salvage Permits** – These permits are required to collect, salvage, or handle birds.
    - **State Scientific Collecting Permit** – These permits are issued by state resource agencies and allow the collection, salvage, or capture and release of special-status species as allowed by the individual permit conditions. TransWest will seek this permit from the appropriate state agencies if any of these actions is required during Project construction.

- **Federal Migratory Bird Permit** – These permits are issued by the USFWS under the MBTA and may be required if it is necessary to salvage and/or rehabilitate birds protected by the MBTA during construction. Fish and Game Code 3513 also prohibits the take or possession of any migratory nongame bird protected by the MBTA, except where allowed by the Secretary of the Interior.

- **Nest Removal and Relocation Permits** – Bird nests are protected by the MBTA and by the Fish and Game Code. Under the MBTA, it is illegal to possess, sell, purchase, barter, transport, import, export, or take—defined as collecting, for nests—or attempt any of those actions on a migratory bird nest (USFWS 2003). Under Fish and Game Code Sections 3503 and 3503.5, it is illegal to take, possess, or needlessly destroy the nest or eggs of any bird, except as otherwise provided by the Fish and Game Code or pursuant regulations. However, it is lawful to remove inactive nests or nests during the non-breeding season for most birds, excepting those of eagles. When it is necessary to remove a protected nest as dictated by the MBTA and Fish and Game Code, TransWest will seek permits from the USFWS prior to taking any further actions other than those described under Section 9.0, Nest Management.

9.0 NEST MANAGEMENT

Nest management addresses both nests that may be constructed on facilities and nests near facilities that may be affected by construction or O&M activities. Under the MBTA, it is illegal to possess, sell, purchase, barter, transport, import, export, or take—defined as collecting, for nests—or attempt any of those actions on a migratory bird nest (USFWS 2003). In order to comply with these regulations, the various best management practices (BMPs) and protocols that will be utilized by TWE Project staff to avoid and minimize impacts to nesting avian species on structures or in the Project ROW are discussed below. Additionally, all BLM and U.S. Forest Service (USFS) spatial and timing stipulations regarding nesting birds will be followed as set forth in the right-of-way grants and special use authorizations for the TWE Project. TransWest recognizes that it may be difficult at times to determine whether a nest is active or inactive, and that even checking on the status of a nest may result in disturbance. If in doubt, O&M personnel will contact the APP Program Coordinator who will have the nest checked by a qualified biologist as appropriate.

9.1 Definition of an Active Nest

Nests of native bird species are protected by the MBTA. The USFWS has clarified that the federal regulations only pertain to active nests except in the cases of listed species and eagle nests, which are protected under the Endangered Species Act and the Bald and Golden Eagle Protection Act, respectively, whether they are active or inactive. Regarding all other bird species however, the MBTA does not clearly define what an active nest is. This being the case, it is left to qualified biologists to determine what constitutes an active nest. For the TWE Project, a nest will be considered active when construction of a new nest or use of an existing nest commences, and its formal status will remain active as long as adults, viable eggs, and/or living young are present at the nest. A nest may be abandoned, fail, or fledge young and become inactive during the breeding season. Prior to removal of the buffer around an inactive nest, a qualified biologist will confirm that the nest is inactive using appropriate survey methods.

A number of species will utilize existing nests built in prior years. These include owls (Strigiformes) and diurnal raptors such as falcons, hawks, vultures, and eagles (Falconiformes). Because known nesting sites are likely to be utilized in the current year, each existing nest suitable for use by owls and diurnal raptors should be considered active when the designated seasonal avoidance period begins. Its formal status should remain active until such time as a qualified biologist determines the nest is inactive.

9.2 Inactive Nests

Inactive nests may be removed and/or destroyed in compliance with the MBTA, unless they are nests of listed species or eagles as discussed above. In most cases, a previously active nest becomes inactive when it no longer contains viable eggs or young and is not being used by a bird as part of the reproductive cycle. According to the Migratory Bird Permit Memorandum regarding nest destruction, "the MBTA does not contain any prohibition that applies to the destruction of a bird nest alone (without birds or eggs), provided that no possession occurs during the destruction" (USFWS 2003).

Nests known to be used by ESA-listed species or bald or golden eagles will not be removed unless coordination with state or federal agencies has deemed it appropriate to remove them. Active nests will be protected through establishment of buffers determined by BLM and USFS and set forth in the right-of-way grants and special use authorizations for the TWE Project.

9.3 Operations and Maintenance Procedures

In order to properly assess and document any potential nesting issues, O&M activities occurring during the avian breeding season, generally from mid-February through late-July, will be subdivided into activities that strictly involve work on overhead structures and activities on the ground that involve ROW vegetation management. For activities strictly occurring on towers and other overhead structures, linemen and O&M personnel will conduct visual surveys of the maintenance area prior to beginning work to determine whether any bird nest are present in the work area. For activities involving ROW vegetation management, a qualified biologist would conduct a nesting bird survey not more than 14 days prior to the O&M activities to determine if active nests of any bird species are present within the work area. All active bird nests that are encountered are to be documented using the nest reporting form (Attachment B). All construction and O&M work that might disturb an active nest is to be halted immediately and the APP Program Coordinator contacted. The APP Program Coordinator will develop a treatment plan that will protect the active nest or contact the USFWS for guidance.

TransWest will comply with all federal and state laws regarding nest management or removal. Removal of an inactive, non-eagle nest outside the breeding season may be conducted for safety or maintenance issues without a take permit. When in doubt about the status of a nest (or type) field engineers will consult with the managing engineer who may seek a professional opinion from the APP Program Coordinator or an agency. Active problem nests will be addressed on a case-by-case basis and in coordination with the USFWS and appropriate state agencies.

While inactive bird nests—those without birds or eggs—are not protected from destruction by the MBTA, some inactive nests are protected by other regulations, including those of ESA-listed species or of bald and golden eagles. Nests of eagles cannot be altered, moved, or destroyed without specific authorization from the applicable agency (APLIC 2006). Recent legislation changes in 2009 allow take of eagle nests when there is a safety concern to people or eagles, when it is a public health and safety concern, when the nest prevents use of a human-engineered structure, or when the activity or its mitigation will have a net benefit to eagles; only inactive nests can be taken except in safety emergencies (50 Code of Federal Regulations [CFR] Part 22.27). However, permits are still required for nest removal and ground crews must notify the APP Program Coordinator if a problem nest is discovered. Therefore, determining the active or inactive status of a nest in the vicinity of planned work is paramount to protecting the birds that may be occupying it and protecting the Project by ensuring smooth and avian-safe construction.

If there is question as to whether an observed nest is active or inactive, the APP Program Coordinator and the appropriate land management agency are to be consulted for assistance. Under no circumstances is an active nest to be disturbed until the APP Program Coordinator has been notified and applicable permits and/or resource agencies have been consulted for further action. The nest

reporting form must be completed for all active nests. Construction may only proceed within an established distance of an active nest after the nest has been determined to be inactive or after approval has been given by the APP Program Coordinator or the applicable regulatory agency.

Should a nesting bald eagle be encountered prior to work, the USFWS has issued recommendations for avoiding or minimizing disturbance to the nest and its inhabitants (USFWS 2007). If the construction will be visible from the nest, the USFWS recommends a buffer of 660 feet if there is no similar activity occurring within one mile of the nest; if a similar activity is occurring within one mile of the nest, the USFWS recommends a construction buffer of 660 feet or as close as the other activity is allowed. Landscape buffers are recommended as available. If construction is not visible from the nest, the USFWS recommends a buffer of 330 feet from the nest if there is no similar activity within one mile of the nest; if a similar activity is occurring within mile of the nest, the USFWS recommends a construction buffer of 330 feet or as close as the other activity is allowed. All clearing, external construction, and landscaping between 330 and 660 feet of the nest should be conducted outside of the breeding season. In the DEIS and relevant Resource Management Plans, BLM has broadly identified the spatial buffers surrounding bald eagle nests at one mile on BLM managed lands. The USFWS recommends that the temporary use of loud machinery be restricted to outside of the breeding season. While the breeding season for bald eagles can range from January through August, the most critical time periods when bald eagles are most sensitive to disturbance—courtship, nest building, egg-laying, and incubation—are generally from January through May (USFWS 2007).

For active golden eagle nests, the USFWS recommends a spatial buffer in non-urban areas of 0.5 miles (USFWS 2008). In the DEIS and relevant Resource Management Plans, BLM has broadly identified the spatial buffers surrounding golden eagle nests at one mile on BLM managed lands. Similar to the measures for bald eagle, it is recommended that use of loud machinery as well as all clearing, external construction, and landscaping within the spatial buffers for golden eagle nests should be conducted outside of the golden eagle breeding season.

