# United States Department of the Interior

FISH AND WILDLIFE SERVICE

Ecological Services
5353 Yellowstone Road, Suite 308A
Cheyenne, Wyoming 82009

In Reply Refer To:
06E13000/WY14F0075b

JAN 15 2016

Memorandum

To: State Director, Bureau of Land Management, Wyoming State Office, Cheyenne, Wyoming

From: Field Supervisor, U.S. Fish and Wildlife Service, Wyoming Field Office, Cheyenne, Wyoming

Subject: Biological Opinion and Informal Consultation for the Energy Gateway South Transmission Line Right-of-Way Project—Carbon and Sweetwater Counties, Wyoming; Moffat and Rio Blanco Counties, Colorado; and Uintah, Duchesne, Wasatch, Utah, Sanpete, and Juab Counties, Utah

Enclosed are the U.S. Fish and Wildlife Service's (Service) concurrence and final Biological Opinion (BO) for the Bureau of Land Management's (Bureau) determinations of effects on species pursuant to section 7(a)(2) of the Endangered Species Act of 1973, as amended (ESA; 50 CFR §402.13 and §402.14), for the proposed Energy Gateway South Transmission Line Right-of-Way Project (Project). The Bureau is the lead federal agency for this Project, and the following cooperating federal agencies are included under the Bureau's section 7 consultation for the Project: the Service, the U.S. Department of Agriculture Forest Service (USFS), the U.S. Army Corps of Engineers (USACE), and the Bureau of Indian Affairs (BIA).

This consultation addresses only the route selected as the preferred alternative for the Project by the Bureau. The Project includes the construction, operations, and maintenance of approximately 429 miles of new 500-kilovolt (kV) single-circuit alternating current (AC) transmission line from the Aeolus Substation near Medicine Bow in Carbon County, Wyoming to the Clover Substation near Mona in Juab County, Utah; the construction of two series compensation stations and communication regeneration stations approximately every 55 miles; rebuilding two 345-kV AC transmission lines between the Clover and Mona Substations totaling approximately 9 miles; the rerouting the Mona to Huntington 345-kV AC transmission line through the Clover Substation; and the relocation of a 2-mile section of the Bears Ears to Bonanza Flats 345-kV AC transmission line. A full description of the Project can be found in the Bureau's Biological Assessment (BA) and is hereby incorporated by reference.

This correspondence has two parts: (1) informal consultation including concurrence with "not likely to adversely affect" determinations; and (2) BO for adverse effects to listed species and designated critical habitat in the Colorado and Platte River Basins associated with depletions and other Project activities, and for adverse effects to the Uinta basin hookless cactus. The informal and formal consultations contained in this memo were prepared in accordance with section 7 of the ESA. Concurrence with the "not likely to adversely affect" determination and the BO are based on the following: (1) the Service's review of the proposed action as described in the Bureau's July 20, 2015, BA; (2) the information contained in the Bureau's August 28, 2015, electronic correspondence; (3) the information contained in the Bureau's September 11, 2015, memo, as amended; and (4) the anticipated effects of the action on listed species. Through electronic correspondence, the Bureau responded on August 28, 2015, to comments provided by the Service's Utah and Wyoming Field Offices on August 13 and 14. The Bureau's September 11, 2015, memo consisted of a "Response to U.S. Fish and Wildlife Service questions and revisions to the final Biological Assessment for the Energy Gateway South Transmission Project" (hereafter, BA revision), which was subsequently updated by the Bureau in electronic correspondence submitted January 11, 2016.

In a memo dated July 15, 2015 (with attached BA dated July 20), received by the Service on July 20, the Bureau requests formal consultation on the determination under section 7 of the ESA that the proposed Project is likely to adversely affect the endangered bonytail (*Gila elegans*) and its designated critical habitat, Colorado pikeminnow (*Ptychocheilus lucius*) and its designated critical habitat, humpback chub (*G. cypha*) and its designated critical habitat, razorback sucker (*Xyrauchen texanus*) and its designated critical habitat, whooping crane (*Grus americana*) and its designated critical habitat, the least tern (*Sterna [Sternula] antillarum*), pallid sturgeon (*Scaphirhynchus albus*), the threatened Western prairie fringed orchid (*Platanthera praeclara*), the piping plover (*Charadrius melodius*), and the Uinta Basin hookless cactus (*Sclerocactus wetlandicus*). The complete administrative record of all documents and correspondence concerning this consultation is on file in the Wyoming Ecological Services Field Office.

The Bureau determined that the Project may affect but is not likely to adversely affect the endangered June sucker (*Chasmistes liorus*), gray wolf (*Canis lupus*) in Colorado and Utah, clay phacelia (*Phacelia argillacea*), and shrubby reed-mustard (*Schoenocrambe suffrutescens*), and the threatened Mexican spotted owl (*Strix occidentalis lucida*), western distinct population segment of the yellow-billed cuckoo (*Coccyzus americanus*), Canada lynx (*Lynx canadensis*), clay reed-mustard (*Schoenocrambe argillacea*), deseret milkvetch (*Astragalus desereticus*), and Ute ladies'-tresses (*Spiranthes diluvialis*). The Bureau also determined that the Project is not likely to jeopardize the experimental/non-essential populations of gray wolf in Wyoming or the experimental/non-essential populations of the black-footed ferret (*Mustela nigripes*). Based on information included in the final BA, we concur that this Project may affect but is not likely to adversely affect these listed species and is not likely to jeopardize the experimental/non-essential populations of gray wolves or black-footed ferrets.

The Bureau determined that the Project will have no effect on endangered populations of the black-footed ferret and that seven species under the Service's jurisdiction do not occur in the action area of the proposed Project: the endangered Barneby ridgecress (*Lepidium barnebyanumi*) and blowout penstemon (*Penstemon haydenii*), and the threatened Utah prairie

dog (*Cynomys parvidens*), Dudley Bluffs bladderpod (*Lesquerella congesta*), Dudley Bluffs twinpod (*Physaria obcordata*), Heliotrope milkvetch (*Astragalus montii*), and Pariette cactus (*Sclerocactus brevispinus*). The ESA does not require the Service to concur with "no effect" determinations; however, we appreciate receiving the information used to support your conclusion. Additionally, the Bureau included potential effects of the Project on greater sage-grouse due to the species' status as a candidate at the time of submittal of the final BA and the BA revision, though did not request to conference on this species. As of October 2, 2015, the greater sage-grouse is no longer a candidate species and is determined to not warrant protection under the ESA at this time. The Service acknowledges the Bureau has made these determinations.

**CONSULTATION HISTORY**

The Service and the Bureau (including the Bureau's third-party contractor, Environmental Planning Group, LLC (EPG)) had numerous communications and coordination in the development of the final BA. An overview of consultation history associated with the proposed Project is provided below; a full consultation history is available in the Wyoming Ecological Services Field Office.

| | |
|---|---|
| July 23, 27, and 30, 2009 | Bureau submitted correspondence to the Service initiating informal consultation on the Project |
| Early 2010 | Bureau established the Biological Resources Task Group for monthly coordination meetings |
| Early 2011 | Bureau, Service, USFS, BIA, and USACE entered into Consultation Agreement. Utah Reclamation Mitigation and Conservation Commission and National Park Service entered agreement in 2013 |
| March 3, 2014 | Bureau, Service, and cooperating agencies participated in a BA kick-off meeting |
| December 2014 | Bureau and Service agreed upon species to be addressed in the BA |
| January 5, 2015 | Bureau submitted draft BA to Service and cooperating agencies |
| February 6, 2015 | Service submitted comments on draft BA |
| July 20, 2015 | Bureau submitted final BA to Service initiating formal consultation on the Project. Bureau's memo was dated July 15, 2015, and BA was dated July 20, 2015 |
| July and August 2015 | Service submitted questions and requests for clarification on the final BA to the Bureau |
| August 5 and 19, 2015 | Bureau and Service participated in conference calls to discuss the final BA and revisions |
| September 11, 2015 | Bureau submitted a response to the Service's questions and suggested revisions to the final BA for the Project; the BA revision |
| September 21, 2015 | Service accepted final BA and revisions and commenced writing of the BO and concurrence memo |
| November 13, 2015 | Service submitted draft BO for Bureau and cooperating agency review |
| December 7, 2015 | Bureau submitted comments and revisions on draft BO to Service |

| | |
|---|---|
| January 11, 2016 | Bureau submitted revised Attachment A, Conservation Measures |
| January 15, 2016 | Service submitted final BO and concluded formal consultation |

**Informal Consultation for the**
**Energy Gateway South Transmission Line Project**

**June sucker**
The Bureau determined that the Project may affect but is not likely to adversely affect the June sucker in part because the transmission line does not cross or is not located adjacent to any waters currently occupied by the species. Where Project activity may affect water quality in the Jordan River basin, Rocky Mountain Power will implement conservation measures identified in Attachment A (dated January 11, 2016) of the Bureau's BA revision and attached to this consultation. The Bureau also determined that the depletion of approximately 31 acre-feet of water from the Jordan River basin over a multi-year period will represent a negligible, immeasurable effect to the species. Consequently, the Service concurs that the Project as proposed may affect, but is not likely to adversely affect the June sucker.

**Endangered population of Gray wolf**
The Bureau determined that the Project may affect but is not likely to adversely affect the endangered population of gray wolf in Colorado and Utah, because it is unlikely that wolves may disperse through the Project area. No packs are known to reside near the Project area, and individuals dispersing from the existing population in the Greater Yellowstone area are likely to follow pathways that minimize human interaction. The agency-preferred route does cross intermountain valleys that may be used by dispersing wolves. However, general Project-wide conservation measures will minimize ground disturbance and vegetation clearing, which will minimize avoidance of the right-of-way by any wolves that might disperse through the Project area. Therefore, the Service concurs that the Project may affect but is not likely to adversely affect the endangered population of gray wolf in Colorado and Utah.

**Nonessential, Experimental Population of Gray wolf**
The Bureau determined that the Project will not jeopardize the nonessential, experimental populations of the gray wolf in Wyoming. The Project will be located outside of the existing population in the Greater Yellowstone area, and therefore few, if any, dispersing wolves will utilize the Project area. Therefore, the Service concurs that the Project may affect, but is not likely to jeopardize the continued existence of the nonessential, experimental population of gray wolves.

**Clay phacelia**
The Bureau determined that the Project may affect but is not likely to adversely affect the clay phacelia, because Rocky Mountain Power has committed to avoid all occupied sites inside and outside the right-of-way by at least 650 feet and minimize Project activity within suitable habitat. Additional commitments to avoid and minimize direct and indirect adverse effects to the species may be found in Attachment A (dated January 11, 2016) of the Bureau's BA revision and attached to this consultation. Consequently, the Service concurs that the Project as proposed may affect but is not likely to adversely affect the clay phacelia.

**Shrubby reed-mustard**
Potential and occupied mapped habitat occurs in proximity to the Project. The Bureau determined that the Project may affect but is not likely to adversely affect the shrubby reed-mustard because, even though potential habitat occurs within 0.4 mile and the boundary of the Badland Cliffs population occurs within 0.7 mile of the Project, the transmission line does not cross known occupied or suitable habitat for the species. Regardless, Rocky Mountain Power has committed to avoid all Project related surface disturbance within at least 300 feet of the species and occupied habitat. Project activity will be minimized within suitable habitat. Additional commitments to avoid and minimize direct and indirect adverse effects to the species may be found in Attachment A (dated January 11, 2016) of the Bureau's BA revision and attached to this consultation. Consequently, the Service concurs that the Project as proposed may affect but is not likely to adversely affect the shrubby reed-mustard.

**Mexican spotted owl**
The Bureau determined that the Project may affect but is not likely to adversely affect the Mexican spotted owl because the species is not anticipated to occur near the Project area in Colorado or Wyoming and because no individuals have been detected in the Project area or adjacent surveyed habitat during surveys conducted by the Bureau in Utah. Where the transmission line crosses within 0.5 mile of suitable Mexican spotted owl habitat in Utah, Rocky Mountain Power will conduct species surveys for 2 years prior to construction activities. Permanent structures will not be sited within 0.5 mile of suitable habitat unless species surveys demonstrate the habitat is unoccupied. A complete list of conservation measures for Mexican spotted owl may be found in Attachment A (dated January 11, 2016) of the Bureau's BA revision and attached to this consultation. The Service concurs that the Project as proposed may affect but is not likely to adversely affect the Mexican spotted owl.

**Yellow-billed cuckoo, Western distinct population segment**
The Bureau determined that the Project may affect but is not likely to adversely affect the yellow-billed cuckoo (western distinct population segment) because the implementation of conservation measures will minimize potential effects to an insignificant or discountable level. These conservation measures include, but are not limited to, conducting habitat and breeding surveys within 0.5-mile of construction activities, avoiding siting structures within field-verified suitable habitat, minimizing vegetation clearing and pruning within field-verified suitable nesting habitat, marking the line to increase visibility and reduce collisions within field-verified suitable habitat, and avoidance of aerial and broadcast herbicide treatments within 0.5-mile of field-verified suitable nesting habitat. See Attachment A (dated January 11, 2016) of the Bureau's BA revision and the conservation measures attached to this consultation for a complete list of conservation measures that will be implemented for the Yellow-billed cuckoo. The Project will not cross proposed critical habitat for this species. Based on the implementation of these conservation measures, the Service concurs that the Project may affect but is not likely to adversely affect the western distinct population segment of the yellow-billed cuckoo.

**Canada Lynx**
The Bureau determined that the Project may affect but is not likely to adversely affect the Canada lynx because the transmission line does not cross areas known or likely to be occupied by resident Canada lynx. Dispersing Canada lynx could use intermountain valleys crossed by

the transmission line; however, it is anticipated that lynx from source populations in the Greater Yellowstone area or Colorado would follow pathways outside the Project area including the Wind River Range, Ferris Mountains, the Snowy Range in Wyoming, or the Wasatch and Uinta Mountains in Utah. Consequently, no conservation measures were proposed. The Service concurs that the Project as proposed may affect but is not likely to adversely affect the Canada lynx.

**Clay reed-mustard**
The Bureau determined that the Project may affect but is not likely to adversely affect the clay reed-mustard because Rocky Mountain Power has committed to avoid all Project related surface disturbance within at least 300 feet of the species and occupied sites, and minimize Project activity within suitable habitat. Additional commitments to avoid and minimize direct and indirect adverse effects to the species may be found in Attachment A (dated January 11, 2016) of the Bureau's BA revision and attached to this consultation. Consequently, the Service concurs that the Project as proposed may affect but is not likely to adversely affect the clay reed-mustard.

**Deseret milkvetch**
The Bureau determined that the Project may affect but is not likely to adversely affect the Deseret milkvetch because Rocky Mountain Power has committed to avoid activities by a 300-foot buffer from the species' occupied habitat. Additional commitments to avoid and minimize direct and indirect adverse effects to the species may be found in Attachment A (dated January 11, 2016) of the Bureau's BA revision and attached to this consultation. Consequently, the Service concurs that the Project as proposed may affect but is not likely to adversely affect the Deseret milkvetch.

**Ute Ladies'-tresses**
The Bureau determined that the Project may affect but is not likely to adversely affect the Ute ladies'-tresses orchid because the implementation of conservation measures will minimize potential effects to an insignificant or discountable level. Conservation measures for Ute ladies'-tresses can be found in Attachment A (dated January 11, 2016) of the Bureau's BA revision and attached to this consultation. These include, but are not limited to conducting field habitat assessments and surveys for potential habitat for the species, avoiding geotechnical investigations and construction activities within 300 feet of occupied habitat, and avoiding aerial and broadcast herbicide treatments within 2,500 feet of suitable or occupied habitat for this species. Therefore, the Service concurs that the Project may affect but is not likely to adversely affect the Ute ladies'-tresses.