9.4 Problem Nests

Many birds build nests on power poles. Nests that do not pose safety, reliability, outage, or bird electrocution risks will be left undisturbed. Nests that may present safety, reliability, outage, or bird electrocution risks are referred to as “problem nests”. Managing problem nests involves several components:

- Discouraging birds from nesting in problem areas
- Providing an alternative nest site
- Ensuring that surrounding utility facilities are avian-safe

Problem nests may be removed or relocated if inactive unless it is an ESA-listed species or a bald or golden eagle nest. If active, an ESA-listed species, or a bald or golden eagle nest then the APP Program Coordinator must be contacted before any further action is taken. If a problem with a specific nest is anticipated in the future, permit requirements may be minimized by taking appropriate action during the non-breeding season before the nest is active.

Summary

- If O&M efforts such as repairs, equipment replacement or routine vegetation removal are to occur during the avian breeding season, generally from mid-February through late-July, line maintenance crews will conduct a nesting bird survey prior to construction on above ground structures to determine if active nests of any bird species are present within the work area. If any ROW vegetation management will occur, a qualified biologist will conduct a nest survey no more than 14 days prior to work. All active bird nests that are encountered are to be documented using the nest reporting form (Attachment B).

- If an active nest is present, then all construction and O&M work that might disturb the nest is to be halted immediately and the APP Program Coordinator contacted. The APP Program Coordinator will develop a treatment plan that will protect the active nest or contact the USFWS for guidance. Any active bald eagle nest will be given a 660-foot buffer if maintenance activity is visible from the nest or a 330-foot buffer if it is not, active golden eagle nests will be given a 0.5 mile buffer, and both eagle species will be given a one mile buffer on BLM managed lands (or less as directed or approved by BLM staff).
- All active nests will be documented with the attached Avian Nest Reporting Form (Attachment B).
- Active nests of any species protected under the MBTA, active or inactive eagle nests, or active nests of ESA listed species are not to be moved without approval from the APP Program Coordinator, who will first consult with the USFWS. When in doubt about the status of a nest (or type) field engineers will consult with the managing engineer who may seek professional opinion from the APP Program Coordinator or an agency. Active problem nests will be addressed on a case-by-case basis and in coordination with the USFWS and appropriate state agencies.
- Inactive nests of common species (i.e. non-eagles and non-ESA listed species) can be removed where they are in the path of the work.

10.0 ADAPTIVE MANAGEMENT

As stated previously, this APP will be a living document that will be revised and updated as goals are achieved, innovative solutions are developed to mitigate impacts, agency guidance is adjusted, and conditions of the TWE Project warrant. As such, TransWest will utilize an adaptive management approach to address issues with the Project as they arise. Through this process, TransWest will better be able to identify potential risk and avoid and minimize impacts to avian species. Set out below are examples of some areas where adaptive management will serve to benefit avian species as well as the TWE Project.

10.1 Retrofit/ Remedial Protective Measures

The TWE Project is a new build transmission line that will be built to APLIC construction recommendations, which eliminates the need for retrofit devices and remedial protection. However, if an area is identified where avian species are being impacted by the transmission line, the issue will be investigated, identified and corrected through the use of retrofit devices or other accepted protective measures which will again reduce the potential risk to avian species. General types of equipment that may be used for these situations include covers for hardware and conductors; perching dissuaders; flight path diverters; line marking devices; and other similar types of equipment. TransWest has preemptively considered and approved the use of a few market available products; specifications for these products are located in Attachment D, Design Standards. Records will be kept of the nature of any problems requiring avian protection equipment, bird species involved, site conditions, materials, performance characteristics of equipment and lifespan. The records will be reviewed on a semiannual basis by the APP Program Coordinator to ascertain patterns or developing conditions.

The APP will be reviewed annually and updated as needed based on field data on retrofitted equipment and monitoring of any system changes to improve avian safety. The overarching goal of the APP is to be a living document that will strive to protect avian species by reducing the potential risk created by the Project.

10.2 Incident Tracking

Avian incidents and mortalities will be documented during all phases of the TWE Project by supervisors, construction crews, linemen, environmental contractors, O&M personnel, and any other transmission-related field personnel. Personnel will undergo avian protection awareness training prior to beginning work on the TWE Project that will include recognition and effective documentation of observed avian issues and mortalities. All avian injuries or mortalities that are a result of collision or electrocution with the transmission lines or other Project components are to be documented and reported to the APP Program Coordinator. Following initial notification, the employee or contractor is to fill out the avian reports included as Attachment C. Avian incidents will also be recorded into a Geographic Information Systems (GIS) database for tracking purposes and to determine particular repeat problem areas.

If the affected bird is a special-status species or if it is discovered that a particular area or stretch of transmission line is a "hot spot" for avian safety issues, TransWest will investigate remedial measures to alleviate the issue, as discussed in Section 9.1.

TransWest will maintain an annual list of avian mortalities, including dates, locations, and the species involved, as well as a list of remedial measures implemented (e.g., retrofitting, avian safety devices installed), a shape file or map of the annual avian incident data, and an itemized breakdown of the annual cost of implementing this APP. This information will be internally maintained for use in any future permitting action or enforcement action.

TransWest management and the APP Program Coordinator will review the annual list of avian mortalities and the annual report for compliance with this APP and to insure that adequate measures are being taken to avoid and minimize risks to birds. Where areas of substantial concern are identified through the internal reporting described above, mortality surveys may be conducted to identify the location and scope of the problem, which will then inform the adaptive management process and result in the correction of aspects of the TWE Project that may be causing impacts to avian species. The adaptive management process will utilize the best available information, methods, and analysis techniques implemented by the utility industry. Currently the APLIC *Reducing Avian Collisions*, 2012 document provides up-to-date survey and data collection methods, as well as analysis information.

11.0 EXPENDITURE TRACKING

To determine the amount of investment being expending on measures set out in Section C9.0, TransWest will track its expenses in order to inform the agencies (e.g., USFWS) of these costs. Cost capture is a mechanism agencies use to track efforts utilities expend to improve and sustain avian safety of their systems. As a new project, no data exist to meaningfully prepare a scope and budget for mortality reduction measures. Within one year of commencement of Project operations, TransWest will establish an annual budget and cost tracking mechanism for remedial actions (purchase and installation of avian protection equipment), training, and other activities such as attendance of avian protection workshops.

Examples of potential work that will be tracked in the APP reporting system include the following:

1) Modification of poles associated with a raptor mortality

2) Installation of bird flight diverters/markers to prevent bird collisions

3) Proactive installation of bird guards to prevent squirrel/bird outages

4) Proactive modification of existing poles considered to have a high risk of electrocution.

12.0 QUALITY CONTROL

TransWest will implement quality control measures to ensure that this APP is accurate, up-to-date, and used effectively during the long-term operation of the Project. These measures will include the following:

- TransWest line crews, field engineers, operators, foremen, design personnel, and all contractors associated with the Project, are tasked with understanding and complying with this Plan.
- Quality control will be overseen by the APP Program Coordinator who will provide quarterly reports to TransWest's General Management.
- The APP Program Coordinator will review submitted nest reporting forms and avian incident reporting forms and ensure that they are properly and adequately completed. Any missing information will be obtained from the worker who completed the form. The APP Program Coordinator will ensure that a local (TransWest) incident database is kept up-to-date. Any problems with the reporting system will be reported to management for review and remedial action will be taken.
- Any transmission towers or sections of conductor that are retrofitted with avian safety measures as described under Section 10.0 Adaptive Management, will be monitored for effectiveness by checking for injured birds, carcasses, or signs of potentially risky nest-building weekly for the first month after the retrofitting. Any observed incidents of additional nesting, injury, or mortality will be investigated for further remedial actions, which will then be determined and implemented.
- TransWest will keep an internal database which tracks detected avian injuries or mortalities, a list of retrofitting operations over the last year, a shape file or map of the last year's avian incident data, and an itemized list of the operating costs associated with implementing the protective measures in this APP. TransWest management and the APP Program Coordinator will discuss and implement any necessary changes to this APP or avian protection methods based on this annual report.