**Nonessential, Experimental Population of Black-footed ferret**
The Bureau determined that that Project is not likely to jeopardize the nonessential, experimental populations of the black-footed ferret because Project conservation measures will avoid and minimize potential impacts to any populations. These include, but are not limited to, limiting vehicle activities to daylight hours in occupied habitat, and conducting disruptive activities within 0.5-mile of prairie dog colonies in active black-footed ferret reintroduction management areas outside of the reproductive period (March 1 through July 15). In active black-footed ferret reintroduction management areas, the transmission line will also be located as close as possible to existing and other planned high-voltage transmission lines. A full list of conservation

measures specific to the nonessential, experimental populations of the black-footed ferret can be found in Attachment A of (dated January 11, 2016) the Bureau's BA revision and attached to this consultation. Therefore, the Service concurs that the Project may affect but is not likely to jeopardize the experimental, nonessential population of black-footed ferret.

**Greater sage-grouse**

The Bureau analyzed potential effects of the Project on the greater sage-grouse, which was a Candidate species at the time the BA and its amendment were written. On October 2, 2015, the Service announced that the greater sage-grouse (*Centrocercus urophasianus*) does not warrant listing under the ESA (80 FR 59858). Formal conservation commitments made by federal, state, and private landowners to protect the greater sage-grouse and its habitat were an important component of the Service's finding to not list the greater sage-grouse. Therefore, we anticipate that the conservation measures committed to for the Project, both through the ongoing National Environmental Policy Act (NEPA) processes and as identified via the Conservations Objective Team Report/Mitigation Framework Checklist consistency analyses, will help this Project to achieve a net conservation benefit for the greater sage-grouse, and will help to preclude the need to list the species in the future.

The Service appreciates the Bureau's continued interest in the conservation of threatened and endangered species. If you have questions regarding species addressed in this consultation package or the BO, please contact the following Service staff: **Wyoming** – Julie Reeves of our Wyoming Field Office (307) 772-2374, extension 232; **Colorado** – Creed Clayton of our Grand Junction Field Office (970) 628-7187; and **Utah** – Amy Defreese of our Utah Field Office (801) 975-3330, extension 128.

Attachments:

1-Biological Opinion for the Energy Gateway South Transmission Line Project
2-Conservation Measures for the Energy Gateway South Transmission Line Project

cc: BLM, Energy Gateway South Project Manager, Cheyenne, WY (T. Gertsch) (tgertsch@blm.gov)
BLM, Endangered Species Program Lead, Cheyenne, WY (C. Keefe) (ckeefe@blm.gov)
USFS, Energy Gateway South Project Manager, Cedar City, UT (K. Call) (ckcall@fs.fed.us)
BIA, Deputy Superintendent, Fort Duchesne, UT (A. Pingree) (antonio.pingree@bia.gov)
USACE, Senior Regulatory Project Manager, Saint George, UT (P. McQueary) (Patricia.L.McQueary@usace.army.mil)
USFWS, Fish and Wildlife Biologist, Grand Junction, CO (C. Clayton) (creed_clayton@fws.gov)
USFWS, Field Office Supervisor, Salt Lake City, UT (L. Crist) (larry_crist@fws.gov)
USFWS, Fish and Wildlife Biologist, Salt Lake City, UT (A. Defreese) (amy_defreese@fws.gov)
CPW, Energy Liaison, Northwest Region, Grand Junction, CO (M. Warren) (michael.warren@state.co.us)
UDWR, Energy Development/NEPA Coordinator, Salt Lake City, UT (B. James) (billjames@utah.gov)

WGFD, Terrestrial Biologist, Cheyenne, WY (R. Huber) (rick.huber@wyo.gov)
WGFD, Statewide Nongame Bird and Mammal Program Supervisor, Lander, WY (Z. Walker) (zack.walker@wyo.gov)
WGFD, Statewide Habitat Protection Coordinator, Cheyenne, WY (M. Flanderka) (mary.flanderka@wyo.gov)
WGFD, Habitat Protection Secretary, Cheyenne, WY (N. Stange) (nancy.stange@wyo.gov)
WY State Engineer's Office, North Platte River Coordinator, Cheyenne, WY (M. Hoobler) (matt.hoobler@wyo.gov)

# BIOLOGICAL OPINION FOR THE ENERGY GATEWAY SOUTH TRANSMISSION LINE PROJECT

**06E13000-2014-F-0075b**

U.S. FISH AND WILDLIFE SERVICE
WYOMING ECOLOGICAL SERVICES FIELD OFFICE
CHEYENNE, WYOMING

January 15, 2016

# Contents

# Description of the proposed action

This consultation is on the effects of the proposed Bureau of Land Management (Bureau) decision to permit the Energy Gateway South Transmission Line Right-of-Way (ROW) Project (Project). A detailed description of the Project (i.e., proposed action or agency-preferred alternative) and the action area can be found in the Bureau's July 20, 2015, biological assessment (BA). The Project includes the construction, operation, and maintenance of approximately 429 miles of new 500- kV single-circuit alternating current transmission line from the Aeolus Substation near Medicine Bow in Carbon County, Wyoming to the Clover Substation near Mona in Juab County, Utah; construction of two series compensation stations and communication regeneration stations approximately every 55 miles; rebuilding two 345-kVtransmission lines between the Clover and Mona Substations totaling approximately 9 miles; rerouting the Mona to Huntington 345-kV transmission line through the Clover Substation; and relocating a 2-mile section of the Bears Ears to Bonanza Flats 345-kV transmission line. The Project also includes resource surveys, geotechnical investigation, vegetation clearing, and construction of access roads as well as reclamation of temporarily disturbed sites. The design of the transmission line includes guyed single-circuit tangent structures, self-supporting steel-lattice single-circuit tangent and angle structures, and tubular steel H-frame single-circuit structures. Table 1-2 in the BA describes individual types of Project activities, their general locations, their components, their stressors, and the frequency, duration and intensity of those activities, and is incorporated here by reference.

The action area for the Project consists of the geographic area in which changes to the physical, chemical, and biotic environment can be caused directly or indirectly by the Project. For this Project, the action area includes an area encompassing one mile on either side of the agency-preferred alternative's centerline, thus forming a two-mile corridor. The analysis area for individual species varies from this two-mile corridor centered on the agency-preferred alternative to include all potential direct and indirect impacts on a species, based on the species' distribution.

The Project proponents will use water from both the Colorado River and Platte River Basins. Consultation is not required if the water is obtained from sources with existing consultations (e.g., municipal); however, the Project proponents are currently unable to identify all of the future withdrawal locations and the precise amounts of water to be used from each location. If all water used for this Project is from withdrawals that have previously consulted, then there will be no new effect from the water being used for this Project. For the Colorado River Basin, it is possible that some potential sources may already be addressed by existing consultations (e.g. some municipal systems); however, for purposes of this consultation, we assume all water used will be new depletions as the sources are unknown. Therefore, the action includes the potential consumptive use from the Colorado River system of up to 181.7 acre-feet of water during the three-year construction timeframe for the Project, which results in an average annual depletion of 60.6 acre-feet per year. For the Platte River Basin, the proponents intend to source all water used in construction of the Project from previously allocated sources covered under previous section 7 consultation or water that is not hydrologically connected to the Platte River system, and therefore water use in the Platte River Basin does not require section 7 consultation. However, in

the event that this does not occur, the Bureau has requested consultation on depletions from the Platte River Basin. The action includes the consumptive use from the Platte River Basin system of up to 40.7 acre-feet of water during the three-year construction period for the Project, which results in an average annual depletion of approximately 13.6 acre-feet per year. The BOs for water depletions are based on templates that tier to existing programmatic biological opinions for the Colorado River and Platte River.

In addition to water depletions, the Project could also affect the Colorado River fish species and their designated critical habitat by physically impacting critical habitat. The Project will span designated critical habitat and avoid all ground disturbance in all locations except for the construction of a single transmission line structure within the critical habitat for the Colorado pikeminnow along the north bank of the Yampa River, totaling 1.4 acres of temporary disturbance and 0.1 acre of permanent structure foundation. Critical habitat for Colorado pikeminnow is crossed in three locations by the Project; for the razorback sucker in one location; and occurs approximately 22 river miles downstream of Project activity for the bonytail and humpback chub.

# Colorado River Fish Species

## I. Background

The four federally endangered fish species of the upper Colorado River Basin include the endangered bonytail (*Gila elegans*), Colorado pikeminnow (*Ptychocheilus lucius*), humpback chub (*Gila cypha*), and razorback sucker (*Xyrauchen texanus*). A Recovery Implementation Program for Endangered Fish Species in the Upper Colorado River Basin (Recovery Program) was initiated on January 22, 1988. The Recovery Program was intended to be the reasonable and prudent alternative to avoid jeopardy to the endangered fish by depletions from the Upper Colorado River.

In order to further define and clarify the process in the Recovery Program, a section 7 agreement was implemented on October 15, 1993, by the Recovery Program participants. Incorporated into this agreement is a Recovery Implementation Program Recovery Action Plan (Plan), which identifies actions currently believed to be required to recover the endangered fish in the most expeditious manner in the Upper Colorado River Basin.

## II. Colorado River Depletions

A part of the Recovery Program was the requirement that if a Project was going to result in a depletion, a depletion fee would be paid to help support the Recovery Program. On July 5, 1994, the Service issued a biological opinion determining that the fee for depletions of 100 acre-feet or less would no longer be required. This was based on the premise that the Recovery Program has made sufficient progress to be considered the reasonable and prudent alternative avoiding the likelihood of jeopardy to the endangered fishes and avoiding destruction or adverse modification of their critical habitat by depletions of 100 acre-feet or less. Therefore, **the depletion fee for**

**this Project is waived.**

We concur that the proposed Project may affect and is likely to adversely affect the four federally endangered fishes of the Upper Colorado River Basin and their designated critical habitat due to the associated 60.6 acre-feet average annual water depletion over the three-year construction period for the Project. Permits or other documents authorizing specific projects, which result in depletions, should state that the Bureau retains discretionary authority over each project for the purpose of endangered species consultation. If the Recovery Program is unable to implement the Plan in a timely manner, reinitiation of section 7 consultation may be required so that a new reasonable and prudent alternative can be developed by the Service.

## III. Critical Habitat for Colorado River Fish Species

The Project may additionally affect listed fish species and their designated critical habitat within the Colorado River through the contribution of sediment and degradation of water quality caused by ground disturbance from vehicles and heavy equipment during preconstruction, construction, operation, and maintenance activities. The Project will cross designated critical habitat occurring in the Yampa River (Moffat County, Colorado), White River (Uintah County, Utah), and the Green River (Uintah County, Utah). The implementation of conservation measures within and near all critical habitats will minimize potential impacts of the Project. These measures include not withdrawing surface water from the Green, White, and Yampa Rivers and their tributaries to avoid entrainment of fish; limiting vegetation removal within designated critical habitat to protect riparian function; and avoiding aerial and broadcast herbicide treatments within 2,500 feet of designated critical habitat.

The transmission line will completely span the 100-year floodplain where it crosses the White and Green Rivers; no surface disturbance, staging areas, or permanent structures will be placed within endangered fish critical habitat along these rivers. One transmission tower will be placed within Colorado pikeminnow critical habitat in the 100-year floodplain of the Yampa River. Additional conservation measures will apply at this location to minimize Project impacts, including: no permanent access roads will be constructed in the 100-year floodplain, any grading activities will be conducted in a way that will avoid altering seasonal flows, and all temporary disturbance in the floodplain will be promptly stabilized and reclaimed. A complete list of the conservation measures which will be implemented for this Project are contained in Attachment A of the Bureau's BA revision, are attached to this consultation, and are on file in the Wyoming Ecological Service's Office of the U.S. Fish and Wildlife Service (Service). Therefore, due to the implementation of additional conservation measures at this site, which will reduce the number of life stages of fish and types of potentially affected habitats, we do not anticipate that the effects of tower placement and loss of 0.1 acre of floodplain habitat will adversely affect the Yampa River critical habitat unit designated for the Colorado pikeminnow.

# Platte River Species

The federally listed species within the Platte River Basin include the whooping crane (*Grus americana*) and its critical habitat, interior least tern (*Sterna [Sternula] antillarum*), northern Great Plains population of the piping plover (*Charadrius melodus*), pallid sturgeon (*Scaphirhynchus albus*), and the western prairie fringed orchid (*Platanthera praeclara*).

## I. Platte River Depletions

In accordance with the streamlined section 7 consultation process under the Platte River Recovery Implementation Program (PRRIP), the completion of a Platte River Recovery Agreement (Agreement) with the State of Wyoming may be necessary for this Project prior to preparing a biological opinion. The Appendix D of the BA contained a letter from the Wyoming State Engineer's Office dated June 9, 2015, to Tamara Gertsch, Bureau Project Manager for the Project, indicating the Project is an existing depletion and the Project does not require an Agreement to be covered under the PRRIP. Therefore, we are able to proceed with the review of the BA and complete this BO.

We understand that sources for the water to be used out of the North Platte River basin have not been determined. The State Engineer's Office stated in the June 9, 2015 letter, that once the source of water through the temporary water use agreements and/or non-hydrologically connected groundwater wells is identified, mitigation will be determined unnecessary as there will be no new depletions of water within the North Platte River basin associated with the Project.

## II. Background

On June 16, 2006, the Service issued a programmatic biological opinion (PBO) for the PRRIP and water-related activities[1] affecting flow volume and timing in the central and lower reaches of the Platte River in Nebraska. The action area for the PBO included the Platte River basin upstream of the confluence with the Loup River in Nebraska and the mainstem of the Platte River downstream of the Loup River confluence. The federal action addressed by the PBO included the following:

1) Funding and implementation of the PRRIP for 13 years, the anticipated first stage of the PRRIP; and

[1] The term "water-related activities" means activities and aspects of activities that (1) occur in the Platte River basin upstream of the confluence of the Loup River with the Platte River; and (2) may affect Platte River flow quantity or timing, including, but not limited to, water diversion, storage and use activities, and land use activities. Changes in temperature and sediment transport will be considered impacts of a "water related activity" to the extent that such changes are caused by activities affecting flow quantity or timing. Impacts of "water related activities" do not include those components of land use activities or discharges of pollutants that do not affect flow quantity or timing.

2) Continued operation of existing and certain new water-related activities[2] including, but not limited to, Reclamation and Service Projects that are (or may become) dependent on the PRRIP for ESA compliance during the first 13-year stage of the PRRIP for their effects on the target species[3], whooping crane critical habitat, and other federally listed species[4] that rely on central and lower Platte River habitats.

The PBO established a two-tiered consultation process for future federal actions on existing and new water-related activities subject to section 7(a)(2) of the ESA, with issuance of the PBO being Tier 1 and all subsequent site-specific Project analyses constituting Tier 2 consultations covered by the PBO. Under this tiered consultation process, the Service will produce tiered biological opinions when it is determined that future federal actions are "likely to adversely affect" federally listed species and/or designated critical habitat in the PRRIP action area and the Project is covered by the PBO. If necessary, the biological opinions will also consider potential effects to other listed species and critical habitat affected by the federal action that were not within the scope of the Tier 1 PBO (e.g., direct or indirect effects to listed species occurring outside of the PRRIP action area).

Although the water depletive effects of this federal action to central and lower Platte River species have been addressed in the PBO, when "no effect", or "may affect, but is not likely to adversely affect" determinations are made on a site-specific basis for the target species in Nebraska, the Service will review these determinations and provide written concurrence where appropriate. Upon receipt of written concurrence, section 7(a)(2) consultation will be considered completed for those federal actions.

Water-related activities requiring federal approval will be reviewed by the Service to determine if (1) those activities comply with the definition of existing water-related activities and/or (2) proposed new water-related activities are covered by the applicable state or the federal depletions plan. The Service has determined that the Project meets the above criteria and, therefore, this Tier 2 biological opinion regarding the effects of the Project on the target species, whooping crane critical habitat, or western prairie fringed orchid in the central and lower Platte River can tier from the PBO.

## III. Consultation History

[2] "Existing water related activities" include surface water or hydrologically connected groundwater activities implemented on or before July 1, 1997. "New water-related activities" include new surface water or hydrologically connected groundwater activities including both new projects and expansion of existing projects, both those subject to and not subject to section 7(a)(2) of the ESA, which may affect the quantity or timing of water reaching the associated habitats and which are implemented after July 1, 1997.

[3] The "target species" are the endangered whooping crane (*Grus americana*), the endangered interior least tern (*Sternula antillarum*), the endangered pallid sturgeon (*Scaphirynchus albus*),and the threatened northern Great Plains population of the piping plover (*Charadrius melodus*).

[4] Other listed species present in the central and lower Platte River include the western prairie fringed orchid (*Platanthera praeclara*), the American burying beetle (*Nicrophorus americanus*), and the Eskimo curlew (*Numenius borealis*). The bald eagle (*Haliaeetus leucocephalus*) was listed as threatened when the PBO was written.

Table II-1 of the PBO (pages 21-23) contains a list of species and critical habitat in the action area, their status, and the Service's determination of the effects of the federal action analyzed in the PBO.

The Service determined in the Tier 1 PBO that the federal action, including the continued operation of existing and certain new water-related activities, may adversely affect, but would not likely jeopardize the continued existence of the federally endangered interior population of the least tern, whooping crane, and pallid sturgeon, or the federally threatened northern Great Plains population of the piping plover, western prairie fringed orchid, and bald eagle in the central and lower Platte River. Furthermore, the Service determined that the federal action, including the continued operation of existing and certain new water-related activities, was not likely to destroy or adversely modify designated critical habitat for the whooping crane. The bald eagle was subsequently removed from the federal endangered species list on August 8, 2007. Bald eagles continue to be protected by the Bald and Golden Eagle Protection Act and the Migratory Bird Treaty Act. For more information on bald eagles, see the Service's webpage at: http://www.fws.gov/midwest/eagle/recovery/biologue.html.

The effects of the continued operation of existing and certain new water-related activities on the remaining species and critical habitats listed in Table II-1 of the PBO were beyond the scope of the PBO and were not considered.

The Service has reviewed the information contained in the BA submitted by the Bureau on July 20, 2015, as amended, including the letter from the State Engineer's Office in Appendix D. We concur with the determinations of "likely to adversely affect" for the endangered whooping crane and its designated critical habitat, interior least tern, and pallid sturgeon, and the threatened northern Great Plains population of the piping plover and threatened western prairie fringed orchid in the central and lower Platte River in Nebraska.

## IV. Scope of the Tier 2 Biological Opinion

The Project is a component of "the continued operation of existing and certain new water-related activities" needing a federal action evaluated in the Tier 1 PBO. Flow-related effects of the federal action are consistent with the scope and the determination of effects in the PBO. Because the applicants have elected to participate in the PRRIP, ESA compliance for flow-related effects to federally listed endangered and threatened species and designated critical habitat from the Project is provided to the extent described in the Tier 1 PBO.

This BO applies to the Project's effects to listed endangered and threatened species and designated critical habitat as described in the PBO for the first thirteen years of the PRRIP (i.e., the anticipated duration of the first PRRIP increment).

## V. Description of the Federal Action

A detailed description of the Project can be found in the BA. The applicant has stated that they will require the consumptive use from the Platte River Basin system of up to 40.7 acre-feet of

water during the three-year construction period for the Project, which results in approximately 13.6 acre-feet per year. The source of the water to be used for the Project has yet to be determined.

## VI. Status of the Species

Species descriptions, life histories, population dynamics, status and distributions, are fully described in the PBO on pages 76-156 for the whooping crane, interior least tern, piping plover, pallid sturgeon, and western prairie fringed orchid, and are hereby incorporated by reference. On August 8, 2007, the bald eagle was removed from the federal endangered species list. Climate change is not explicitly identified in the Tier 1 PBO as a potential threat, except for whooping crane.

The terms "climate" and "climate change" are defined by the Intergovernmental Panel on Climate Change (IPCC). "Climate" refers to the mean and variability of different types of weather conditions over time, with 30 years being a typical period for such measurements, although shorter or longer periods also may be used (IPCC 2007, p. 78). The term "climate change" thus refers to a change in the mean or variability of one or more measures of climate (e.g., temperature or precipitation) that persists for an extended period, typically decades or longer, whether the change is due to natural variability, human activity, or both (IPCC 2007, p. 78). Various types of changes in climate can have direct or indirect effects on species. These effects may be positive, neutral, or negative and they may change over time, depending on the species and other relevant considerations, such as the effects of interactions of climate with other variables (e.g., habitat fragmentation) (IPCC 2007, pp. 8-14, 18-19).

Changes in temperature and/or precipitation patterns will influence the status of the Platte River ecosystem. These changes may contribute to threats that have already been identified and discussed for the interior least tern, piping plover, pallid sturgeon, and western prairie fringed orchid in the Tier I PBO.

## VII. Environmental Baseline

The Environmental Baseline sections for the Platte River and for the whooping crane, interior least tern, piping plover, pallid sturgeon, and western prairie fringed orchid, as well as whooping crane critical habitat are described on pages 157 to 219 of the Tier 1 PBO, and are hereby incorporated by reference. The Tier 1 PBO concluded that although climate change has been identified as a contributor to the baseline, human activities are the biggest influence on the baseline. For the duration of this consultation, 13 years, human activities are expected to continue to be the major influence on the functionality of the action area for listed species and critical habitat. Since issuance of the Tier 1 PBO, there have been no substantial changes in the status of the target species or designated critical habitat other than the bald eagle delisting previously mentioned.

## VIII. Effects of the Action

The Tier 1 PBO did not address climate change in the Effects of the Action section, as human activities (upstream storage, diversion, and distribution of the river's flow) are the most important drivers of change that adversely affect species habitat in the action area. Since issuance of the Tier 1 PBO, our analyses under the ESA include consideration of ongoing and projected changes in climate. In our analyses, we used our expert judgment to weigh relevant information, including uncertainty, in our consideration of various aspects of climate change. Actions that are undertaken to improve the river ecology and habitats for listed species not only address human activities, but also contribute to listed species and whooping crane critical habitat resiliency to climate change.

Based on analysis of the information provided in the BA for the Project, the Service and the Wyoming State Engineer's Office concluded that the proposed federal action will result in an existing depletion to the Platte River system above the Loup River confluence. These depletions are associated with the Project. As an existing water-related activity, we have determined that the flow-related adverse effects of the Project are consistent with those evaluated in the Tier 1 PBO for the whooping crane, interior least tern, piping plover, pallid sturgeon, and western prairie fringed orchid.

## IX. Cumulative Effects

Cumulative effects include the effects of future State, local, or private (non-federal) actions that are reasonably certain to occur in the action area considered in this BO. A non-federal action is "reasonably certain" to occur if the action requires the approval of a State or local resource or land-control agency, such agencies have approved the action, and the Project is ready to proceed. Other indicators which may also support such a "reasonably certain to occur" determination include whether: (a) the Project sponsors provide assurance that the action will proceed; (b) contracting has been initiated; (c) State or local planning agencies indicate that grant of authority for the action is imminent; or (d) where historic data have demonstrated an established trend, that trend may be forecast into the future as reasonably certain to occur. These indicators must show more than the possibility that the non-federal Project will occur; they must demonstrate with reasonable certainty that it will occur. Future federal actions that are unrelated to the proposed action are not considered in this section because they require separate consultation pursuant to section 7 of the ESA and would be consulted on at a later time.

Cumulative effects are described on pages 194 to 300 of the Tier 1 PBO, and are hereby incorporated by reference. There have been no substantial changes in cumulative effects since the issuance of the PBO. Since the Tier 1 PBO was issued, there have been no substantial changes in the status of cumulative effects.

## X. Conclusions

The Service concludes that the Project is consistent with the Tier 1 PBO for effects to listed species and critical habitat addressed in the Tier 1 PBO. After reviewing site-specific information, including: (1) the scope of the federal action, (2) the environmental baseline, (3) the status of the whooping crane, interior least tern, piping plover, pallid sturgeon, and western

prairie fringed orchid in the central and lower Platte River and their potential occurrence within the Project area, (4) the effects of the Project, and (5) any cumulative effects, it is the Service's opinion that the Project, as described, is not likely to jeopardize the continued existence of the federally endangered whooping crane, interior least tern, and pallid sturgeon, or the federally threatened northern Great Plains population of the piping plover, or western prairie fringed orchid. The federal action is also not likely to destroy or adversely modify designated critical habitat for the whooping crane.

## XI. Incidental Take Statement

Section 9 of the ESA and federal regulations pursuant to section 4(d) of the ESA prohibit the take of endangered and threatened species without special exemption. 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, and applies to individual members of a listed species. Harm is further defined by the Service to include significant habitat modification or degradation that results in death or injury to listed wildlife by significantly impairing essential behavioral patterns, including breeding, feeding, or sheltering. Harass is defined by the Service as intentional or negligent actions that create the likelihood of injury to listed wildlife by annoying it to such an extent as to significantly disrupt normal behavior patterns which include, but are not limited to, breeding, feeding or sheltering. Incidental take is defined as take that is incidental to, and not the purpose of, the carrying out of an otherwise lawful activity. Under the terms of section 7(b)(4) and section 7(o)(2), taking that is incidental to and not intended as part of the agency action is not considered to be prohibited taking under the ESA provided that such taking is in compliance with the terms and conditions of this incidental take statement.

Sections 7(b)(4) and 7(o)(2) of the ESA do not apply to the incidental take of federally listed plant species (e.g., Deseret milkvetch, Ute ladies' tresses orchid, and western prairie fringed orchid). However, limited protection of listed plants from take is provided to the extent that ESA prohibits the removal and reduction to possession of federally listed endangered plants or the malicious damage of such plants on non-federal areas in violation of State law or regulation or in the course of any violation of a State criminal trespass law. Such laws vary from state to state.

The Department of the Interior, acting through the Service and Bureau of Reclamation, is implementing all pertinent Reasonable and Prudent Measures and implementing Terms and Conditions stipulated in the Tier 1 PBO Incidental Take Statement (pages 309-326 of the PBO), which will minimize the anticipated incidental take of federally listed species. In instances where the amount or extent of incidental take outlined in the Tier 1 PBO is exceeded or the amount or extent of incidental take for other listed species is exceeded, the specific PRRIP action(s) causing such take shall be subject to reinitiation expeditiously.

## XII. Conservation Recommendations

Section 7(a)(1) of the ESA directs federal agencies to utilize their authorities to further the purposes of the ESA by carrying out conservation programs for the benefit of endangered and threatened species. Conservation recommendations are discretionary agency activities to

minimize or avoid adverse effects of an action on listed species or critical habitat, to help implement recovery plans, or to develop information. Conservation recommendations are provided in the PBO (pages 328-329) and are hereby incorporated by reference.

### XIII. Closing Statement

Any person or entity undertaking a water-related activity that receives federal funding or a federal authorization and which relies on the PRRIP as a component of its ESA compliance in section 7 consultation must agree: (1) to the inclusion in its federal funding or authorization documents of reopening authority, including reopening authority to accommodate reinitiation upon the circumstances described in section IV.E. of the Program document, which addresses Program termination; and (2) to request appropriate amendments from the federal action agency as needed to conform its funding or authorization to any PRRIP adjustments negotiated among the three states and the Department of the Interior, including specifically new requirements, if any, at the end of the first PRRIP increment and any subsequent PRRIP increments. The Service believes that the PRRIP should not provide ESA compliance for any water-related activity for which the funding or authorization document does not conform to any PRRIP adjustments (Program Document, section VI).

Reinitiation of consultation over the Project will not be required at the end of the first 13-years of the PRRIP provided a subsequent Program increment or first increment Program extension is adopted pursuant to appropriate ESA and NEPA compliance procedures, and, for a subsequent increment, the effects of the Project are covered under a Tier 1 PBO for that increment addressing continued operation of previously consulted-on water-related activities. Requests for reinitiation or questions regarding reinitiation should be directed to the Service's Wyoming Field Office at the letterhead address above.

## Uinta Basin Hookless Cactus

### I. Description of the Proposed Project

The Project is described in detail in the Bureau's BA dated July 20, 2015, as amended, and is incorporated here by reference. A summary of the Project description is presented at the beginning of this BO.

### II. Status of the Species

*Regulatory Status and Taxonomy*
*Sclerocactus glaucus* was listed as a threatened species in 1979 (44 FR 58870). However, based on more recent genetic studies (Porter et al. 2000), common garden experiments (Welsh et al. 2003), and morphological characteristics (Heil and Porter 2004), we currently recognize *S. glaucus* as three distinct species: *S. brevispinus* (Pariette cactus), *S. wetlandicus* (Uinta Basin hookless cactus), and *S. glaucus* (Colorado hookless cactus). These three species retain their threatened status (74 FR 47112, September 15, 2009). There is no critical habitat designated for

these species. This consultation focuses on impacts of the Project on Uinta Basin hookless cactus. In April 2010, the Service developed a recovery outline for Uinta Basin hookless cactus (USFWS 2010a).

*Distribution and Life History*

Uinta Basin hookless cactus occurs in Uintah County, Utah along the Green River, White River, and their tributaries. The species also occurs within Duchesne and Carbon Counties. Uinta Basin hookless cactus is generally found on coarse soils derived from cobble and gravel stream terrace deposits, or rocky surfaces on mesa slopes at 1,350 to 1,900 meters elevation (4,400 to 6,200 feet) (USFWS 1990; Heil and Porter 2004). Uinta Basin hookless cactus can be found growing with other common desert shrubland plants including shadscale, black sagebrush, and galleta grass. However, the habitat type for Uinta Basin hookless cactus has expanded with recent reports of individual cacti found in habitat that was previously considered unsuitable (multiple survey reports 2013-2015).

In 2013, consistent with our recovery outline for this species, we developed *Sclerocactus* core conservation areas (CCAs) to guide the protection of important population areas of high cactus density and maintain connectivity across the range of the species (USFWS 2013). *Sclerocactus* core conservation area 1 (CCA 1), core conservation area 2 (CCA 2), and the *Sclerocactus* habitat polygon were delineated based on pollinator travel distance and density of cactus populations (USFWS 2013, Tepedino 2010). The larger *Sclerocactus* habitat polygon encompasses CCA 1 and CCA 2 polygons and defines the area in which the Uinta basin hookless cactus, the Pariette cactus, and their potential habitat are likely to be located. The larger *Sclerocactus* habitat polygon is also separated into two adjoining polygons representing the Pariette cactus habitat polygon and the Uinta Basin hookless cactus polygon. While there is some overlap between the two species, the two habitat polygons identify a rough approximation of the species' boundaries. The CCA 1 polygons include the densest concentrations of cactus locations and the most restrictive management recommendations. The CCA 1 polygons were developed using a 400-meter buffer around plants to allow for pollinator travel. The CCA 2 polygons include less-dense cactus areas and less restrictive management recommendations, while still maintaining a minimum amount of undisturbed habitat to protect the species. The CCA 2 polygons were developed using a 1,000-meter buffer around plants.

The total area of the Uinta Basin hookless cactus habitat polygon is 421,665 acres, including approximately 26,933 acres of CCA 1 and 65,454 acres of CCA 2 habitat (USFWS 2013)[5]. The total known, documented population of Uinta Basin hookless cactus is 68,055; however, this is an underestimate because not all suitable habitat has been surveyed. The habitat and CCA polygons will be adjusted as more known locations are documented. Although Uinta Basin hookless cactus populations can be found outside of these habitat polygons, they tend to occur in greater numbers and at higher densities within the polygons. The potential and core habitat for

[5] The Uinta Basin hookless cactus habitat polygon was revised in 2013 based on available distribution information. Therefore, the polygon acreage in this biological opinion differs from that reported in previous BOs.

the Uinta Basin hookless cactus is spread across four land ownership types summarized below in Table 1.