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ATTACHMENT A
SPECIAL STATUS AVIAN SPECIES

TABLE A1 POTENTIAL SPECIAL STATUS AVIAN SPECIES IN TWE PROJECT AREA

COMMON NAME	SCIENTIFIC NAME	STATUS[1]	RANGE AND HABITAT REQUIREMENTS	NESTING STRUCTURE	POTENTIAL FOR OCCURRENCE2
American white pelican	*Pelecanus erythrorhynchos*	BLM; UT-SS Tier II	Range: The American white pelican breeds in widely distributed island colonies from Canada to northeastern California, Utah, Nevada, Wyoming, and Colorado. Habitat: The species breeds on islands in large bodies of water. It forages in marshes, lakes, and rivers. It constructs a scrape nest on flat, open ground, near water. It is a colonial nester.	Wetlands: ground nester	Regions I and II: High. The species has been documented within the 2-mile transmission line corridor in Millard County, Utah. It has also been documented within 5 miles of the reference line in Iron, Juab, Millard, Sevier, Uintah, and Washington counties, Utah. No suitable habitat for the American white pelican is crossed by the project alternatives in Region III. A breeding colony has been documented within 5 miles of the reference line in Carbon County, Wyoming.
Least bittern	*Ixobrychus exilis*	BLM; NV-P	Range: The least bittern nests throughout the eastern United States and in select areas of Oregon, California, Colorado, Arizona, New Mexico, Texas, Utah, Nebraska, Nevada, Mexico, and South America. Habitat: The species breeds and forages in freshwater marshes. It nests on a platform of marsh vegetation with a canopy.	Wetlands: ground nester	Regions I, III, and IV: Moderate. The species has been documented within 5 miles of the reference line in Clark County, Nevada. Probable breeding records exist for the Pahranagat National Wildlife Refuge in Lincoln County, Nevada.
White-faced ibis	*Plegadis chihi*	BLM	Range: The white-faced ibis nests from central Mexico to coastal Texas and Louisiana and through the Great Basin. Isolated colonies exist in Alberta, New Mexico, California, Montana, North Dakota, Iowa, Kansas, and South America. Habitat: The species breeds in tall emergent vegetation growing as “islands”, surrounded by water (at least 18 inches deep). It forages in wet hay meadows and flooded agricultural croplands, marshes, shallow ponds, lakes, and reservoirs. It constructs a nest of emergent vegetation in bulrushes, cattails, or reeds; on floating mats; or in low trees.	Wetlands: ground nester	Regions I, II, III, and IV: High. The species has been documented within the 2-mile transmission line corridor in Carbon County, Wyoming. It has also been documented within 5 miles of the reference line in Sweetwater County, Wyoming. Possible breeding colonies exist in northwestern Colorado and in Clark County, Nevada.

COMMON NAME	SCIENTIFIC NAME	STATUS[1]	RANGE AND HABITAT REQUIREMENTS	NESTING STRUCTURE	POTENTIAL FOR OCCURRENCE2
Barrow's goldeneye	*Bucephala islandica*	BLM	Range: The Barrow's goldeneye breeds in the western mountains of North America, from Alaska to central California. Habitat: The species breeds near densely vegetated water bodies with abundant aquatic vegetation. It forages in water bodies. It nests in cavities, usually in dead trees close to cold-water lakes, pools, or rivers. The species exhibits high nest fidelity.	Wetlands: cavities	Region I: Low. The species is a confirmed breeder in Sweetwater and Carbon counties, Wyoming.
Trumpeter swan	*Cygnus buccinator*	BLM	Range: The trumpeter swan was once distributed across most of North America and currently occurs locally from Alaska south to Oregon and east to Michigan. Habitat: The species breeds in areas with stable, quiet, and shallow waters where small islands, muskrat houses, or dense emergent vegetation provide nesting and loafing habitat. It forages in shallow marshes, ponds, lakes, and river oxbows with nutrient-rich waters, and dense aquatic plants and invertebrates. It constructs a nest of aquatic and emergent vegetation, often on a muskrat house surrounded by water.	Wetlands: ground nester	Region I: High. The species has been documented within the 2-mile transmission line corridor in Sweetwater County, Wyoming.
Bald eagle	*Haliaeetus leucocephalus*	BLM; USFS; CO-ST; UT-SS Tier I; NV-P	Range: The bald eagle occurs throughout the United States and Canada, south into central Mexico. Habitat: The species breeds near large lakes and rivers, in forested habitat where adequate prey and large, old cottonwood or conifer trees are available for nesting. It constructs a large stick nest, and exhibits high nest fidelity.	Raptor: trees	Regions I, II, III, and IV: High. This species has been documented throughout Wyoming, Colorado, Utah, and Nevada. Bald eagles nest and winter along major waterbodies in mature riparian woodlands.

COMMON NAME	SCIENTIFIC NAME	STATUS[1]	RANGE AND HABITAT REQUIREMENTS	NESTING STRUCTURE	POTENTIAL FOR OCCURRENCE2
Ferruginous hawk	*Buteo regalis*	BLM; UT-SS Tier II; NV-P	Range: The ferruginous hawk occurs in Canada, eighteen western and central states, and Mexico. Habitat: The species breeds in semiarid open country, primarily grasslands, basin prairie shrublands, and badlands, typically near prairie dog colonies. It requires large tracts of relatively undisturbed rangeland for foraging habitat. It constructs a large stick nest on rock outcrops, knolls, cutbanks, cliff ledges, or trees, and exhibits high nest fidelity.	Raptor: cliffs/trees	Regions I, II, III, and IV: High. The species has been documented within the 2-mile transmission line corridor in Carbon and Sweetwater counties, Wyoming; in Beaver, Duchesne, Emery, Grand, Iron, Juab, Millard, Uintah, and Washington counties, Utah; and in Lincoln County, Nevada. Suitable habitat also occurs within the study area in Clark County, Nevada.
Golden eagle	*Aquila chrysaetos*	BLM	Range: The golden eagle occurs throughout North America, from Alaska to central Mexico. Habitat: The species breeds and forages in a variety of habitats, including large expanses of grasslands, sagebrush, agricultural lands, and tundra. It constructs a large stick nest on cliffs and in large trees, and exhibits high nest fidelity.	Raptor: cliffs/trees	Regions I, II, III, and IV: High. The species has been documented within the 2-mile transmission line corridor in Carbon and Sweetwater counties, Wyoming, and in White Pine and Lincoln counties, Nevada. Suitable habitat also occurs within the 2-mile transmission line corridor in Colorado, Utah, and Nevada.
Northern goshawk	*Accipiter gentilis*	BLM; USFS; UT-SS Tier I; NV-P	Range: The northern goshawk occurs in Alaska, Canada, and south through the southern Rocky Mountains and Mexico. Habitat: The species breeds and forages in mixed coniferous forest and mature aspen stands with tall trees, intermediate canopy coverage for nesting, and small open areas for foraging. It constructs a stick and twig nest on a large horizontal limb, usually against or near the truck.	Raptor: trees	Regions I and II: High. The species is known to occur within the 2-mile transmission line corridor in Sweetwater County, Wyoming and in Emery and Millard counties, Utah. It has also been documented within 5 miles of the reference line in Carbon County, Wyoming; Garfield and Rio Blanco counties, Colorado; in Daggett, Duchesne, Emery, Millard, Sanpete, Sevier, Uintah, Utah, and Wasatch counties, Utah; and in Lincoln County, Nevada. No suitable habitat for the northern goshawk is crossed by the project alternatives in Region III.
Peregrine falcon	*Falco peregrinus*	BLM; USFS; NV-P	Range: The peregrine falcon occurs throughout most of North America. Habitat: The species breeds and forages in a	Raptor: cliffs	Regions I, II, III, and IV: High. The species has been documented within the 2-mile transmission line corridor in Sweetwater County, Wyoming, Uintah

COMMON NAME	SCIENTIFIC NAME	STATUS[1]	RANGE AND HABITAT REQUIREMENTS	NESTING STRUCTURE	POTENTIAL FOR OCCURRENCE2
			variety of open habitats, including woodlands, forests, shrub-steppe, grasslands, marshes, and riparian habitats. It nests on cliffs and rarely on tall buildings near habitats with abundant prey. It constructs a well-rounded scrape nest of accumulated debris on a ledge.		County, Utah, and Clark County, Nevada. It has also been documented within 5 miles of the reference line in Carbon County, Wyoming, and in Utah (Daggett, Duchesne, Emery, Sevier, and Washington counties).
Prairie falcon	*Falco mexicanus*	BLM	Range: The prairie falcon occurs throughout western North America from Canada to Mexico. Habitat: The species breeds and forages in open terrain, including sagebrush, grasslands, and other arid habitats. It nests on cliff ledges facing open habitat.	Raptor: cliffs	Regions I, II, III, and IV: High. Potential habitat for this species occurs in the 2-mile transmission line corridor. It has been documented within 5 miles of the 2-mile transmission line corridor in Lincoln County, Nevada, and in Colorado.
Swainson's hawk	*Buteo swainsoni*	BLM	Range: The Swainson's hawk breeds in western North America, from Alaska south into northern Mexico, and east to Oklahoma and Iowa. The species range includes Wyoming, Colorado, Utah, and Nevada. Habitat: The species breeds and forages in arid grasslands, desert, and agricultural areas with scattered trees and shrubs. It constructs a modest nest in trees and exhibits moderate nest fidelity.	Raptor: trees	Regions I, II, III, and IV: High. The species has been documented within the 2-mile transmission line corridor in Utah. Suitable habitat is present along the 2-mile transmission line corridor in Wyoming, Colorado, Utah, and Nevada.
Columbian sharp-tailed grouse	*Tympanuchus phasianellus columbianus*	BLM; USFS; UT-SS Tier II	Range: The Columbian sharp-tailed grouse occurs locally from Canada, south to Nevada and east to Colorado. It has been extirpated from Oregon, California, and Nevada. Habitat: The subspecies inhabits mountain-foothill shrub communities, sagebrush, grassland, and riparian habitats. Leks are located in flat areas with low, sparse vegetation. Nests occur within 0.6 mile of the lek area.	Shrublands: ground nester	Regions I and II: Low. The subspecies occurs in suitable habitat in isolated locations in south-central Wyoming, and northwestern Colorado.