The Uinta Basin hookless cactus is an outcrossing species, meaning they require pollen from the flower of a different plant to produce viable seed (Tepedino et al. 2010). Flowers typically open in mid-day and close late in the afternoon for three to five days (Tepedino et al. 2010). A broad assemblage of native, ground-nesting bees, mostly from the family Halictidae (Tepedino et al. 2010), pollinate the Uinta Basin hookless cactus. These bees can travel from 0.4 to 1 kilometer (km) between plants (Tepedino pers. Comm. 2010). Other insects, including ants and beetles, may also pollinate Uinta Basin hookless cactus (USFWS 1990), though it is predominately pollinated by ground-nesting bees (Tepedino et al. 2010). Limiting the amount of fragmentation and disturbance within the habitat of Uinta Basin hookless cactus is important to maintain adequate pollinator habitats and healthy cactus populations.

**Table 1.** Distribution of Uinta Basin hookless cactus habitat by landowner type.

| Uinta Basin hookless cactus | | | | | |
|---|---|---|---|---|---|
| | **State (Acres)** | **Private** | **Tribal** | **BLM** | **Total (acres)** |
| **Potential Habitat Polygon** | 45,233 | 12,655 | 109,534 | 25,4250 | 421,673 |
| | 11% | 3% | 26% | 60% | |
| **CCA 2** | 9,514 | 1,678 | 23,194 | 58,002 | 92,389 |
| | 10% | 2% | 25% | 63% | |
| **CCA 1** | 2,269 | 245 | 7,024 | 17,384 | 26,924 |
| | 8% | 1% | 26% | 65% | |

The life history and population dynamics of this species is poorly known, but they are thought to be long-lived perennials, usually flowering after three or four years. Preliminary demographic and population trend data for Uinta Basin hookless cactus show an observed decline in population size and growth rate from 2012 to 2014 (SWCA 2015). Population viability analysis also shows a negative population growth vital rate of 0.89 for Uinta Basin hookless cactus. Modeled data out to 10-years similarly show a decline both in population growth rate and population size (SWCA 2015). We recognize that these data cover a short period of time and that long-term data are required in order to fully understand the population trends. Information from this study will be updated as it becomes available. Additional information on the life history, population dynamics, status, and distribution are described in detail within the "Recovery Plan for the Uinta Basin hookless Cactus" (USFWS 1990d) and the more recent recovery outlines (USFWS 2010a).

*Threats to the Species*

Ongoing and proposed oil and gas development are the primary threats to the Uinta Basin hookless cactus from the combined impacts of road and well pad development, fugitive dust, erosion, isolation of populations due to habitat fragmentation, impacts to pollinators and seed dispersers, increased access by off-road vehicles and illegal collectors due to an expanded road

network, and pesticide and herbicide use (BLM 2008). The species is also sought by cacti and succulent collectors around the world (USFWS 2010 a).

Habitat loss associated with energy development is a major threat across the known range. There are 6,797 existing oil and gas well locations within the Uinta Basin hookless cactus habitat polygon. We used GIS analysis to calculate the amount of disturbance within the entire Uinta Basin hookless cactus habitat polygon, which includes CCA 1 and CCA2 areas, by estimating that there are 5 acres of disturbance associated with each well. For every additional well on a shared well pad, we estimate 0.25 acre of additional disturbance. Thus, we calculated that approximately 19,959 acres (4.6 percent) of the Uinta Basin hookless cactus habitat polygon are already disturbed by oil and gas development in May 2015. The level of disturbance for all CCA1 and CCA2 areas within the Uinta Basin hookless cactus habitat polygon is 5.3 percent (2,203 acres) and 5.6 percent (7,223 acres), respectively.

Habitat fragmentation is a primary direct threat to Uinta Basin hookless cactus. The primary sources of habitat fragmentation are the increased number of access roads, pipeline and other utility ROW, and long-term surface disturbance from well pads and associated facilities. The anthropogenic fragmentation of plant habitats can decrease species density (Mustajarvi *et al.* 2001) and result in isolated, smaller populations that are more prone to extinction. Decreased species density has the potential to adversely impact pollination and reproductive success of *Sclerocactus* species (Mustajarvi *et al.* 2001).

Surface disturbance due to energy development, roads vehicular traffic, off-road vehicle use, and livestock disturbance can lead to increased fugitive dust, particulates, erosion and storm water runoff that can impact the Uinta Basin hookless cactus. Construction activities, access roads, and vehicular traffic within and near occupied habitats increase fugitive dust and particulates. Dust accumulation is higher near roads, with fugitive dust depositing up to 984 feet from the source (Everett 1980). Dust accumulation may adversely impact photosynthesis, respiration, transpiration, water use efficiency, leaf conductance, growth rate, gas exchange, and growth (Eller 1977; Spatt and Miller 1981; Thompson et al. 1984; Farmer 1993; Sharifi et al. 1997; Trombulak and Frissell 2000; Hobbs 2001). Erosion and runoff from surface disturbing activities can result in plants being buried or directly removed. Erosion and runoff can be natural events, but are often worsened by human activities such as vegetation removal and alteration of stream courses, making these events more catastrophic. These augmented events can lead to greater damage to native ecosystems through additional scour and burial of soils and plants. Increases in dust, erosion, and storm water runoff interact cumulatively with other negative effects to further fragment and disturb Uinta Basin hookless cactus populations.

A majority of Uinta Basin hookless cactus potential habitat on Bureau land is leased for grazing. At least 28 grazing allotments overlap with Uinta Basin hookless cactus habitat polygon, with both cattle and sheep grazing annually or on deferred rotation, depending on the specific allotment.

Livestock grazing results in cactus damage and mortality when livestock trample, nick, cut, break individual cacti (USFWS 1990; Utah Natural Heritage Program 2006; BLM 2008; 72 FR

53215, September 18, 2007, USFWS 2010b, Brunson 2013, BLM 2015). Livestock can degrade Uinta Basin hookless cactus habitat by compacting the soil and reducing water filtration, removing biological soil crust, and removing native vegetation cover (Castellano 2007; Sharrow 2007). Such habitat degradation can reduce seedling recruitment and reproductive output, and stress individuals by reducing water availability (Kuske *et al.* 2012; Schwinning *et al.* 2008). Due to lack of monitoring, we do not always know the frequency or extent of impacts to the plants or suitable habitat from livestock. A Service review of all available research on livestock impacts to cacti concluded that if the current grazing practices continue without adjustments, the populations of five listed Utah cactus species will continue to decline to the point of precluding recovery (Spector 2013). Mortality rates are greater than recruitment rates for all species, including the Uinta Basin hookless cactus, and grazing pressure is ubiquitous and chronic.

Overgrazing is the continued heavy grazing by domestic livestock beyond the recovery capacity of forage plants (Vallentine 1990). Overgrazing can result in degradation of western ecosystem functions and structures (Fleischner 1994). Overgrazing can facilitate the establishment of invasive species like cheatgrass (Masters and Sheley 2001), which are difficult to eradicate and tend to outcompete native vegetation, including cacti. Invasive weeds (e.g., cheatgrass and halogeton) are prevalent on Bureau lands in the range of Uinta Basin hookless cactus and less so on tribal lands where grazing has been concentrated in areas outside of suitable cactus habitat (72 FR 53214, September 18, 2007).

Noxious and invasive plant species directly compete for resources and alter the habitat for native species such as *Sclerocactus,* making it more difficult for the species to survive and thrive. Noxious and invasive species are often present in the soil seed bank, and once an area is disturbed, these species can quickly establish. In addition, competition from noxious and invasive species can further reduce special status species' population size. Invasive plants spread more easily when other land uses such as livestock grazing are concentrated within the remaining interspaces between roads and wells. Seeds from invasive species are often carried by vehicles and spread by vehicle-caused air turbulence (Forman and Alexander 1998). The cumulative pressures of energy development and grazing can lead to more invasive plants in Uinta Basin hookless cactus habitat.

The spread of noxious and invasive plants may change species composition within native plant communities. This may lead to increased livestock grazing on native grasses and shrubs that act as "nurse" plants for immature cacti. Nurse plants create an environment that is more favorable for successful establishment of immature cacti by providing shade, moisture, and protection from trampling. Additionally, habitat alteration from invasive species can alter pollinator composition in the area, thereby possibly reducing the effectiveness of pollination within the native community. All of these connected actions reduce the ability of Uinta Basin hookless cactus to thrive within its native habitat.

Illegal collection of Uinta Basin hookless cactus historically was one of the primary threats to the conservation and recovery of this species (BLM 2008). The increased number of access roads from energy development within and near occupied habitats allows greater access to rare plant populations and potentially could increase illegal collection of the species.

## III. Environmental Baseline

Regulations implementing the Act (50 CFR 402.02) define the environmental baseline as follows:

- The past and present impacts of all federal, state, or private actions and other human activities in the action area;
- The anticipated impacts of all proposed state or federal projects in the action area that have already undergone formal or early section 7 consultation; and
- The impact of state or private actions that are contemporaneous with the consultation process.

*Status of the Species within the Action Area*
As described above (see Status of the Species), available information indicates that Uinta Basin hookless cactus are declining range-wide, including portions of the action area (a one-mile buffer on either side of the Project centerline). The primary threat to the species in the action area is energy development. Approximately 43,008 acres (13 percent) of the Service-designated *Sclerocactus* habitat polygon is within the action area, along with approximately 7,198 known Uinta Basin hookless cactus individuals. Of this, 2,944 acres (7 percent) of all CCA 1 areas and 7,933 acres (9 percent) of all CCA 2 designated areas are within the action area.

We estimate that the surface disturbance within the White River CCA 1 is 11 percent and CCA 2 is 12 percent, which exceeds the Service-recommended 5 percent maximum disturbance level (USFWS 2013). Within the Middle Green unit we estimate the disturbance within CCA 1 at 2.5 percent and CCA 2 at 3.3 percent.

*Factors Affecting the Species within the Action Area*
Habitat loss associated with energy development is a major threat across the known range and within the action area. There are 6,797 existing oil and gas wells within the Uinta Basin hookless cactus habitat polygon. To assess their impact to the species, we used available GIS data (UDOGM 2015) and assumed a 5-acre per well disturbance. For every additional well on a shared well pad, we estimate 0.25 acre of additional disturbance. As of May 2015, we caclutated that approximately 19,959 acres (4.7 percent) of the entire Uinta Basin hookless cactus polygon (including CCA 1 and CCA 2) are already disturbed by oil and gas development. The 877 existing wells located within the action area represent approximately 4,385 acres (10 percent) of the total oil and gas-related disturbance currently present within the Uinta Basin hookless cactus habitat.

## IV. Effects of the Action

The effects of the action refer to the direct and indirect effects of an action on the species or critical habitat, together with the effects of other activities that are interrelated and interdependent with that action that will be added to the environmental baseline. Interrelated actions are those that are part of a larger action and depend on the larger action for their justification. Interdependent actions are those that have no independent utility apart from the action under consideration. Direct effects are those direct or immediate effects of the project on

the species or its habitat. Indirect effects are those that are caused by the proposed action and are later in time, but are still reasonably certain to occur. Because localized effects to a species have the potential to result in population level effects, our analysis included consideration of effects to species populations in entire conservation areas in which the Project action occurs. For purposes of this Project, the conservation areas included in the effects analysis are the *Sclerocactus* potential habitat polygon, the White River CCA 1 and CCA 2 units, and the Middle Green CCA 1 and CCA 2 units.

Uinta Basin hookless cactus individuals included in the effects analysis are likely to experience both direct and indirect impacts from the Project including dust deposition, increased traffic, weed dispersal, pollinator disturbance, degraded habitat, and habitat fragmentation.

Uinta Basin hookless cactus individuals within the effects analysis will be affected during all three phases of the Project, including the pre-construction, construction, and post-construction maintenance phases. The disturbance intensity of the Project phases will vary from low during pre-construction, moderate-to-high during construction, and moderate-to-low during post-construction maintenance (see Table 1-2 of the BA). Thus, the potential for direct loss of individuals is greater during the construction phase of the Project than during the pre- or post-construction phases.

Based on the estimate of 18 acres of surface disturbance per mile of transmission line, the Bureau estimates that a total of 614 acres of potential habitat, including 41 acres of CCA 1 habitat, 111 acres of CCA 2 habitat, and 462 acres of the *Sclerocactus* habitat polygon, will be lost due to construction of the transmission-line structures, access roads within the action area, and series compensation stations, as well as the stringing of the transmission line, staging areas, line tensioning areas, herbicide treatment, operation, and maintenance activities. Based on our own calculations, the proposed Project will add less than one-half of a percent of disturbance to the total estimated disturbance in each of the core conservation areas and in the potential habitat polygon (see Table 2 below).

**Table 2.** Existing and proposed development in core conservation areas that overlap with effects analysis area (disturbance acres presented here were calculated based on Service GIS data and vary slightly from those estimated by the Bureau in the BA).

| Development and Surface Disturbance | White River (CCA1 + CCA2) | Middle Green (CCA1+CCA2) | SCWE Potential habitat polygon (excluding CCA1 and CCA2) |
|---|---|---|---|
| **Number of existing wells (estimated)** | 1,770 | 178 | 3,489 |
| **Existing surface disturbance, percent (acres)** | 12.2% (3,214) | 3.3% (528) | 4.7% (15,295) |
| **Additional surface disturbance from proposed action, percent (acres)** | 0.2% (50) | 0.6% (110) | 0.15% (462) |
| **Estimated total surface disturbance (existing + proposed action)** | 12.4% | 3.9% | 4.9% |

The area included in the analysis for indirect impacts includes the area of surface disturbance (Table 2) plus a 300-foot buffer from the edge of the surface disturbance. The total effects analysis area for direct and indirect effects is 2,479 acres. There are approximately 5,962 Uinta Basin hookless cactus individuals within the White River core conservation area, 6,231 individuals within the Middle Green core conservation area, and 11,134 individuals within the Uinta Basin hookless cactus potential habitat polygon (excluding core areas). Therefore, a total of 23,327 Uinta Basin hookless cactus individuals are located within the effects analysis area that may be directly or indirectly affected by the proposed Project action. These effects are listed in Table 3 below.

Within the effects analysis area, direct effects to Uinta Basin hookless cactus individuals are most likely to occur within the Project ROW. Our GIS data indicate that 285 individuals are located within the 250-foot wide ROW and will be directly impacted by the surface disturbing activities. These areas have not been completely surveyed and it is expected that as surveys are conducted, more plants will be located. In addition, there are always individual cacti in any population that are undetected by surveys, sometimes as many as half of the population (Reisor 2013). Therefore, we estimate that at least twice as many individuals (570 individuals) are likely to be present within the ROW and will likely be directly impacted by the surface disturbing activities.

Many of the stressors (see Table 1-2 of the BA, pages 13-15) from the three phases of the Project are the same and include increased dust production, weed introduction, soil disturbance, human presence, equipment and vehicle traffic, soil compaction, drilling and construction noise, hazardous materials, change in runoff patterns, increased public access to sensitive sites, and herbicide application. These stressors create the following negative impacts to Uinta Basin

hookless cactus individuals and habitat: reduced photosynthesis and reduced reproduction due to dust impacts, weed introduction and plant community changes, loss of or damage to individuals, loss or alteration of habitat, loss or alteration of pollinator habitat, habitat fragmentation, pollinator disturbance leading to reduced reproduction, and loss of existing transplant study and research data. Conservation measures have been developed to address each of these negative impacts (see BA section 4.5.5.3) and are summarized in Table 3 below. Direct loss of plants and the need to transplant individuals will be minimized by conservation measures 1-5, 7, 10, 15, and 16 (See Table 3). All conservation measures for this Project will be applied consistently throughout the action area, regardless of landownership type.