COMMON NAME	SCIENTIFIC NAME	STATUS[1]	RANGE AND HABITAT REQUIREMENTS	NESTING STRUCTURE	POTENTIAL FOR OCCURRENCE2
Greater sage-grouse	*Centrocercus urophasianus*	FC; BLM; USFS; UT-SS Tier II;	Range: The greater sage-grouse is found throughout the western United States. Habitat: The species breeds and forages in sagebrush grasslands. Leks are located in open areas (e.g., ridges, knolls, dry lake beds, burned areas) in close proximity to taller sagebrush which is used as escape cover. Most nests are located under sagebrush plants, typically within 4 miles of the lek. Brooding habitat consists of grassy areas near sagebrush. Winter habitat consists of south and east facing slopes with minimal snow cover.	Shrublands: ground nester	Regions I, II, and III: High. Active leks occur within the 2-mile transmission line corridor in Wyoming, Colorado, and Utah. Suitable nesting, brooding, and wintering habitat also occurs within the 2-mile transmission line corridor in these states. The 2-mile transmission line corridor includes greater sage-grouse core habitat areas in Wyoming.
Black tern	*Chlidonias niger*	BLM	Range: The black tern occurs locally in Canada and the northern two-thirds of the United States. Habitat: The species breeds in large marshes, usually greater than 50 acres and forages in marshes and aquatic areas. It nests in small, loose colonies, in still water. It constructs a floating nest of dead rushes in marshes, or on grass tufts in wetlands	Wetlands: ground nester	Regions I and II: High. Breeding colonies of this species have been documented within the 2-mile transmission line corridor in Carbon County, Wyoming and within 5 miles of the 2-mile transmission line corridor in Sweetwater County, Wyoming. The species has been documented within 5 miles of the reference line in Uintah County, Utah. Suitable habitat occurs at Pelican Lake, and on sandbars in the Green River, Utah.
Long-billed curlew	*Numenius americanus*	BLM; UT-SS Tier II	Range: The long-billed curlew occurs from southern Canada into most of the western United States. Habitat: The species breeds and forages in a variety of grassland habitats, including moist meadow grasslands, agricultural areas, and dry prairie uplands, usually near water. It nests in grass less than 12 inches tall, with bare ground, shade, abundant invertebrate prey.	Grasslands: ground nester	Regions I, II, and III: High. This species has been documented within the 2-mile transmission line corridor in Carbon County, Wyoming and Juab, Millard, and Uintah counties, Utah. It has also been documented within 5 miles of the reference line in Beaver, Grand, and Iron counties, Utah.

COMMON NAME	SCIENTIFIC NAME	STATUS[1]	RANGE AND HABITAT REQUIREMENTS	NESTING STRUCTURE	POTENTIAL FOR OCCURRENCE2
Mountain plover	*Chardrius montanus*	BLM; USFS; UT-SS;	Range: The mountain plover occurs in dry short-grass prairies from south-central Canada to Texas. Habitat: The species breeds and forages in flat, short-grass prairie habitat and fallow agricultural fields with sparse vegetation. It constructs a ground nest of cow manure chips, grass, and roots.	Grasslands: ground nester	Regions I and II: High. The species has been documented within the 2-mile transmission line corridor in Carbon and Sweetwater counties, Wyoming. It has been documented within 5 miles of the reference line in Grand County, Utah. Historic records also exist for mountain plovers in Duchesne and Uintah counties, Utah.
Yellow-billed cuckoo (western)	*Coccyzus americanus*	FC; BLM;UT-SS Tier I; NV-P	Range: The western yellow-billed cuckoo occurs west of the continental divide in North America. Habitat: The species breeds and forages in dense woodlands along riparian corridors in otherwise arid areas. It requires a multi-storied canopy, and dense, shrubby vegetation, adequate invertebrate prey, cover, and water. It constructs twig nests, in shrubs.	Wetlands: trees	Regions I, II, III, and IV: High. The species has been documented within the 2-mile transmission line corridor in Utah county, Utah. It has also been documented within 5 miles of the reference line in Emery, Grand, Uintah, and Washington counties, Utah. The species is documented in Meadow Valley Wash in Lincoln County, Nevada. It is also a confirmed breeder along the Muddy River in Nevada.
Boreal owl	*Aegolius funereus*	USFS	Range: The boreal owl occurs from Alaska, south through the Rocky Mountains to northern New Mexico. Habitat: The species breeds and forages in mature, high elevation (above 9,000 feet amsl) coniferous forests, interspersed with mature aspen stands for nesting cavities. It requires large areas of forested habitat. It nests in large woodpecker holes or natural cavities in trees.	Raptor: cavities	Regions I and II: Moderate. The species is documented within 5 miles of the reference line in Carbon County, Wyoming.

COMMON NAME	SCIENTIFIC NAME	STATUS[1]	RANGE AND HABITAT REQUIREMENTS	NESTING STRUCTURE	POTENTIAL FOR OCCURRENCE2
Burrowing owl	*Athene cunicularia*	BLM; CO-ST; UT-SS Tier II	Range: The burrowing owl occurs from Canada, south through most of the western United States to central Mexico. Habitat: The species breeds and forages in a wide variety of arid and semiarid environments, including grassland, desert, and shrub-steppe habitats, and agricultural areas. It generally nests in burrows excavated by small mammals, particularly prairie dogs and ground squirrels.	Raptor: burrow nester	Regions I, II, III, and IV: High. The species is documented within the 2-mile transmission line corridor in Carbon and Sweetwater counties, Wyoming, Moffat County, Colorado, throughout Utah, and in Clark and Lincoln counties, Nevada.
Flammulated owl	*Otus flammeoulus*	BLM; USFS	Range: The flammulated owl breeds from Canada, south through Washington, Oregon, California, Nevada, Utah, Wyoming, Colorado, Arizona, New Mexico, western Texas, and Mexico. Habitat: The species breeds and forages in montane forests, especially ponderosa pine where it feeds on moths. It nests in cavities, especially abandoned woodpecker holes.	Raptor: cavities	Regions I and II: Moderate. The species is known to occur in Colorado, Utah, and Nevada. Suitable habitat occurs in Rio Blanco County, Colorado, Daggett, Sevier, and Uintah counties, Utah, and Carbon County, Wyoming. It has been documented within 1 mile of the reference line. No suitable habitat for the flammulated owl is crossed by the project alternatives in Region III.
Long-eared owl	*Asio otus*	BLM	Range: The long-eared owl occurs from southern Canada through most of the United States, except in the southeast. Habitat: The species breeds and forages in dense, woody vegetation for roosting, and open country for hunting. It nests in abandoned corvid nests in trees or brush.	Raptor: trees	Regions I, II, III, and IV: Low. The species is known to occur in Wyoming, Colorado, Utah, and Nevada. Suitable habitat occurs along the 2-mile transmission line corridor.

COMMON NAME	SCIENTIFIC NAME	STATUS[1]	RANGE AND HABITAT REQUIREMENTS	NESTING STRUCTURE	POTENTIAL FOR OCCURRENCE2
Short-eared owl	*Asio flammeus*	BLM; UT-SS Tier II	Range: The short-eared owl occurs from Alaska and Canada, south to central California and east to Maryland. Habitat: The species breeds and forages in broad expanses of open habitat, with dense, low vegetation, including grasslands, meadows, marshes, and open sagebrush shrublands. It is strongly associated with ungrazed and undisturbed native grasslands and wetlands that support dense small mammal populations. It constructs a grass nest in low vegetation.	Raptor: ground nester	Regions I, II, and III: High. The species is documented within the 2-mile transmission line corridor in Millard County, Utah and Carbon and Sweetwater counties, Wyoming. It has also been documented within 5 miles of the reference line in Beaver, Juab, and Uintah counties, Utah.
Black swift	*Cypseloides niger*	BLM; UT-SS Tier II	Range: The black swift occurs in scattered colonies throughout western North America, from southeast Alaska to central Mexico. Habitat: The species breeds and forages in a variety of habitats, foraging far from nesting areas. It nests on vertical rock faces, near waterfalls, or in dripping caves. Nests are constructed of ferns and algae in small colonies.	Cliffs	Regions I and II: High. Nesting colonies are known to occur in Utah County, Utah. The species has been documented within the 2-mile transmission line corridor in Duchesne County, Utah. It has also been documented within 5 miles of the reference line in Uintah County, Utah.
Lewis's woodpecker	*Melanerpes lewis*	BLM; UT-SS Tier II	Range: The Lewis's woodpecker occurs from southern Canada, to south-central California and New Mexico. Habitat: The species breeds and forages in open country with scattered trees, usually below 9,000 feet amsl. Habitat includes open ponderosa pine forests, burned-out coniferous stands, riparian and oak woodlands, and deciduous forests. It excavates cavities for nests in trees.	Forests: cavities	Regions I, II and III: High. The species has been documented within the 2-mile transmission line corridor area in Juab and Utah counties, Utah. It has also been documented within the 2-mile transmission line corridor in Millard and Uintah counties, Utah.

COMMON NAME	SCIENTIFIC NAME	STATUS[1]	RANGE AND HABITAT REQUIREMENTS	NESTING STRUCTURE	POTENTIAL FOR OCCURRENCE2
Red-naped sapsucker	*Sphyrapicus nuchalis*	BLM	Range: The red-naped sapsucker occurs from the Rocky Mountains, west to eastern California and Oregon, and from southern Canada to Arizona and New Mexico. Habitat: The species breeds and forages in aspen, cottonwood riparian stands, and mixed aspen/coniferous forests from 5,000 to 9,000 feet amsl. It nests in tree cavities and exhibits some nest fidelity.	Forests: cavities	Regions I, II, III, and IV: Low. The species is known to occur in Wyoming, Colorado, Utah, and Nevada.
American three-toed woodpecker	*Picoides dorsalis*	BLM; USFS; UT-SS Tier II	Range: The American three-toed woodpecker occurs from Canada and Alaska, south through the Rocky Mountains to New Mexico. Habitat: The species is a high elevation spruce-fir forest obligate. It breeds and forages in coniferous forests, particularly in burned and beetle killed areas where it scales off bark in search of prey. It nests in tree cavities.	Forests: cavities	Regions I and II: Moderate. The species has been documented within 5 miles of the reference line in Emery and Sevier counties, Utah. Suitable habitat is present within the 2-mile transmission line corridor in Wyoming, Colorado, and Utah. No suitable habitat for the American three-toed woodpecker is crossed by the project alternatives in Region III.
Bobolink	*Dolichonyx oryzivorus*	BLM; UT-SS Tier II	Range: The bobolink occurs from Canada, south to eastern Oregon, central Colorado, central Illinois, and western North Carolina. Habitat: The species breeds and forages in large grassland expanses. It constructs a grass nest in a depression in wet meadows, flooded pastures, and fields.	Grasslands: ground nester	Regions I, II, and III: Moderate. The species has been documented within 5 miles of the reference line in Carbon County, Wyoming; Uintah County, Utah; and Moffat County, Colorado. Suitable habitat occurs within the 2-mile transmission line corridor in Wyoming, Colorado, and Utah.
Baird's sparrow	*Ammodramus bairdii*	BLM	Range: Baird's sparrow occurs from Canada south through the northern Great Plains. Habitat: The species breeds and forages in shortgrass prairie. It constructs a ground nest in a depression.	Grasslands: ground nester	Region I: Low. This species may be found in grasslands and weedy fields in the Rawlins Field Office, but likely outside of the Special Status Bird Analysis Area.

COMMON NAME	SCIENTIFIC NAME	STATUS[1]	RANGE AND HABITAT REQUIREMENTS	NESTING STRUCTURE	POTENTIAL FOR OCCURRENCE2
Brewer's sparrow	*Spizella breweri*	BLM	Range: The Brewer's sparrow occurs from southeastern Alaska south to southern California and southwestern Kansas. Habitat: The species is a sagebrush obligate. It breeds and forages in sagebrush shrublands with abundant, scattered shrubs and short grasses. It constructs a nest of grass, forbs, and roots in a shrub or low tree.	Shrublands: shrubs/trees	Regions I, II, and III: High. The species has been documented within the 2-mile transmission line corridor in Lincoln County, Nevada. It has been documented within 5 miles of the reference line in Carbon and Sweetwater counties, Wyoming. Suitable habitat occurs throughout the 2-mile transmission line corridor in Wyoming, Colorado, Utah, and Nevada. No suitable habitat for the Brewer's sparrow is crossed by the project alternatives in Region IV.
Grasshopper sparrow	*Ammodramus savannarum*	BLM; UT-SS Tier II	Range: The grasshopper sparrow occurs from Canada east to southern Maine, and south to southern California and central Georgia. The main population occurs in the Great Plains. Habitat: The species breeds and forages in mid- and long-grass prairie, mixed grasslands, meadows, and open sagebrush-grasslands. It constructs a grass nest in a depression.	Grasslands: ground nester	Region I: High. The species has been documented within the 2-mile transmission line corridor in Carbon and Sweetwater counties, Wyoming.
Gray vireo	*Vireo vicinior*	BLM	Range: The gray vireo occurs in Arizona, New Mexico, Colorado, Utah, Nevada, and southern California. Habitat: The species breeds and forages in hot, arid mountains, in desert scrub, pinyon-juniper, pine-oak scrub, and high plains scrubland. It constructs a deep, rounded grass nest, suspended in a forked twig in a shrub.	Shrublands: shrubs	Regions I, II, III, and IV: High. This species has been documented within the 2-mile transmission line corridor in Lincoln County, Nevada. It has been documented within 5 miles of the reference line in Moffat, and Rio Blanco counties, Colorado. Suitable habitat occurs throughout the 2-mile transmission line corridor in Utah and Nevada.

COMMON NAME	SCIENTIFIC NAME	STATUS[1]	RANGE AND HABITAT REQUIREMENTS	NESTING STRUCTURE	POTENTIAL FOR OCCURRENCE2
Juniper titmouse	*Baeolophus griseus*	BLM	Range: The juniper titmouse occurs in western North America, from southern Oregon west to Wyoming, and south to Arizona, western Texas, and Mexico. Habitat: The species breeds and forages in juniper woodlands interspersed with sagebrush and other shrubs. It nests in a natural cavity or in an abandoned woodpecker hole.	Woodlands: cavities	Region I and II: High. The species has been documented within the 2-mile transmission line corridor in Carbon and Sweetwater counties, Wyoming, and Lincoln County, Nevada. Suitable habitat occurs throughout the 2-mile transmission line corridor in Colorado, Utah, and Nevada. No suitable habitat for the juniper titmouse is crossed by the project alternatives in Regions III and IV.
Loggerhead shrike	*Lanius ludovicianus*	BLM	Range: The loggerhead shrike occurs from south-central Canada, throughout the United States, and Mexico. Habitat: In the western U.S., the species breeds and forages in arid, open country with scattered small trees and shrubs or hedgerows. It constructs a twig nest in a thorny tree or shrub.	Shrublands: shrubs/trees	Regions I, II, III, and IV: High. The species has been documented within the 2-mile transmission line corridor in Carbon and Sweetwater counties, Wyoming, and Lincoln County, Nevada. Suitable habitat occurs throughout the 2-mile transmission line corridor in Wyoming, Colorado, Utah, and Nevada.
Pinyon jay	*Gymnorhinus cyanocephalus*	BLM	Range: The pinyon jay occurs from central Oregon, Montana, and South Dakota, south to Baja California, Arizona, and New Mexico. Habitat: The species breeds and forages in ponderosa pine savannah, pinyon-juniper, and montane shrublands. It constructs a bulky twig nest in a juniper or pine tree.	Woodlands: trees	Regions I, II, and III: High. The species has been documented within the 2-mile transmission line corridor in Lincoln County, Nevada. It is known to occur in Wyoming, Colorado, Utah, and Nevada. No suitable habitat for the pinyon jay is crossed by the project alternatives in Region IV.
Sage sparrow	*Amphispiza belii*	BLM	Range: The sage sparrow occurs from central Washington, east to northwestern Colorado and south to Baja California and northwestern New Mexico. Habitat: The species is a sagebrush obligate. It breeds and forages in habitat with tall shrubs (3 to 6 feet tall) and low grass cover, and requires large blocks of unfragmented habitat. It constructs a twig nest in sagebrush.	Shrublands: shrubs	Regions I, II, and III: High. The species has been documented within the 2-mile transmission line corridor in Carbon and Sweetwater counties, Wyoming, Moffat County, Colorado, and Lincoln County, Nevada. It has also been recorded within 5 miles of the reference line in Rio Blanco County, Colorado. Suitable habitat occurs throughout the 2-mile transmission line corridor in Wyoming, Colorado, Utah, and in Lincoln County, Nevada.

COMMON NAME	SCIENTIFIC NAME	STATUS[1]	RANGE AND HABITAT REQUIREMENTS	NESTING STRUCTURE	POTENTIAL FOR OCCURRENCE2
Sage thrasher	*Oreoscoptes montanus*	BLM	Range: The sage thrasher occurs from Canada, south through the Great Basin, to Arizona and New Mexico. Habitat: The species is a sagebrush obligate. It breeds and forages in habitat with tall shrubs (3 to 6 feet tall) and low grass cover. It constructs a bulky, twig nest in sagebrush.	Shrublands: shrubs	Regions I, II, and III: High. The species has been documented within the 2-mile transmission line corridor in Carbon and Sweetwater counties, Wyoming, and Lincoln County, Nevada. Suitable habitat occurs in Wyoming, Colorado, Utah, and in Lincoln County, Nevada.
Vesper sparrow	*Pooecetes gramineus*	BLM	Range: The vesper sparrow occurs from southern Canada to the Appalachian Mountains, along the Ohio River, and in much of the western United States. Habitat: The species breeds and forages in a variety of open, grass habitats, including sagebrush steppe, meadows, pastures, and roadsides. It constructs a grass nest in a depression.	Grasslands: ground nester	Regions I, II, and III: Low. The species is known to occur in Wyoming, Colorado, Utah, and in Lincoln County, Nevada.
Yellow-breasted chat	*Icteria virens*	BLM	Range: The yellow-breasted chat occurs throughout the United States and northern Mexico. Habitat: The species breeds and forages in riparian shrub and marshes below 7,000 feet amsl. It constructs a large leaf and weed nest in a deciduous shrub.	Woodlands: trees	Regions I, II, III, and IV: High. The species has been documented within the 2-mile transmission line corridor in Lincoln County, Nevada. It is known to occur in Wyoming, Colorado, Utah, and Nevada.