There are 18 existing Uinta Basin hookless cactus transplants, set up as mitigation for a previous energy project (Questar ML 104 Pipeline 24 Mile Extension, TAILS: 65411-2010-F-0149) present within 300 feet of the Project ROW. The previously transplanted individuals are located between 128 and 260 feet away from the edge of the proposed ROW. Construction of certain Project features may not be able to avoid these existing Uinta Basin hookless cactus transplants, and thus several years of research and data could potentially be lost if any study individuals need to be transplanted a second time. Transplanted individuals may also experience reduced reproduction or die as a direct result of transplanting.

Although the conservation measures described in the BA and the BA revision will minimize the impacts of the action to Uinta Basin hookless cactus, larger indirect, landscape-level changes such as increased habitat fragmentation and habitat loss, pollinator disturbance, changes in erosion and water runoff, and increased weed invasion cannot be entirely negated. These disturbances will continue to negatively impact the species throughout the action area. There will be permanent loss and fragmentation of habitat for cactus and pollinators where permanent structures are installed, and temporary loss and fragmentation of habitat for cactus and pollinators where short-term disturbance occurs during construction. Both permanent and short-term disturbances will reduce opportunities for the Uinta Basin hookless cactus to cross-pollinate, reproduce, and establish, and will provide a corridor for noxious weeds and livestock to disperse for a period of several years to decades.

**Table 3.** Summary of conservation measures and the type of impact to Uinta Basin hookless cactus that it addresses. See section 4.5.5.3 of the BA for additional details on each conservation measure.

| Conservation Measures | Description | Dust impacts (reduced photosynthesis or reproduction) | Weeds or Plant community changes | Loss of or damage to individuals | Loss or alteration of habitat | Loss or alteration of pollinator habitat | Habitat fragmentation | Pollinator disturbance/ reduced reproduction | Loss of existing transplant study/data |
|---|---|---|---|---|---|---|---|---|---|
| 1 | Pre-construction surveys | | | X | X | X | X | X | |
| 2 | Avoidance of existing transplant sites | | | X | X | X | X | X | X |
| 3 | ROW avoidance of occupied habitat by 300 feet | | | X | X | X | X | X | |
| 4 | Minimizing impacts during geotechnical investigation | | | X | X | X | X | X | |
| 5 | Maximizing distance from cactus and minimizing the surface disturbance area | | | X | X | X | X | X | |
| 6 | Sedimentation and erosion control implementation | X | | X | | | | | |
| 7 | Qualified, approved botanist on-site where construction is within 300 feet of occupied | | | X | X | X | X | X | |

| Conservation Measures | Description | Dust impacts (reduced photosynthesis or reproduction) | Weeds or Plant community changes | Loss of or damage to individuals | Loss or alteration of habitat | Loss or alteration of pollinator habitat | Habitat fragmentation | Pollinator disturbance/ reduced reproduction | Loss of existing transplant study/data |
|---|---|---|---|---|---|---|---|---|---|
| | habitat | | | | | | | | |
| 8 | Dust abatement using only water will be applied within 300 feet of occupied habitat | X | | | | | | | |
| 9 | No surface disturbance will occur within the flowering period | X | | | | | | X | |
| 10 | 15 mile-per-hour speed limit for personnel within 300 feet of occupied habitat | X | | | X | X | X | X | |
| 11 | USFWS will be contacted if an unexpected damage or loss to cacti in CCA1 or CCA2 areas will occur | | | X | | | | | |
| 12 | Disturbed areas will be reclaimed using a FWS and BLM approved seed mix | | X | | | | | | |
| 13 | Invasive species monitoring and treatment will occur according | | X | | | | | | |

| Conservation Measures | Description | Dust impacts (reduced photosynthesis or reproduction) | Weeds or Plant community changes | Loss of or damage to individuals | Loss or alteration of habitat | Loss or alteration of pollinator habitat | Habitat fragmentation | Pollinator disturbance/ reduced reproduction | Loss of existing transplant study/data |
|---|---|---|---|---|---|---|---|---|---|
| | to BLM protocols | | | | | | | | |
| 14 | If necessary, cactus transplant and monitoring will occur where direct impacts cannot be avoided, and will coordinate with the USFWS and BLM. | | | X | | | | | X |
| 15 | Contributions to the *Sclerocactus* mitigation Fund will be made where surface disturbance occurs within 300 feet of occupied habitat. | | | X | X | X | X | X | |
| 16 | Additional measures may be developed if needed to ensure compliance with the ESA. | X | X | X | X | X | X | X | X |

## V. Cumulative Effects

Cumulative effects include the effects of future state, tribal, local or private actions that are reasonably certain to occur in the action area. Future federal actions that are unrelated to the proposed action are not considered under this section because they require separate consultation pursuant to section 7 of the ESA.

Declines in the abundance or range of many special status species are attributable to various human activities on federal, state, and private lands, such as human population expansion and associated infrastructure development; energy development and associated infrastructure; construction and operation of dams along major waterways; water retention, diversion, or dewatering of springs, wetlands, or streams; recreation, including off-road vehicle activity; expansion of agricultural or grazing activities, including alteration or clearing of native habitats for domestic animals or crops; and introductions of non-native plant, wildlife, or fish or other aquatic species, which can alter native habitats or out-compete or prey upon native species. Many of these activities are expected to continue on state and private lands within the range of various federally protected wildlife, fish, and plant species, and could contribute to cumulative effects to the species within the action area. Species with small population sizes, endemic locations, or slow reproductive rates will generally be more susceptible to cumulative effects.

Non-federal activities have the potential to cumulatively affect Uinta Basin hookless cactus, as a significant portion of the species' range occurs on state, private, and tribal lands without federal mineral leases or federal surface rights (see Table 1 in Distribution section). Quantified data on the future extent of these activities are difficult to obtain, but we must assume, for the purposes of this assessment, that some level of these activities are reasonably certain to occur, particularly energy and mineral exploration, development, livestock grazing, stone collecting, off-highway vehicle use, and illegal cactus collecting. Where these future activities intersect Uinta Basin hookless cactus populations or habitats, they may cumulatively add to the existing and future impacts of activities authorized by federal agencies.

Of the total 570 Uinta Basin hookless cactus individuals within the Project ROW, approximately 454 individuals (79.6 percent) are located on state, private, and tribal lands within the action area. These 454 individuals represent less than 1 percent of the total estimated population of Uinta Basin hookless cactus throughout the species' range. This number is an underestimate of the number of individuals on non-federal lands, as surveys are not always required or conducted on private, state, and tribal lands. Uinta Basin hookless cactus individuals on non-federal lands will be negatively impacted by direct loss and disturbance, as well as landscape-scale factors (habitat fragmentation, increased dust, and so on) due to cumulative impacts in the action area.

## VI. Conclusion

After reviewing the current status of the Uinta Basin hookless cactus; the environmental baseline for the action area; the effects of the proposed action; and the cumulative effects, it is our biological opinion that this Project, as described in this biological opinion, is not likely to jeopardize the continued existence of Uinta Basin hookless cactus. We base our conclusion on the following:

1. The proposed disturbance of 614 acres represents a 0.2 and 0.6 increase in the disturbance level for the White River and Middle Green conservation units, and a 0.15 percent increase in the disturbance level of the *Sclerocactus* potential habitat polygon (see Table 2). In addition, direct impacts to approximately 570 individual plants represents less than 1 percent of the current documented species population. Because of the small percentages of impacts, we conclude that the increase in disturbance and affected number of plants is not substantial.

2. The commitment to implement the applicant committed conservation measures for the Uinta Basin hookless cactus (see Table 3). In particular, the applicant committed conservation measures numbers 1 - 5, to avoid Uinta Basin hookless cactus to the maximum extent practicable, conservation measure number 9, to avoid construction during flowering, conservation measure number 6, to prevent sedimentation and erosion within cactus populations, and conservation measure number 14 to transplant and monitor any transplanted cacti will reduce direct impacts to Uinta Basin hookless cactus individuals. Additionally, the applicant committed conservation measures 8 - 10, to reduce the creation and dispersal of fugitive dust, conservation measure number 12 and 13, to control invasive species and revegetate the habitat with native species, which will minimize indirect impacts to Uinta Basin hookless cactus individuals.

3. That all conservation measures are applied consistently across the entire Project area, regardless of landownership type.

## VII. Incidental Take Statement

Sections 7(b)(4) and 7(o)(2) of the ESA generally do not apply to listed plant species; therefore, we are not providing an incidental take statement in this biological opinion. However, limited protection of listed plants is provided to the extent that the ESA prohibits the removal and reduction to possession of federally listed endangered plants or the malicious damage of such plants on areas under federal jurisdiction, or the destruction of endangered plants on non-federal areas in violation of state law or regulation or in the course of any violation of a state criminal trespass law.

## VIII. Reporting Requirements

Within 90 days of completion of the Project within the Uinta Basin hookless habitat, the acres of disturbance will be reported to the Bureau and our office. This report will be used to calculate the mitigation amount to be paid into the *Sclerocactus* Mitigation Fund account. The *Sclerocactus* Mitigation Fund was established with the National Fish and Wildlife Foundation to receive money for conservation actions such as dispersed development study, pollinator and genetics work, and enhanced reclamation study. Payment into the fund releases Project proponents from future monitoring obligations. Any cactus monitoring or transplant reports associated with the proposed actions must be submitted to our office and the Bureau by January 31 each year following the event.

**IX. Conservation Recommendations**

Section 7(a)(1) of the ESA directs federal agencies to utilize their authorities to further the purposes of the ESA by carrying out conservation programs for the benefit of endangered and threatened species. Conservation recommendations are discretionary agency activities to minimize or avoid adverse effects of an action on listed species or critical habitat, to help implement recovery plans, or to develop information.

1. We recommend that all Uinta Basin hookless cactus individuals be avoided by a minimum of 300 feet in order to minimize impacts to the species.
2. We recommend that all surface disturbance within CCA 1 areas and within the White River CCA 2 area be avoided in order to prevent additional fragmentation to core areas that are key to the persistence of the species and are already heavily impacted by surface disturbance and fragmentation.
3. We recommend that research plots associated with previously transplanted cacti and the control plots are avoided in order to preserve the critical Uinta Basin hookless cactus research data associated with the Project.
4. We recommend that the transplanting of any Uinta Basin hookless cactus due to impacts from this Project are completely avoided in order to avoid negative direct impacts to the species, such as mortality.
5. There are 18 cacti located within the current ROW, and are between 128 and 260 feet away from the current Project centerline. We recommend that the centerline and ROW be adjusted to ensure that there is a minimum of a 100-foot buffer between the edge of the ROW and the previously transplanted cacti (the existing research plots). A 300-foot buffer between the ROW edge and the cacti would be preferred to avoid all impacts.

# Reinitiation/Closing Statement

This concludes formal consultation on the actions outlined in the July 20, 2015, BA and September 11, 2015, BA revision, as amended, request for the Project. As provided in 50 CFR §402.16, reinitiation of formal consultation is required where discretionary federal agency involvement or control over the action has been retained (or is authorized by law) and if: (1) the amount or extent of incidental take is exceeded; (2) new information reveals effects of the agency action that may affect listed species or critical habitat in a manner or to an extent not considered in this BO; (3) the agency action is subsequently modified in a manner that causes an effect to the listed species or critical habitat not considered in this BO; or (4) a new species is listed or critical habitat designated that may be affected by the action. In instances where the amount or extent of incidental take is exceeded, the specific action(s) causing such take shall be subject to reinitiation expeditiously.

# Literature Cited


Brunson, J. 2013. "RE: Grazing impacts to cacti." Email to Tova Spector January 4, 2013.

Bureau of Land Management. 2008. Record of Decision and Approved Resource Management Plan. BLM-UT-PL-09-003-1610. Vernal Field Office, Vernal, Utah. October 2008.

Castellano, M.J. and T.J. Valone 2007. Livestock, soil compaction and water infiltration rate: Evaluating a potential desertification recovery mechanism. Journal of Arid Environments. 71:1 97-108.

Everett, K. R. 1981. Distribution and properties of road dust along the northern portion of the haul road. In Environmental Engineering and Ecological Baseline Investigations along the Yukon River--Purdhoe Bay Haul Road, ed. J. Brown & R. Berg. US Army Cold Regions Research and Engineering Laboratory, CRREL Report 80-19, pp. 101-28.

Eller, B. M. 1977. Road dust induced increase of leaf temperature. Environmental Pollution, 13, 99-107.

Farmer, A.M. 1993. The effects of dust on vegetation-a review. Environmental Pollution 79:63-75.

Final Platte River Recovery Implementation Program Document. October 24, 2006. http://www.fws.gov/platteriver/.

Fleischner, T. L. 1994. Ecological costs of livestock grazing in Western North America. Conservation Biology 8(3):629-644.

Fogg, J. and H. Hadley. 2007. Hydraulic considerations for pipelines crossing stream channels. Technical Note 423. BLMIST/ST-07/007+2880. U.S. Department of the Interior, Bureau of Land Management, National Science and Technology Center, Denver, CO. 20 pp. http://www.blm.gov/nstc/library/techno2.htm.

Forman, R.T.T., and L.E. Alexander. 1998. Roads and Their Major Ecological Effects. Annual Review of Ecology and Systematics. V(29). 207–231pp.

Heil, K.D., and J.M. Porter. 2004. *Sclerocactus*. In: Flora of North America Editorial Committee, eds. 1993+. Flora of North America North of Mexico. 15+ vols. New York and Oxford. Vol. 4, pp. 197-207.

Hobbs, M.L. 2001. Good practice guide for assessing and managing the environmental effects of dust emissions. Published September 2001 by Ministry for the Environment. P.O. Box 10-362, Wellington, New Zealand. 58 pp.

IPCC. 2007. *Climate Change 2007: Synthesis Report. Contribution of Working Groups I, II and III to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change* [Core Writing Team, Pachauri, R.K., and A. Reisinger (eds.)]. IPCC, Geneva, Switzerland, 104 pp.

Kuske C., C. Yeager, S, Johnson, L. Ticknor, and J. Belnap. 2012. Response and resilience of soil biocrust bacterial communities to chronic physical disturbance in arid shrublands. ISME Journal 6(4) 886-897.

Masters, R. A. and R. L. Sheley. 2001. Principles and practices for managing rangeland invasive plants. Journal of Rangeland Management 54(5):502-517.

Mustajarvi, K. P. Siikamaki, S. Rytkonen, and A. Lammi. 2001. Consequences of Plant Population Size and Density for Plant-pollinator Interactions and Plant Performance. Journal of Ecology 89:80-87.

Porter, J.M., J. Cruse-Sanders, L. Prince, and R. Lauri. 2007. An assessment of genetic relationships among *Sclerocactus* brevispinus, S. wetlandicus, and S. Glaucus. Report to the U.S. Fish and Wildlife Service, Salt Lake City, Utah. 30 pp.

Reisor ,R. 2013. Final Report: 2012 and 2013 Post-transplant Monitoring of *Sclerocactus wetlandicus* for Questar Mainline 104. Red Butte Garden and Arboretum, Salt Lake City, Utah. December 2013.

Schwinning, S., J. Belnap, D. R. Bowling, and J. R. Ehleringer. 2008. Sensitivity of the Colorado Plateau to change: climate, ecosystems, and society. Ecology and Society 13(2): 28. http://www.ecologyandsociety.org/vol13/iss2/art28/

Sharifi, M.R., A.C. Gibson, and P.W. Rundel. 1997. Surface Dust Impacts on Gas Exchange in Mojave Desert Shrubs. Journal of Applied Ecology 34:837-846.

Sharrow, S.H. 2007. Soil Compaction by grazing livestock in silvopastures as evidenced by changes in soil physical properties. Agroforestry Systems 71:215-223.

Spatt, P. D. and M.C. Miller. 1981. Growth conditions and vitality of Sphagnum in a tundra community along the Alaska pipeline haul road. Arctic, 34, 48-54.

Spector, T. 2013. Impacts to federally listed cacti species from livestock on the Colorado Plateau in Utah: A Review and Summary. Utah Field Office, Ecological Services, U.S. Fish and Wildlife Service, West Valley City, UT 68 pp.