[1]Status:

FE = Federally Endangered; FT = Federally Threatened; FC = Federal Candidate; FP = Federal Proposed; EXP/NE = Experimental Non-essential population; BLM = BLM Sensitive; USFS = USFS Sensitive; CO-E = Colorado State Endangered; CO-T = Colorado State Threatened; NV-P = Nevada State Protected; UT-SS = Utah Sensitive Species (Tier I and Tier II species are defined in Utah's Comprehensive Wildlife Strategy)

[2]Potential for Occurrence

High = The species is known to occur within suitable habitat within the 2-mile transmission line corridor.

Moderate = The species is known to occur within 5 miles of the study area and suitable habitat for the species occurs within the 2-mile transmission line corridor.

Low = The known geographic range of the species is within the 2-mile transmission line corridor.

None = The geographic range of the species is outside the 2-mile transmission line corridor.

ATTACHMENT B
AVIAN NEST AND INCIDENT REPORTING FORM

Avian Nest Reporting Form

Discoverer's Name

Discoverer's Phone Number

Date of Nest Discovery

Nest Location (circle one) Tower/Pole Tree Shrub Ground

Line Name, Voltage, and Closest Tower/Pole ID

Other Specific Location Information

Surrounding Habitat (circle all that apply)

Agricultural	Chaparral/Shrubs	Desert Scrub
Disturbed/Developed	Grassland	Riparian

Nest Condition (circle one) Active Inactive, Intact Inactive, Partial Deterioration Inactive, Heavy Deterioration

Describe any Bird Signs Around the Nest (feathers, scat, prey remains)

Are Birds Present? (circle one) Yes No

Number of Birds Visible

Age of Bird(s) (circle all that apply) Adult Juvenile Nestling Eggs Unknown

Bird Species (if known)

Type of Bird (circle one if species unknown)

Raptor (hawk, falcon, eagle) Owl Crow/Raven

Passerine (small bird) Unknown

Risk to Birds/Construction (circle one)

No Risk Potential Risk – Imminent Potential Risk – Not Imminent

Additional Comments

ATTACHMENT C
AVIAN INCIDENT REPORTING FORM

Avian Incident Reporting Form

Discoverer's Name

Discoverer's Phone Number

Date of Nest Discovery

Date of Incident/Discovery

Time of Incident/Discovery

Line Name, Voltage, and Tower/Pole ID

GPS Coordinates of Incident (if available)

Species (if known)

Type of Bird (circle one if species unknown)

Raptor (hawk, falcon, eagle)	Owl	Crow/Raven
Passerine (small bird)	Waterfowl	Unknown

Number of Birds

Age of Bird(s) (circle all that apply) Adult Juvenile Nestling Eggs Unknown

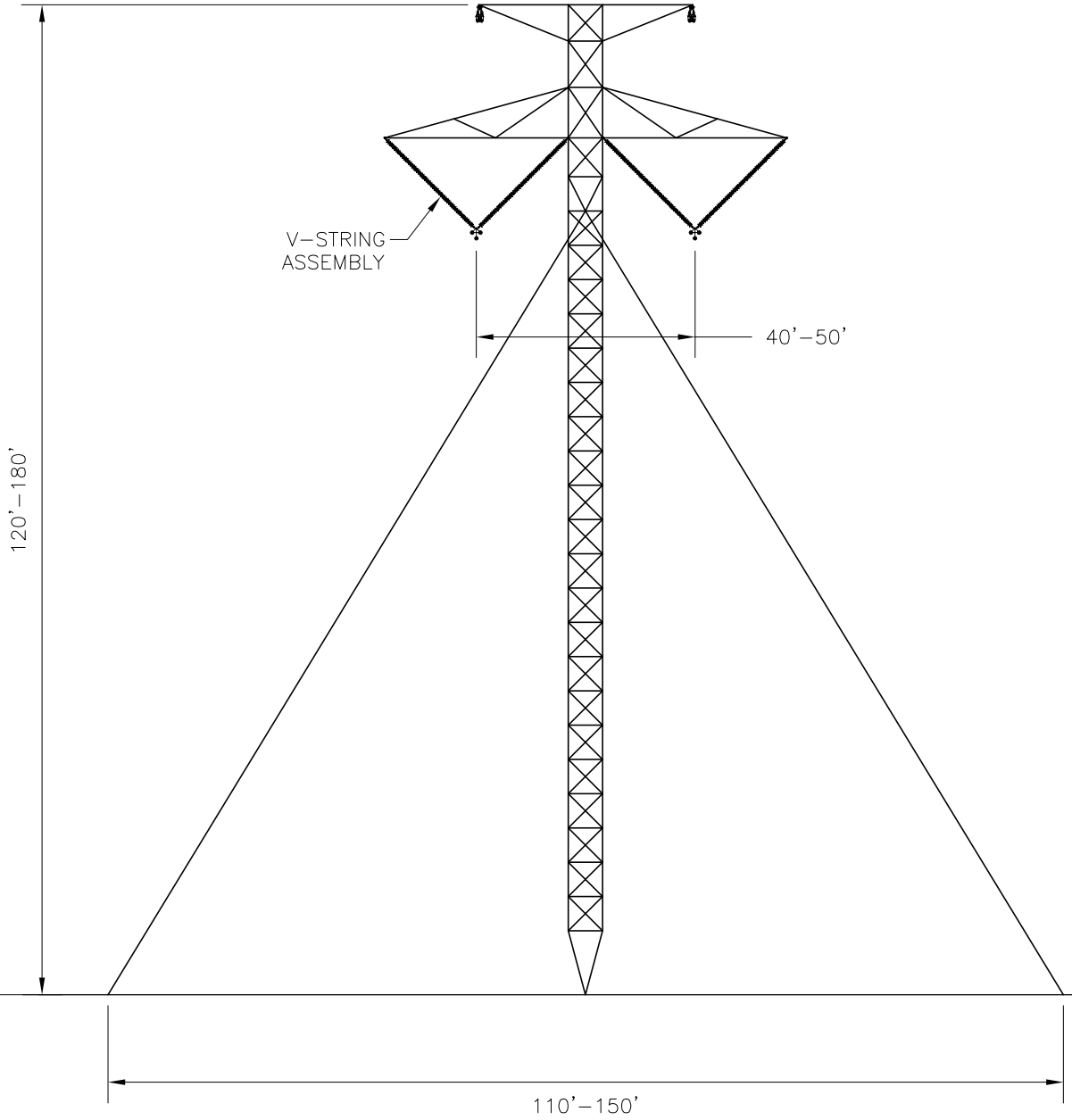
Surrounding Habitat (circle all that apply)

Agricultural	Chaparral/Shrubs	Desert Scrub
Disturbed/Developed	Grassland	Riparian

Type of Incident (circle one) Injury Mortality

Description of Incident. Include condition of bird, circumstances of incident and cause of injury or mortality, and any damage or impacts to construction.

ATTACHMENT D
DESIGN STANDARDS



NOTES

1. DIMENSIONS SHOWN ARE FOR ILLUSTRATION PURPOSES ONLY.
2. TOWER OUTLINE AND BRACINGS ARE INDICATIVE ONLY.

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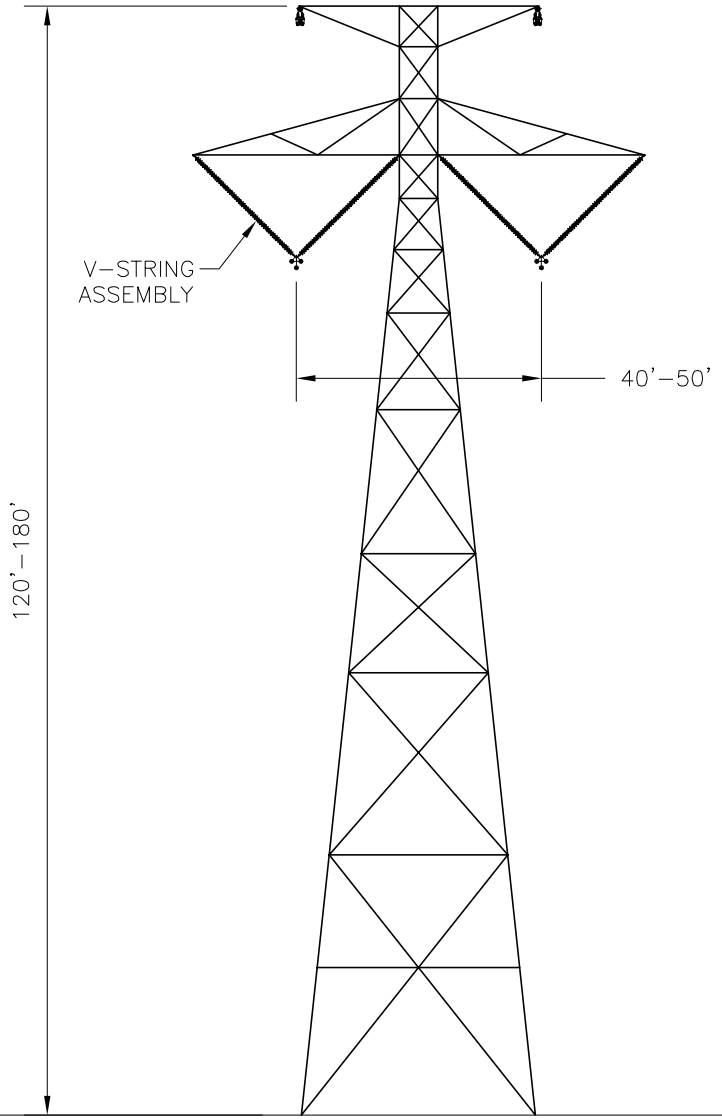
TRANSWEST EXPRESS TRANSMISSION PROJECT
FIGURE 1

TYPICAL ±600kV DC
GUYED V–STRING
LATTICE STRUCTURE



NOTES

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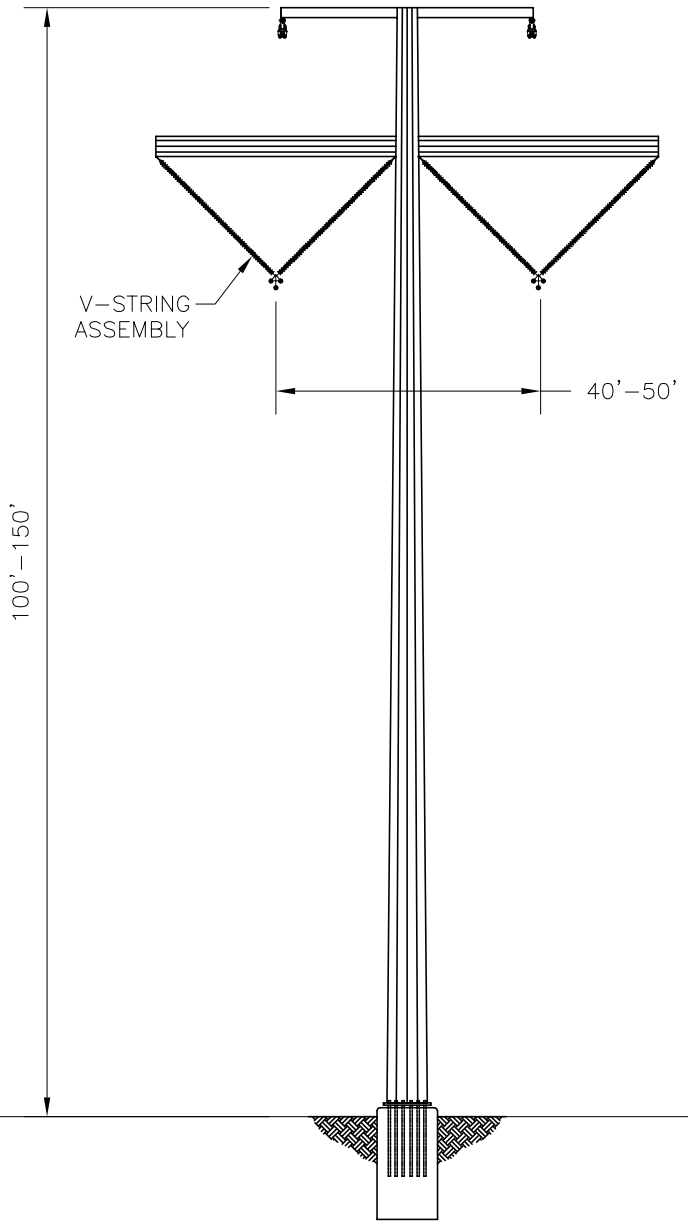
TRANSWEST EXPRESS TRANSMISSION PROJECT
FIGURE 2

TYPICAL ±600kV DC
SELF SUPPORTING LATTICE
V–STRING STRUCTURE



NOTES

1. DIMENSIONS SHOWN ARE FOR ILLUSTRATION PURPOSES ONLY.

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TRANSWEST EXPRESS TRANSMISSION PROJECT
FIGURE 3

TYPICAL ±600kV DC
TUBULAR STEEL POLE
V–STRING STRUCTURE

PREFORMED LINE PRODUCTS
The connection you can count on.

BIRD-FLIGHT™ DIVERTER

COMMUNICATIONS ENERGY SPECIAL INDUSTRIES SOLAR

BIRD-FLIGHT™ DIVERTER

General Information

The BIRD-FLIGHT Diverter is designed to make overhead lines and guyed structures visible to birds and provides an economical means of reducing the hazard to both lines and birds.

The BIRD-FLIGHT Diverter is lightweight, offers little wind resistance and is easily and quickly applied by hand. The positive grip of the fitting on the cable ensures that it remains in the applied position and cannot move along the span under aeolian vibration or other conditions.

Visibility

The diverter section increases the visible profile of the cable and is designed to ensure safety, but avoid an undesirably bulky outline.

Material

Manufactured from rigid high impact polyvinyl chloride (PVC), the BIRD-FLIGHT Diverter possesses excellent chemical and strength properties and will retain good physical characteristics within a range of extreme temperatures. The performance of the BIRD-FLIGHT Diverter is not deteriorated in severe weather conditions. Industrial fumes and salt water cannot seriously degrade the properties of rigid PVC.

Product Characteristics

BIRD-FLIGHT Diverters are designed to offer the following advantages:

- Increased conductor/strand profile to provide enhanced visibility where bird flight paths are present
- Economical and easily applied
- Lightweight
- Long service life without deterioration of material properties
- Minimal wind resistance
- Manufactured from gray or yellow high impact PVC with UV protection (Contact PLP for other color/voltage options).

Application Notes

Ensure the correct size BIRD-FLIGHT Diverter is used. For a detailed installation description, refer to the application procedure SP2805.

Spacing

For optimum results the recommended spacing distances are 15 foot intervals depending upon local conditions. Since wind resistance is limited, more BIRD-FLIGHT Diverters can be used to ensure adequate visibility without creating stresses on the line.

Product Data

Catalog Number (Yellow)	Catalog Number (Gray)	Conductor Ranger (in) Min	Conductor Ranger (in) Max	Overall Length	Internal Diameter of Diverter Coil	Diameter of PVC Rod	Approx. Weight (lbs)	Color Code
BFD-MS-3331	BFD-MS-3346	.175	.249	8.00	1.50	.375	.090	Black
BFD-MS-3155	BFD-MS-2921	.250	.349	8.50	1.75	.375	.100	Blue
BFD-MS-3164	BFD-MS-3355	.350	.449	9.50	2.00	.375	.110	Brown
BFD-MS-11135	BFD-MS-11060	.350	.449	12.37	4.50	.500	.240	Brown
BFD-MS-3341	BFD-MS-3366	.450	.599	11.00	2.25	.375	.140	Green
BFD-MS-3344	BFD-MS-3371	.600	.770	13.00	2.75	.500	.300	Purple
BFD-MS-3345	BFD-MS-3376	.771	.858	15.00	3.25	.500	.330	Red
BFD-MS-3405	BFD-MS-11699	.859	.942	16.50	3.75	.500	.360	Orange
BFD-MS-11111	BFD-MS-12290	.971	1.121	15.50	4.25	.438	.420	Pink
BFD-MS-11430		1.122	1.306	16.25	4.38	.438	.450	Gray
BFD-MS-11110		1.307	1.530	17.00	4.70	.438	.450	Black
BFD-MS-12351		1.531	1.786	20.00	4.88	.438	.520	White
BFD-MS-11566		1.787	2.100	23.00	5.25	.438	.600	Purple
BFD-MS-12603		2.101	2.500	26.00	5.25	.438	.650	Orange

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World Headquarters
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Cleveland, Ohio 44101

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Raptor, Guard, coverup, cover up, sage grouse, eagle, whooping crane, endangered, RUS, USFW, mitigation, wildlife, redtail, squirrel, woodpecker, power line, pole, cross-arm, crossarm, cross arm, raccoon, nest, nest diverter, spike, perch, perch excluder, excluder, insula[illegible] insulator, golden eagle, bald eagle, windfarm, flight diverter, bird flight diverter, line marker, glow marker, kaddas, cantega, tyco, salisbury hose, salisbury

Power LineSentry

Home Products Sales Contact

Avian Flight Diverters

The Patented shape is designed to provide excellent visibility at any angle of approach...day or night. This profile is based on research that found contrast in low light conditions is the most important aspect to alert birds of the oncoming power lines, guy and static wires.