SWCA Environmental Consultants. 2015. *Sclerocactus wetlandicus* (Uinta Basin Hookless Cactus) and *Sclerocactus brevispinus* (Pariette Cactus) Range-Wide Demographic and Habitat Monitoring: Year 3 (2014) Report. Salt Lake City, Utah. 56 pp.

Tepedino, V.J., T.L. Griswold, and W.R.Bowlin. 2010. "Reproductive biology, hybridization, and flower visitors of rare *Sclerocactus* taxa in Utah's Uinta Basin." Western North American Naturalist 70(3):377-386.

Thompson, J. R., P. W. Mueller, W. Fluckiger, and A.J. Rutter. 1984. The effect of dust on photosynthesis and its significance for roadside plants. Environmental Pollution (Ser. A), 34, 171-90.

Trombulak, S.C., and C.A. Frissell. 2000. Review of ecological effects of roads on terrestrial and aquatic communities. Conservation Biology. 14(1):18-30.

U.S. Department of the Interior. 2006. Platte River Recovery Implementation Program Final Environmental Impact Statement.

U.S. Fish and Wildlife Service. 1990. Recovery Plan for the Uinta Basin Hookless Cactus. U.S. Fish and Wildlife Service, Region 6, Denver, Colorado. 26 pp.

_____. 2006. Biological opinion on the Platte River Recovery Implementation Program.

_____. 2010a. Recovery outline for the *Sclerocactus* wetlandicus (Uinta Basin hookless cactus). Utah Ecological Services Field Office, West Valley City, Utah. Available at: http:/www.fws.gov/mountain-prairie/species/plants/uintabasinhooklesscactus/Recovery/OutlineApril 2010.pdf.

_____. 2010b. Recovery outline for the *Sclerocactus* brevispinus (Pariette cactus). Utah Ecological Services Field Office, West Valley City, Utah. Available at; http:/www.fws.gov/mountain-prairie/species/plants/pariettecactus/Recovery/OutlineApril 2010.pdf.

____. 2013. Draft Energy Development Management Guidelines for *Sclerocactus wetlandicus* and *Sclerocactus brevispinus* Core Conservation Areas. Utah Ecological Services Field Office, West Valley City, Utah. March 2013.

Utah Division of Oil, Gas and Mining. 2015. GIS Dataset from Utah Division of Oil, Gas and Mining website (https://fs.ogm.utah.gov/pub/Oil&Gas/Database/). March 2015.

Utah Natural Heritage Program. 2006. Element Global Rank Report for *Sclerocactus glaucus* (Uinta Basin Hookless Cactus). Electronic database maintained by the Utah Natural Heritage Inventory, Utah Division of Wildlife Resources, Salt Lake City. 4 pp.

Vallentine, J. F. 1990. Grazing management. Academic Press, San Diego, CA. 659 pp.

Welsh, S. L., N. D. Atwood, S. Goodrich, and L. C. Higgins. 2003. A Utah Flora, 3rd Edition, revised. Brigham Young University, Provo, Utah. 912 pp.

# ATTACHMENT

**Conservation Measures for the Energy Gateway South Transmission Line Project as defined by the September 11, 2015 BA revision (and as updated January 11, 2016)**

**Platte River Species - Pallid Sturgeon, Least Tern, Piping Plover, Whooping Crane, Western Prairie Fringed Orchid**

- ***Platte River Multi-species Conservation Measure 1*:** All water used in construction of the Project would be acquired from previously allocated sources covered under previous Section 7 consultation or water that is not hydrologically connected to the Platte River system and therefore does not require Section 7 consultation.

**Colorado River Species - Bonytail, Colorado Pikeminnow, Humpback Chub, Razorback Sucker**

- ***Colorado River Multi-species Conservation Measure 1*:** No construction equipment will operate in or cross the actively flowing channel of the Green, White, or Yampa rivers.
- ***Colorado River Multi-species Conservation Measure 2*:** Materials will not be stockpiled in the 100-year floodplain of the Green, White, or Yampa rivers or any wetlands connected to those rivers.
- ***Colorado River Multi-species Conservation Measure 3*:** To avoid entrainment of ESA-listed fish species, surface water will not be taken from the Green, White, or Yampa rivers or their tributaries.
- ***Colorado River Multi-species Conservation Measure 4*:** No surface disturbance, staging areas, or permanent structures will be located in the 1O0-year floodplain of the Green and White rivers.
- ***Colorado River Multi-species Conservation Measure 5*:** For any activities within the 100-year floodplain of the Yampa River, the following conservation measures will apply:
    - Construction and maintenance in the floodplain of the Yampa River will take place during seasonal low flows.
    - Ground disturbance and vegetation clearing will be located in areas that avoid or minimize impacts on PCEs.
    - Ground disturbance and vegetation clearing will be minimized in the Yampa River floodplain, Drive-and-crush access and construction techniques will be used to the extent feasible. In areas where vegetation drive-and-crush access and construction techniques are not feasible, the least impactful technique will be used. In areas where vegetation clearing is necessary, vegetation will be trimmed with the root balls left intact and in place wherever practical.
    - No permanent access roads will be constructed in the 100 year floodplain. Any grading activities will be conducted in a way that avoids altering seasonal flow regimes.
    - All temporary disturbance in the floodplain will be promptly stabilized and reclaimed to minimize the potential for erosion.
    - Soil stabilization and erosion control measures will be implemented during construction and through completion of reclamation activities. Specific measures erosion control measures will be developed in coordination with the FWS and will be identified in the Stormwater Pollution Prevention Plan, which is a component of the POD.

- ***Colorado River Multi-species Conservation Measure 6:*** Prior to any vegetation removal in critical habitat for Colorado River fish, a preconstruction site will be attended by the BLM, FWS, Proponent, and construction representatives to discuss implementation of measures designed to protect riparian function and critical habitat for Colorado River fish.
- ***Colorado River Multi-species Conservation Measure 7:*** Refueling and storing potentially hazardous materials will not occur within the 100-year floodplain of the White, Green, and Yampa rivers and their perennial tributaries. Spill preventive practices and containment measures will be incorporated in the Water Resources Protection Plan, which will be developed as a part of the POD.
- ***Colorado River Multi-species Conservation Measure 8:*** No aerial or broadcast herbicide treatments will be applied for vegetation management within 2,500 feet of bonytail, Colorado pikeminnow, humpback chub, or razorback sucker designated critical habitat.
    - For noxious weed control within 2,500 feet of bonytail, Colorado pikeminnow, humpback chub, or razorback sucker designated critical habitat, the following restrictions apply:
    - Herbicides will not be applied over surface water. Only agency-approved herbicides registered for use near water will be used within 328 feet of surface water or in areas with a high leaching potential. Minimum pesticide spray distances (buffers) from surface water are as follows:
        - Backpack spraying operations -20 feet
        - Other mechanized applications (e.g., truck or all-terrain vehicle mounted equipment) – 50 feet
- ***Colorado River Multi-species Conservation Measure 9:*** All required depletion fees would be paid by the Proponent within the required timeframe. At a minimum, 10 percent would be paid at the time the BLM issues a Record of Decision. The remaining balance would be paid when water use commences for the Project.
- ***Colorado River Multi-species Conservation Measure 10:*** The Proponent will develop and implement, as a part of the construction compliance management system committed to in the POD, a tracking tool to record water use during construction. The tracking tool will ensure that all depletions are properly recorded and any required fees for depletions in the Colorado River basin are assessed and paid to the Upper Colorado River Endangered Fish Recovery Program.

**June Sucker**

- ***June Sucker Conservation Measure 1:*** Refueling and storing potentially hazardous materials in the Jordan River basin will not occur within a 328-foot radius of any tributaries of Utah Lake known to support June sucker spawning. Spill preventive practices and containment measures will be incorporated in the Water Resources Protection Plan, which will be developed as a part of the POD.
- ***June Sucker Conservation Measure 2:*** No aerial or broadcast herbicide treatments will be applied for vegetation management within 2,500 feet of June sucker designated critical habitat. For noxious weed control within 2,500 feet of June sucker designated critical habitat, the following restrictions apply:
    - Herbicides will not be applied over surface water. Only agency-approved herbicides registered for use near water will be used within 328 feet of surface water or in areas

with a high leaching potential. Minimum pesticide spray distances (buffers) from surface water are as follows:

- Backpack spraying operations - 20 feet
- Other mechanized applications (e.g., truck or all-terrain vehicle mounted equipment) – 50 feet

- ***June Sucker Conservation Measure 3:*** Ground clearing will be minimized in the floodplain of any tributaries of Utah Lake known to support June sucker spawning, and vegetation will be trimmed with the root balls left intact and in place wherever practical. All temporary disturbances in the floodplain will be promptly stabilized and reclaimed to minimize the potential for erosion. Soil stabilization and erosion control measures will be stipulated in the Stormwater Pollution Prevention Plan, which is a component of the POD.

**Greater Sage-Grouse**

- ***Greater Sage-Grouse Conservation Measure 1:*** For any activities associated with the geotechnical investigation, the following restrictions will apply:
  - Seasonal and spatial restrictions identified in the POD and ongoing land-use plan amendments will be adhered to.
  - All work in designated sage-grouse habitat will be monitored by a biological monitor to ensure compliance with all applicable conservation measures.
  - Existing access roads in designated sage-grouse habitat may be used, but not improved.
- ***Greater Sage-Grouse Conservation Measure 2:*** Special status species will be considered in accordance with management policies set forth by management agencies. Surveys for special status wildlife potentially affected by the Project will be conducted in suitable habitat along the selected route using protocols approved by the BLM, USFS, or other cooperating agencies. Construction techniques that avoid and minimize impacts on special status wildlife populations and habitat would be implemented , which may include altering the placement of roads or transmission-line structures, use of existing roads, and minimization of vegetation clearing. Additional techniques to minimize impacts on sage-grouse in select locations may include structure design modification and the use of perch deterrents to reduce the effects of predation, and flight diverters and marking devices to reduce the risk of collision. The locations where these types of measures would be implemented would be determined by the BLM in coordination with the cooperating agencies. Monitoring of identified special status wildlife populations and habitat also may be required.
- ***Greater Sage-Grouse Conservation Measure 3:*** All construction vehicle movement will be restricted to designated access roads based on avoidance of known noxious weed locations.
- ***Greater Sage-Grouse Conservation Measure 4:*** To minimize vehicle collisions with special status wildlife, a speed limit of 15 miles per hour will be employed on overland access routes.
- ***Greater Sage-Grouse Conservation Measure 5:*** All new or improved access not required for maintenance will be closed or rehabilitated following Project construction in accordance with prior agency approval and using the most effective and least environmentally damaging methods.

- ***Greater Sage-Grouse Conservation Measure 6:*** Construction and maintenance activities will be restricted in designated areas and during critical periods, (e.g., wintering habitats and specific breeding or nesting seasons). The timing of restrictions will be based on measures developed for the EIS and ongoing Land Use Plan Amendments.
- ***Greater Sage-Grouse Conservation Measure 7:*** Drive-and-crush (vehicular travel to access a site without significantly modifying the landscape) and/or clear-and-cut travel (removal of vegetation to provide suitable access for equipment) will occur in areas where no grading will be needed to access work areas (i.e., areas with low-growing sagebrush and other low-growing vegetation). This will reduce the amount of ground-disturbing activities (e.g., surface soil removal, vegetation cropping/cutting) landscape modification, risk of introduction of invasive weeds, and special status wildlife habitat fragmentation, Modification of sagebrush vegetation communities, which provide necessary cover and forage for habitat suitability, resulting from vegetation clearing, will be limited in habitats occupied by sagebrush obligate special status wildlife species like greater sage-grouse.
- ***Greater Sage-Grouse Conservation Measure 8:*** To minimize disturbance to greater sage-grouse habitats, the transmission-line right-of-way would be sited to avoid locally important habitats identified in consultation with the Proponent, BLM, FWS, and state wildlife agencies. Where seasonally important habitats (i.e., within 4 miles of leks, nesting, wintering) cannot be avoided, then transmission-line right-of-way would be further sited as follows:
    - In areas to maximize colocation with other above-ground utilities
    - In existing designated corridors
    - In nonhabitat (i.e., within 4 miles of leks but outside of preliminary priority habitat, occupied habitat, woodland vegetation communities)
    - In areas where placement of structures and access roads maximizes the use of topographic features to visually screen impacts from seasonally important habitats
    - In areas that minimize fragmentation (i.e., use existing roads, no new permanent roads, drive and crush).

**Mexican Spotted Owl**

- ***Mexican Spotted Owl Conservation Measure 1:*** Potentially suitable habitat assessments, including field verification, will be completed using BLM- and FWS-approved methods prior to final design of the transmission line and initiation of construction activities.
- ***Mexican Spotted Owl Conservation Measure 2:*** For any activities associated with the geotechnical investigation, the following restrictions will apply:
    - Geotechnical activities will not be conducted within 0.5 mile of potentially suitable habitat identified during the habitat assessment between March 1 and August 31.
    - Existing access roads located in potentially suitable habitat identified during the habitat assessment and within 0.5 mile of potentially suitable habitat identified during the habitat assessment may be used, but not improved.
- ***Mexican Spotted Owl Conservation Measure 3:*** Surveys will be conducted for 2 years prior to construction activities within 0.5 mile of construction activities in potentially suitable habitat identified during the habitat assessment, Surveys will be conducted according to FWS-approved methods. If owls are found, no actions will occur within 0.5

mile of identified nest sites between March 1 and August 31. If nest site is unknown, no activity will occur within the designated Protected Activity Center (PAC) between March 1 and August 31.

- ***Mexican Spotted Owl Conservation Measure 4:*** The placement of permanent structures within 0.5 mile of suitable habitat identified during the habitat assessment will be avoided unless Mexican spotted owl suitable habitat is surveyed and determined to be unoccupied.

**Yellow-billed Cuckoo**

- ***Yellow-bitted Cuckoo Conservation Measure 1:*** Habitat assessments, including field verification, will be completed within 0.5 mile of construction activities according to Guidelines for identification of suitable breeding and nesting habitat for western yellow-billed cuckoo in Utah (FWS 2015) prior to final design of the transmission line and initiation of the geotechnical investigation or other construction activities to identify suitable nesting habitat. Results will be provided to the FWS for review and concurrence.
- ***Yellow-billed Cuckoo Conservation Measure 2:*** Protocol breeding season surveys will be conducted in suitable nesting habitat within 0.5 mile of construction activities prior to initiation of the geotechnical investigation or any other construction activities unless species occupancy and distribution information is complete, available, and supports a conclusion that the species is not present; or unless otherwise agreed to by the FWS and BLM in response to mitigating factors such as existing disturbance, screening, or site-specific habitat conditions. All surveys must be conducted according to protocol by surveyors who have attended a FWS-approved yellow-billed cuckoo survey training and are operating under a recovery permit.
- ***Yellow-billed Cuckoo Conservation Measure 3:*** For any activities associated with the geotechnical investigation, the following restrictions will apply:
    - Geotechnical activities will not occur within 0. 5 mile of suitable nesting habitat, as determined by the habitat assessments, between June I and August 31.
    - Existing access roads within 0.5 mile of suitable nesting habitat as determined by the habitat assessments may be used during any time of year, but not improved.
    - Geotechnical activity will not occur within suitable yellow-billed cuckoo nesting habitat.
- ***Yellow-billed Cuckoo Conservation Measure 4:*** Transmission-line structures and other permanent or temporary project facilities (including but not limited to new access roads, work areas, or other structures) will not be sited in field-verified suitable nesting habitat. Waterways will be spanned in field-verified suitable nesting habitat. For existing access roads, avoid upgrades that would require clearing and pruning riparian vegetation within field-verified suitable nesting habitat.
- ***Yellow-billed Cuckoo Conservation Measure 5:*** Microsite or increase the height of tower structures to prevent the need to clear or prune vegetation within field-verified suitable nesting habitat. Should some vegetation management be required to ensure that minimum North American Electric Reliability Council vegetation management standards are maintained in these areas, a proposal that outlines the locations and extent of clearing/pruning will be submitted to the FWS to ensure that the effects are not more than insignificant or discountable. If these effects are not insignificant or discountable, then consultation on the western yellow-billed cuckoo would be reinitiated.

- ***Yellow-billed Cuckoo Conservation Measure 6:*** Project activities (e.g., road construction or improvement, geotechnical activities, vegetation management, transmission-line construction, right-of-way reclamation, and maintenance activities), will not be conducted within a 0.5-mile buffer of occupied nesting habitat or field-verified suitable nesting habitat that has not been completely surveyed to determine occupancy between June I and August 31.
- ***Yellow-billed Cuckoo Conservation Measure 7:*** Prior to any vegetation removal or clearing in suitable nesting habitat as determined by the habitat assessments, shrubs and trees targeted for removal will be flagged for review during a site visit attended by the BLM, FWS, Proponent, and construction representatives.
- ***Yellow-billed Cuckoo Conservation Measure 8:*** All transmission lines that cross field-verified suitable habitat will be marked to minimize the potential for collisions in coordination with the FWS. Marking will occur from one outer edge of suitable habitat to the outer edge of suitable habitat on the opposite side of the river.
- ***Yellow-billed Cuckoo Conservation Measure 9:*** New biological information regarding the yellow-billed cuckoo and potential effects of the Project would be addressed as follows:
    - Habitat assessment and survey methods, survey areas, and avoidance buffers would be modified to be consistent with updates and revisions to the current 2015 draft survey protocol and habitat assessment guidance issued by the FWS.
    - Site-specific adjustments to survey and avoidance buffers may be implemented on agreement between the BLM and FWS on a case-by-case basis (e.g., in response to terrain that facilitates or limits noise transmission, or the conditions of the habitat at a specific location), following the interagency preconstruction site visits.
- ***Yellow-billed Cuckoo Conservation Measure 10:*** No aerial or broadcast herbicide treatments will be applied within 0.5 mile of field-verified suitable nesting habitat. Within 0.5 mile of field verified suitable nesting habitat, herbicides will be applied using a backpack spray operation or by hand from an all-terrain vehicle. Only agency-approved herbicides registered for use near water will be used within 300 feet of surface water. Insecticides will not be used within 0.5 mile of field-verified suitable nesting habitat.

**Black-footed Ferret**

All populations of black-footed ferrets crossed by the Project are reintroduced NEPs. The following conservation measures apply only to these NEPs as no black-footed ferret populations are known to occur outside these reintroduction areas.

- ***Black-footed Ferret Conservation Measure 1:*** For any activities associated with the geotechnical investigation, the following restrictions will apply:
    - All geotechnical activities located within 0.5 mile of prairie dog colonies in active black-footed ferret reintroduction management areas during the breeding season (March 1 through July 15) will be avoided.
    - All geotechnical activities in prairie dog colonies in active black-footed ferret reintroduction management areas would be located to avoid damaging prairie dog burrows.

  - All work in prairie dog colonies in active black-footed ferret reintroduction management areas will be monitored by a biological monitor to ensure compliance with all applicable conservation measures.
  - Existing access roads in prairie dog colonies in active black-footed ferret reintroduction management areas may be used, but not improved.
- ***Black-footed Ferret Conservation Measure 2:*** In active black-footed ferret reintroduction management areas, the transmission line will be located as close as possible to existing and other planned high-voltage transmission lines.
- ***Black-footed Ferret Conservation Measure 3:*** The local BLM field office will be notified 10 to 20 days prior to the initiation of construction activities in active black-footed ferret reintroduction management areas.
- ***Black-footed Ferret Conservation Measure 4:*** Vehicle activities will be restricted to daylight hours in occupied black-footed ferret habitat to minimize the risk of vehicle collision.
- ***Black-footed Ferret Conservation Measure 5:*** Disruptive activities within 0.5 mile of prairie dog colonies in active black-footed ferret reintroduction management areas will be conducted outside the reproductive period (March I through July 15), with special emphasis on avoiding the period between birthing and the emergence of young (May 1 through July 15).

**Canada Lynx**
No conservation measures are proposed specifically for the Canada lynx.

**Gray Wolf**
No conservation measures are proposed specifically for the gray wolf.

**Clay Phacelia**

- ***Clay Phacelia Conservation Measure 1:*** A field habitat assessment would be conducted prior to final engineering and design, the geotechnical investigation, or any other construction activities, to ground-truth the August 2013 USFS-suitable habitat model and determine presence of suitable habitat within a 650-buffer surrounding modeled habitat where this area is traversed by the proposed right-of-way or has potential to be affected by other project-related disturbance (i.e., geotechnical investigations, access roads, fly yards). Habitat assessments will be coordinated with the Utah Field Office of FWS and may occur any time as long as there is no snow cover. Suitable habitat parameters developed by the FWS (Appendix E) will be used to assess habitat suitability.
- ***Clay Phacelia Conservation Measure 2:*** Following habitat assessments, all suitable habitat (including field-verified suitable habitat identified in both modeled habitat and areas of suitable habitat outside of the modeled habitat) within 650 feet of either side of the right-of-way and other areas where Project impacts will occur will be 100 percent surveyed by BLM-approved individual(s) prior to final design of the transmission line, the geotechnical investigation, or any other construction activities. Surveys will be coordinated with the Utah Field Office of FWS and conducted in accordance with agency-approved methods and protocols.
- ***Clay Phacelia Conservation Measure 3:*** All occupied sites, including occupied habitat identified during field surveys, will be avoided by Project activities inside and outside the

right-of-way (including structures, facilities, new roads, upgrades to existing roads, and overland vehicle traffic) by at least 650 feet. Section 7 consultation will be reinitiated if any impacts are anticipated within 650 feet of occupied clay phacelia habitat.

- ***Clay Phacelia Conservation Measure 4:*** For any activities associated with the geotechnical investigation the following requirements apply:
  - All work within 650 feet of occupied clay phacelia habitat will be moved or abandoned.
  - All work within 650 feet of suitable habitat will be monitored by a biological monitor to ensure compliance with all applicable conservation measures.
  - Existing access roads within 650 feet of suitable clay phacelia habitat may be used, but not improved.
- ***Clay Phacelia Conservation Measure 5:*** Appropriate erosion control measures (e.g., silt fence, straw wattles) will be constructed where disturbance occurs within 650 feet of suitable habitat or if such measures are needed to prevent sedimentation or dust deposition in suitable habitat.
- ***Clay Phacelia Conservation Measure 6:*** A qualified, BLM-approved botanist will be onsite to monitor surface-disturbing activities when clay phacelia suitable habitat is within 650 feet of any surface-disturbing activities. In addition to ensuring compliance with all applicable conservation measures, the botanist also will:
  - Make areas for avoidance visually identifiable in the field (e.g., flagging, temporary fencing, rebar, etc.) before and during construction,
  - Provide the FWS and BLM with a post-construction report of compliance with conservation measures and any activities within 650 feet of suitable clay phacelia habitat.
- ***Clay Phacelia Conservation Measure 7:*** Only water (no chemicals, reclaimed production water or other) will be used for dust abatement measures in suitable clay phacelia habitat.
- ***Clay Phacelia Conservation Measure 8:*** Dust abatement will be employed during maintenance activities in field-verified suitable clay phacelia habitat over the life of the Project during the time of the year when the plant is most vulnerable to dust-related impacts (March through August).
- ***Clay Phacelia Conservation Measure 9:*** The following restrictions apply to herbicide use in suitable or occupied clay phacelia habitat:
  - No aerial or broadcast herbicide treatments will he applied for vegetation management within 2,500 feet of suitable or occupied clay phacelia habitat.
  - If aerial or broadcast spraying is needed for noxious weed control within 2,500 feet of suitable or occupied clay phacelia habitat, a weed management plan will be developed in coordination with FWS and consultation will be reinitiated.
- ***Clay Phacelia Conservation Measure 10:*** Upgrades to existing access roads in suitable habitat will be limited such that it has minimal impact on clay phacelia habitat, eliminates the need to construct a new road, or is necessary for safety.
- ***Clay Phacelia Conservation Measure 11:*** Surface reclamation will occur for any Project-related ground-disturbing activity. The method of reclamation will normally consist of, but is not limited to, salvaging, segregating and restoring topsoil, returning disturbed areas back to their natural contour, reseeding using seed mixes developed in

coordination with the BLM, USFS, and FWS botanists, installing cross drains for erosion control, placing water bars in the road, and filling ditches.

**Clay Reed-mustard**

- ***Clay Reed-mustard Conservation Measure 1:*** Pre-project habitat assessments will be completed across 100 percent of the disturbance area in FWS-mapped potential habitat prior to any ground disturbing activities to determine if suitable clay reed-mustard habitat is present.
- ***Clay Reed-mustard Conservation Measure 2:*** Site inventories will be conducted in suitable habitat (defined as areas which contain or exhibit the specific components or constituents necessary for plant persistence; determined by field inspection and/or surveys; may or may not contain clay reed-mustard) to determine occupancy. Where standard surveys are technically infeasible and otherwise hazardous due to topography, slope, etc., suitable habitat will be assessed and mapped for avoidance (hereafter, avoidance areas); in such cases, 3O0-foot buffers will be maintained between surface disturbance and avoidance areas. However, site-specific distances will need to be approved by the FWS and BLM whenever disturbance will occur upslope of habitat. Where conditions allow, inventories:
    - Must be conducted by qualified, BLM-approved individual(s) and according to BLM- and FWS-accepted survey protocols.
    - Will be conducted in suitable and occupied habitat for all areas proposed for surface disturbance prior to initiation of Project activities and in the same growing season at a time when the plant can be detected (usually May I to June 5, in the Uinta Basin; however, surveyors will verify that the plant is flowering by contacting a BLM or FWS botanist or demonstrating that the nearest known population is in flower).
    - Will occur within 300 feet of Project-related disturbance.
    - Will include, but not be limited to, plant species lists and habitat characteristics.
    - Will be valid until May 1 of the following year.
- ***Clay Reed-mustard Conservation Measure 3:*** For any activities associated with the geotechnical investigation the following requirements apply:
    - All work within 300 feet of occupied clay reed-mustard habitat will be moved or abandoned
    - All work within 300 feet of suitable habitat will be monitored by a biological monitor to ensure compliance with all applicable conservation measures
    - Existing access roads within 300 feet of suitable clay reed-mustard habitat may be used, but not improved
- ***Clay Reed-mustard Conservation Measure 4:*** Project infrastructure will be designed to minimize impacts in suitable habitat. This will include the following considerations:
    - Where standard surveys are technically infeasible, infrastructure and activities will avoid all suitable habitat by 300 feet. However, site-specific distances will need to be approved by the FWS and BLM when disturbance will occur upslope of habitat.
    - New access route creation will be limited.
    - Roads and utilities will share common right-of-ways where possible.

- The width of roads will be reduced and the depth of excavation needed for the road bed will be minimized; where feasible, the natural ground surface will be used for roads in suitable habitat,
- Signing will be placed to limit off-road travel in sensitive areas.
- Activities will be constrained to designated routes and other cleared/approved areas.

- ***Clay Reed-mustard Conservation Measure 5:*** Project-related surface disturbance will avoid all occupied habitat by 300 feet. Project infrastructure will be designed to avoid direct disturbance and minimize indirect impacts on populations and to individual plants. This will include the following considerations:
  - To avoid water flow and/or sedimentation into occupied habitat and avoidance areas, silt fences, hay bales, and similar structures or practices will be incorporated into Project design; appropriate placement of fill is encouraged.
- ***Clay Reed-mustard Conservation Measure 6:*** A qualified, BLM-approved biologist or botanist must be onsite preconstruction to clearly mark or flag avoidance areas so they are visible during construction. Qualified personnel also will be present during construction to monitor avoidance of these areas. A post-construction report documenting compliance and noncompliance with these measures will be prepared by the qualified personnel and submitted to the FV/S.
- ***Clay Reed-mustard Conservation Measure 7:*** Dust abatement will occur during the peak flowering season (April through May) and only water will be used within 300 feet of suitable habitat.
- ***Clay Reed-mustard Conservation Measure 8:*** The following restrictions apply to herbicide use in suitable or occupied clay reed-mustard habitat:
  - No aerial or broadcast herbicide treatments will be applied for vegetation management within 2,500 feet of suitable or occupied clay reed-mustard habitat.
  - For noxious weed control within 2,500 feet of suitable or occupied clay reed-mustard habitat, manual spot treatments (i.e. backpack sprayers) shall be used.
  - All those involved in the herbicide application shall be accompanied by a qualified botanist/ecologist familiar with clay reed-mustard to help herbicide applicators identify reed mustard and avoid impacts on individual plants.
  - Treatments would not be done when wind speeds exceed 6 miles per hour.
  - Drift reducing agents shall be used when practical.
  - A reduced application rate would be used.
  - Pump pressure would be reduced, per label instructions.
  - Droplet size would be increased to the largest size possible while still effectively covering the target vegetation. This could be accomplished using larger nozzles or reduced pressure.
  - Herbicides shall be stored in spill proof containers away from special status plant habitats.

**Deseret Milkvetch**

- ***Deseret Milkvetch Conservation Measure 1:*** Focused-intuitive surveys will be conducted along the proposed right-of-way to identify and survey any previously unidentified areas of potentially suitable Deseret milkvetch habitat. Surveys will occur in all areas of potentially suitable habitat. Potentially suitable habitat will be identified

based on a geographic information system (GIS) exercise to identify, survey areas prepared by the BLM and Proponent coordination with the FWS Utah Field Office. The GIS exercise will help identify habitats that may be suitable for the species on west through south aspects of the Moroni formation. The identification of suitable habitat will be refined by review of aerial imagery and bounded by the Section 7 consultation boundary provided by the F'WS. Suitable habitat parameters developed by the FWS (Appendix E) will be used to identify appropriate survey areas.

- ***Deseret Milkvetch Conservation Measure 2:*** If the Project can avoid all suitable habitat (as documented during the focused-intuitive surveys) and occupied habitat (as documented) within a 300-foot buffer, no surveys are necessary. If avoidance of suitable habitat is not possible, surveys will be performed within 300 feet of the Project area to determine occupancy prior to construction or 400 feet if upslope of suitable or occupied habitat. If surveys are necessary, they must be performed by qualified, BLM-approved individual(s) and according to FWS-accepted survey protocols. Surveys will be conducted during the flowering and/or fruiting period when the plant can be detected and correctly identified. Surveys will be valid for one calendar year.
- ***Deseret Milkvetch Conservation Measure 3:*** For any activities associated with the geotechnical investigation the following requirements apply:
    - All work within 300 feet (400 feet if upslope) of occupied Deseret milkvetch habitat will be moved or abandoned.
    - All work within 300 feet of suitable habitat will be monitored by a biological monitor to ensure compliance with all applicable conservation measures.
    - Existing access roads within 300 feet of suitable Deseret milkvetch habitat may be used, but not improved.
- ***Deseret Milkvetch Conservation Measure 4:*** No new development or permanent ground disturbance, including but not limited to poles, pads, towers, etc., will occur within a 300-foot buffer of occupied Deseret milkvetch habitat. If construction activities occur upslope of occupied habitat, the buffer may be increased to 400 feet to prevent additional erosion in the habitat.
- ***Deseret Milkvetch Conservation Measure 5:*** Wire will be strung between towers aerially with no ground disturbance in field-verified habitat or within 300 feet of occupied Deseret milkvetch habitat.
- ***Deseret Milkvetch Conservation Measure 6:*** No new roads will be established within a 300-foot buffer of occupied Deseret milkvetch habitat. If construction activities occur upslope of occupied habitat, the buffer may be increased to 400 feet to prevent additional erosion in the habitat. Existing access roads will be used to the extent practicable to limit additional fragmentation in the species' habitat from new road development that avoid occupied habitat.
- ***Deseret Milkvetch Conservation Measure 7:*** The existing access road to the north of Birdseye that connects to Blind Canyon Road contains plants alongside the road and within 300 feet of the road edge. This road will not be used for any Project-related activities,
- ***Deseret Milkvetch Conservation Measure 8:*** A qualified, BLM-approved biologist or botanist must be onsite preconstruction to clearly mark or flag avoidance areas so they are visible during construction. Qualified personnel also will be present during construction to monitor avoidance of these areas. A post-construction report documenting

compliance and noncompliance with these measures will be prepared by the qualified personnel and submitted to the FWS no later than I month after construction.