Specifications

- UV resistant RPVC
- Florescent reflective yellow prism tap
- 24 hour glow tape for improved dawn, dusk, and night visibility
- Withstands > 100 mph winds for sustained periods
- Patented "V" shape design for maximum constrast at all angles
- Hotstick or Extended Stick capable
- Recommend Spacing: 30 feet apart in normal areas and 15 feet apart in high priority zones
- Size: .08" thick by 6.0" by 4" tall
- Weight: 4.7 oz.
- Patent No. 8,438,998

Flight Diverter and Line Marker Sizes

Product Number	Description	Wire Size	Box Qty
BFD-050	Line Marker for .20" - .56" total diameter wire	#6, #4, #2, #1, 1/0, 2/0, static, OPGW	50
BFD-075	Line Marker for .57" - 1.10" total diameter wire	3/0, 4/0, 266 mcm - 666 mcm	50
BFD-XX	Larger sizes available - Call for quotation		
BFD-AT	Hotstick and Extending stick attachment tool	All Sizes	1

Raptor Guard Part Number Chart

Example: BFD-050

BFD - Bird Flight Diverter

050- fits #6 through 2/0, static and OPGW
050G - fits up to .58" guy wire
075 - fits 3/0, 4/0, 266 - 666 mcm
XX - Call for larger custom sizes
AT - Hotstick attachment tool

Fresh Links

- Avian Power Line Interaction Committee - APLIC
- Rural Utility Services - RUS
- Raptor Research Foundation - RRF

Contact

Power Lne Sentry, LLC
432 WCR 66, Fort Collins, CO 80524
Phone: 970-599-1050
Email: info@powerlinesentry.com

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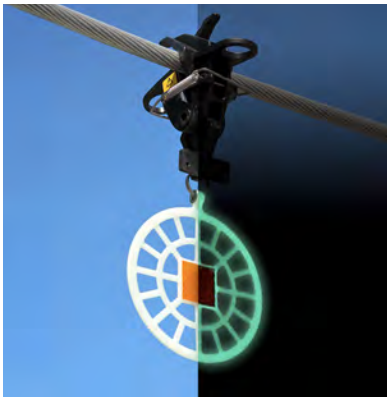
BirdMark BM-AG Bird Diverter



Helping Birds See Hazards Day or Night

Birds large and small—including swans, eagles, hawks, ducks, geese, and many others—often cannot see power lines near the horizon, and they lack the maneuverability to avoid them when they get close enough to see them. Over one million birds are killed annually in North America! BirdMark BM-AG (After Glow) diverters are designed to prevent collisions between birds and hard-to-see power lines day or night.

Easy to See

The BirdMark BM-AG offers a low cost, permanent solution for helping endangered species avoid power lines in traditional flight paths. BirdMarks stand out like a beacon against background features, letting birds see where the power lines are. When swaying in the wind, BirdMarks also make a noise that birds can hear. Highly reflective orange and yellow tape is positioned in the center of each BirdMark to further assist in warning birds.

Night Glow Capability

Other types of bird diverters are usually designed to help birds avoid obstructions during daylight, but recent studies indicate that most bird collisions happen during low light situations such as fog, rain, and the hours before and after dusk. The BirdMark BM-AG glows up to 10 hours after the sun has set, providing extended protection for at risk birds.

Easy to Install

The BirdMark BM-AG can be installed and removed from the ground without interrupting power. Our patented SnapFast mounting clamp securely prevents line slippage on single or bundled cables 0.375"–2.75" in diameter. (Clamp for smaller lines available by special order.) Once in position, the grip is such that the BirdMark BM-AG stays in position, even in a Force 8 gale.

Features

- Highly visible day and night
- Sways and reflects in the wind to alert birds of obstructions
- Glows up to 10 hours after dusk and in other low light conditions
- Fully tested and developed by biologists
- Rugged spring-loaded clamp prevents line slippage
- Quick installation by hot stick
- Easily moved for seasonal flight path variations
- Also hazes birds from buildings and structures

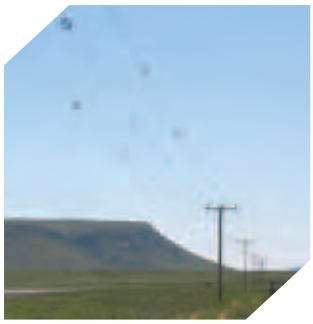
Dimensions

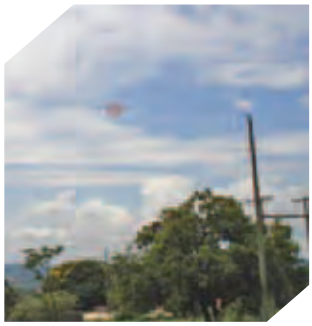
- 11½" total length
- 5⅜" diameter white disk
- Use 15ft spacing for best results

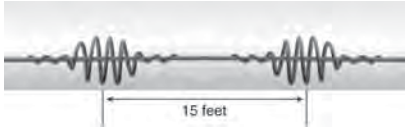
PREFORMED LINE PRODUCTS
The connection you can count on.

SWAN-FLIGHT™ DIVERTER

COMMUNICATIONS ENERGY SPECIAL INDUSTRIES SOLAR







PLP® Distribution Products

SWAN-FLIGHT™ DIVERTER

Description

The Preformed Line Products SWAN-FLIGHT Diverter is designed for use on overhead conductors to create greater visibility for avian flight paths on overhead lines and tower down guys. Offering little wind resistance, it reduces hazards to both lines and birds. For low and medium voltage construction, apply the SWAN-FLIGHT Diverter to phase conductors (bare or jacketed). For high voltages, it is typically used on shield wire.

The SWAN-FLIGHT Diverter is lightweight, offers little wind resistance and is easily and quickly applied by hand or hot stick. The positive grip on the conductor is designed to ensure that the SWAN-FLIGHT Diverter remains in the applied location and does not move along the span under Aeolian vibration or other conditions.

Materials

Manufactured from rigid high impact polyvinyl chloride (PVC), the SWAN-FLIGHT Diverter possesses excellent chemical resistance, strength properties and will retain good physical characteristics within a range of extreme temperatures. Industrial fumes and salt water cannot seriously degrade the properties of rigid PVC.

Spacing

For optimal results, spacing distances are generally recommended at 15' intervals, depending upon local conditions. Since wind resistance is very limited, sufficient SWAN-FLIGHT Diverters can be used to ensure adequate visibility without creating stresses on the line. When marking adjacent spans, overall visibility is improved by staggering the placement between the spans.

Features

SWAN-FLIGHT Diverters are designed to offer the following advantages:

- Increased conductor profile to provide increased visibility where large, slow moving bird flight paths are present
- Economical and easily applied
- Lightweight
- Long service life without deterioration of material properties
- Minimal wind resistance
- Manufactured from gray or yellow high impact PVC with UV protection

Visibility

The diverter section increases the visible profile of the cable or conductor to ensure safety, but avoids an undesirable bulky outline.

Application

Ensure the correct size SWAN-FLIGHT Diverter is used. For detailed installation description, refer to the application procedure. Hot stick application is fast and simple with standard equipment.

SWAN-FLIGHT Diverter - Product Data

PLP Catalog Number	Conductor Range (Inches)		Overall Length (Inches)	Diameter of Diverter Coil (Inches)	Diameter of PVC Rod (Inches)	Approx. Weight (lbs)	Color Code
	Min	Max					
SFD-0445	0.175	0.249	20	7.0	0.375	0.40	Black
SFD-0635	0.250	0.349	23	7.0	0.375	0.46	Blue
SFD-0890	0.350	0.449	25	7.5	0.375	0.50	Brown
SFD-1140	0.450	0.599	35	8.0	0.375	0.70	Green
SFD-1520	0.600	0.770	38	8.0	0.500	1.40	Purple
SFD-1960	0.771	0.858	38	8.0	0.500	1.40	Red
SFD-2220	0.859	0.942	40	8.0	0.500	1.50	Orange
SFD-2460	0.943	1.121	40	8.0	0.500	1.50	Pink
SFD-2700	1.122	1.306	40	8.0	0.500	2.00	Gray*
SFD-3035	1.307	1.530	46	8.0	0.500	2.00	Black

*Gray is the standard color. For yellow add "-Y" after the catalog number.
For voltage over 230kv, add "-B" for black semi-conductive material.

PREFORMED LINE PRODUCTS

World Headquarters
660 Beta Drive
Cleveland, Ohio 44143

Mailing Address:
P.O. Box 91129
Cleveland, Ohio 44101

Telephone: 440.461.5200
Fax: 440.442.8816
Web Site: www.preformed.com
E-mail: inquiries@preformed.com

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