- ***Deseret Milkvetch Conservation Measure 9:*** After construction, the Project will provide a GTS shapefile or documentation of new and upgraded access routes to the appropriate emergency fire operations personnel with the State of Utah, BLM, USFS, and FWS, as well as notification statement that there is an ESA-listed plant species in the area of Birdseye, Utah. This information will be provided no later than 1 year after construction of this specific transmission-line segment.
- ***Deseret Milkvetch Conservation Measure 10:*** No vegetation treatments will be performed within a 300-foot buffer of occupied Deseret milkvetch habitat.
- ***Deseret Milkvetch Conservation Measure 11:*** The following restrictions apply to herbicide use in suitable or occupied Deseret milkvetch habitat:
    - No aerial or broadcast herbicide treatments will be applied for vegetation management within 2,500 feet of suitable or occupied Deseret milkvetch habitat.
    - For noxious weed control within 2,500 feet of suitable or occupied Deseret milkvetch habitat, manual spot treatments (i.e. backpack sprayers) shall be used.
    - All those involved in the herbicide application shall be accompanied by a qualified botanist/ecologist familiar with Deseret milkvetch to help herbicide applicators identify
    - Deseret milkvetch and avoid impacts on individual plants.
    - Treatments would not be done when wind speeds exceed 6 miles per hour.
    - Drift reducing agents shall be used when practical.
    - A reduced application rate would be used.
    - Pump pressure would be reduced, per label instructions.
    - Droplet size would be increased to the largest size possible while still effectively covering the target vegetation. This could be accomplished using larger nozzles or reduced pressure.
    - Herbicides shall be stored in spill proof containers a\¡/ay from special status plant habitats.

**Shrubby Reed-mustard**

- ***Shrubby Reed-mustard Conservation Measure 1:*** Prior to construction, FWS-mapped potentially suitable habitat within 300 feet of any Project-related activity will be 100 percent surveyed by BLM-approved botanists following appropriate FWS guidelines.
- ***Shrubby Reed-mustard Conservation Measure 2:*** For any activities associated with the geotechnical investigation the following requirements apply:
    - All work within 300 feet of occupied shrubby reed-mustard habitat will be moved or abandoned.
    - All work within 300 feet of suitable habitat will be monitored by a biological monitor to ensure compliance with all applicable conservation measures.
    - Existing access roads within 300 feet of suitable shrubby reed-mustard habitat may be used, but not improved.
- ***Shrubby Reed-mustard Conservation Measure 3:*** New surface disturbance is prohibited within 300 feet of occupied shrubby reed-mustard habitat.

- ***Shrubby Reed-mustard Conservation Measure 4:*** In proximity to suitable habitat, all construction activities will be overseen by a biological monitor to ensure compliance with all applicable conservation measures. The biological monitor will also:
  - Before and during construction, make areas for avoidance visually identifiable in the field (e.g., flagging, temporary fencing, rebar, etc.).
  - Provide the FWS and BLM with a post-construction report of compliance, impacts, and extent of impacts on shrubby reed-mustard.
- ***Shrubby Reed-mustard Conservation Measure 5:*** Wrinkles Road will not be used for any Project-related activities.
- ***Shrubby Reed-mustard Conservation Measure 6 :*** Appropriate erosion control measures (silt fencing, hay bales, or other methods) will be taken where Project activities occur within 300 feet upslope of suitable habitat,
- ***Shrubby Reed-mustard Conservation Measure 7:*** The following restrictions apply to herbicide use in suitable or occupied shrubby reed-mustard habitat:
  - No aerial or broadcast herbicide treatments will be applied for vegetation management within 2,500 feet of suitable or occupied shrubby reed-mustard habitat.
  - For noxious weed control within 2,500 feet of suitable or occupied shrubby reed-mustard habitat, manual spot treatments (i.e. backpack sprayers) shall be used,
  - All those involved in the herbicide application shall be accompanied by a qualified botanist/ecologist familiar with shrubby reed-mustard to help herbicide applicators identify shrubby reed-mustard and avoid impacts on individual plants.
  - Treatments would not be done when wind speeds exceed 6 miles per hour.
  - Drift reducing agents shall be used when practical.
  - A reduced application rate would be used.
  - Pump pressure would be reduced, per label instructions.
  - Droplet size would be increased to the largest size possible while still effectively covering the target vegetation. This could be accomplished using larger nozzles or reduced pressure.
  - Herbicides shall be stored in spill proof containers away from special status plant habitats.
- ***Shrubby Reed-mustard Conservation Measure 8:*** Dust abatement will occur during the peak flowering season (April 15th through August 15th) and only water will be used within 300 feet of suitable habitat.

**Uinta Basin Hookless Cactus**

- ***Uinta Basin Hookless Cactus Conservation Measure 1:*** Surveys for Uinta Basin hookless cactus will be conducted prior to final design of the Project using survey protocols developed for the Project through coordination with the BLM and FV/S (Appendix F).
- ***Uinta Basin Hookless Cactus Conservation Measure 2:*** All Uinta Basin hookless cactus transplant sites and study plots will be avoided to the extent possible.
- ***Uinta Basin Hookless Cactus Conservation Measure 3:*** Right-of-way placement within 300 feet of occupied Uinta Basin hookless cactus habitat will be avoided to the extent possible.

- ***Uinta Basin Hookless Cactus Conservation Measure 4:*** For any activities associated with the geotechnical investigation, the following requirements apply:
  - All work requiring Uinta Basin hookless cactus to be transplanted will be moved or abandoned.
  - All work within 300 feet of suitable or occupied habitat will be monitored by a biological monitor to ensure compliance with all applicable conservation measures.
  - Alternative, low-impact geotechnical investigation methods will be used within 300 feet of occupied habitat. These methods could include walk-in or helicopter-assisted drilling and will be subject to BLM and FWS approval.
  - Existing access roads within 300 feet of suitable Uinta Basin hookless cactus habitat may be used, but not improved.
- ***Uinta Basin Hookless Cactus Conservation Measure 5:*** Permanent and temporary disturbance will be sited to: (l) maximize the distance from adjacent Uinta Basin hookless cactus, (2) minimize impacts on the maximum number of cacti technically feasible, and (3) minimize the overall surface-disturbance area without compromising safety.
- ***Uinta Basin Hookless Cactus Conservation Measure 6:*** Construction will occur down slope of plants and populations where feasible and avoid concentrating water flows or sediments to plants. Appropriate erosion/sedimentation control measures (i.e., silt fencing, straw wattles) will be used to protect Uinta Basin hookless cactus within 300 feet and downslope or downwind of surface disturbance. Fencing is intended to prevent sedimentation or dust deposition and will be evaluated for effectiveness by a qualified, BLM-approved botanist.
- ***Uinta Basin Hookless Cactus Conservation Measure 7:*** A qualified, BLM-approved botanist will be on-site to flag cacti or avoidance areas, train construction crews on how to avoid cacti, and be sure that construction and activities avoid or minimize damage to habitat when Uinta Basin hookless cactus is within 300 feet of any surface-disturbing activities.
- ***Uinta Basin Hookless Cactus Conservation Measure 8:*** Dust abatement (consisting of water only) will occur during construction and maintenance activities within the Sclerocactus potential habitat polygon over the life of the Project. Dust abatement will occur during the time of the year when cactus is most vulnerable to dust-related impacts (March 1$^{st}$ through August 31$^{st}$).
- ***Uinta Basin Hookless Cactus Conservation Measure 9:*** Ground-disturbing activities will occur outside of the flowering season, typically March 15 to June 30, in the Sclerocactus potential habitat polygon (including CCAI and2) as defined by the FV/S. This will avoid adverse impacts on Sclerocactus reproductive success due to the high volumes of dust produced during construction and ground-disturbing activities.
- ***Uinta Basin Hookless Cactus Conservation Measure 10:*** A 15-mile-per-hour speed limit for all construction personnel will be implemented within 300 feet of occupied habitat.
  - Speed limit signs will be posted for project personnel.
  - Signing will be posted to limit off-road travel in sensitive areas.
- ***Uinta Basin Hookless Cactus Conservation Measure 11:*** The FWS will be contacted within 24 hours in the event of any emergency or unforeseen situation in which cacti or habitat will be damaged or lost.

- ***Uinta Basin Hookless Cactus Conservation Measure 12:*** All disturbed areas in the Sclerocactus potential habitat polygon will be reclaimed using seed mixes composed mostly of native species developed in coordination with the BLM botanist and the FWS and final approval will be provided by the BLM.
- ***Uinta Basin Hookless Cactus Conservation Measure 13:*** Post-construction monitoring for invasive species will be required. Noxious weeds in Sclerocactus habitat will follow mitigation measures identified in the BLM's 2007 Programmatic EIS for Vegetation Treatments using Herbicides. Coordination would occur with the BLM Vernal Field Office weed coordinator prior to noxious weed management in Sclerocactus habitat.
- ***Uinta Basin Hookless Cactus Conservation Measure 14:*** Where complete avoidance of individual cacti is not feasible, all cacti located in the areas required to be disturbed by the Project will be transplanted by a qualified botanist according to FWS protocols. Only cacti that were not previously transplanted or used as control plants for Uinta Basin hookless cactus monitoring studies would be allowed to be affected during this Project and potentially transplanted. The number of cacti to be transplanted would be calculated after the surveys are completed. A 10-year monitoring plan, specific to Uinta basin hookless cactus, will be developed in coordination with FWS for all transplanted cacti.
    - Cacti shall be transplanted into high-quality unoccupied suitable habitat or habitat with a few scattered individuals within the range of the species to prevent disruption and competition with occupied sites. Recipient sites should be coordinated with botanists from the BLM and FWS. Up to 30 of the cacti to be transplanted can instead be donated to up to three Center for Plant Conservation-designated botanical gardens for education or formation of an ex-situ collection as determined by the BLM and FWS botanists in coordination with the recipient garden.
- ***Uinta Basin Hookless Cactus Conservation Measure 15:*** Mitigation will be required in occupied suitable habitat based on the results of surveys and residual impacts. A monetary amount will be contributed to the Sclerocactus Mitigation Fund to aid in the recovery of Sclerocactus species affected by the Project. The payment will be calculated using the Sclerocactus compensatory mitigation calculation table provided by the FWS upon completion of surveys and final engineering design. The primary purpose of the mitigation fund is to implement conservation and restoration activities for Sclerocactus and its habitat or to acquire suitable or occupied habitat.
- ***Uinta Basin Hookless Cactus Conservation Measure 16:*** Additional measures to avoid or minimize effects on the species may be developed and implemented in consultation with the FWS to ensure continued compliance with the ESA.

**Ute Ladies'-tresses**

- ***Ute Ladies'-Tresses Conservation Measure 1:*** Field habitat assessments will be conducted to identify, areas of potentially suitable Ute ladies tresses habitat in the Project area where surveys will be conducted. Field habitat assessments
    - Must be conducted by qualified individual(s) approved by the BLM and FWS.
    - Will occur during the growing season.
    - Will occur within 300 feet of any planned disturbance or areas likely to experience hydrology changes resulting from Project activities

- Will identify habitat meeting the criteria described in 1992Interim Survey Requirements for Ute ladies'-tresses Orchid (FWS 1992) and Rangewide Status Review of Ute Ladies'-Tresses (Spiranthes diluvialis) (Fertig et. al2005).
- Will exclude habitats meeting the following criteria:
- Appropriate hydrology not present, typically indicated by
    - area comprised of mostly upland vegetation
    - area that dries up by mid-July with a water table lower than 12 to 18 inches below the soil surface
- Heavy clay soils present
- Soils strongly alkaline
- Site heavily disturbed, such as, for example:
    - Stream banks channelized and stabilized by heavy rip-rap
    - Highway rights-of-way built on filled or compacted soil or rock material
    - Construction sites where construction has either stripped the topsoil or where construction has been completed within the last 5 years but the area has not been revegetated (Ute ladies'-tresses orchid has been found in some heavily disturbed sites where hydrology is appropriate, such as revegetated gravel pits, heavily grazed riparian edges and pastures, and along well-traveled trails developed on old berms)
    - Stream banks steep, transition from stream margin to upland areas abrupt
    - Site characterized by standing water with cattails, bulrushes, and other emergent aquatic vegetation- note margins may be suitable habitat
    - Riparian areas, stream banks, or wetlands vegetated with dense rhizomatous species such as reed canary grass (*Phalaris arundinacea*),tamarisk or salt cedar (*Tamarix ramosissima*), teasel (*Dipsacus sylvestris*), common reed, (*Phragmites australis*), or saltgrass (*Distichlis spicata*)
    - Riparian areas overgrazed or otherwise managed such that the vegetation community is comprised of upland native or weedy species or is unvegetated. (the orchid can tolerate rather extreme overgrazing as long as it has not resulted in a drop in the water table as indicated by conversion of the riparian or wet meadow pasture vegetation community to mostly upland species)
    - Potential habitat is no longer in a natural condition, for example, has been converted to agricultural uses and is now plowed and cropped, or has been converted to lawns or golf courses (wet meadow pastures with a mix of native and non-native pasture grasses, including pastures that are regularly hayed, are suitable potential habitat.
    - Wetland is a brackish playa or pothole not fed by springs or not in the floodplain of or hydrologically connected with a riparian system or other source of fresh water (fens and wetlands associated fresh water springs are suitable potential habitat).

- ***Ute Ladies'-Tresses Conservation Measure 2:*** Surveys to determine Ute ladies'-tresses habitat occupancy will be conducted in suitable habitat. The following requirements for inventories apply:

- Must be conducted by qualified individual(s) and according to 1992Interim Survey Requirements for Ute ladies'-tresses Orchid (FWS 1992)
- Will not occur in areas where existing roads would be used without improvement
- Will be conducted at a time when the plant can be detected and during appropriate flowering periods
- Will be conducted for at least I year prior to any temporary disturbance in suitable habitat (e.g., overland travel to access geotechnical boring location). Two additional years of surveys would be conducted after the temporary disturbance for a total of 3 years of surveys.
- Three consecutive years of surveys will be required prior to any permanent disturbance (e.g., road widening, new road construction, placement of other infrastructure)

- ***Ute Ladies'-Tresses Conservation Measure 3:*** For any activities associated with the geotechnical investigation the following requirements apply:
  - All work within 300 feet of occupied Ute ladies' tresses habitat will be moved or abandoned.
  - All work within 300 feet of suitable habitat will be monitored by a biological monitor to ensure compliance with all applicable conservation measures.
  - Existing access roads within 300 feet of suitable Ute ladies'-tresses habitat may be used, but not improved.
- ***Ute Ladies'-Tresses Conservation Measure 4:*** Design Project infrastructure to minimize direct or indirect impacts on suitable habitat both in and downstream of the Project area:
  - Alteration and disturbance of hydrology will not be permitted.
  - Disturbance footprint size should be reduced to the minimum needed, without compromising safety.
  - New access routes for the Project should be limited.
  - Roads and utilities should share common right-of-ways where possible.
  - Rights-of-way widths should be reduced and the depth of excavation needed for the road bed should be minimized,
  - Construction and right-of-way management measures should avoid soil compaction that would impact Ute ladies' tresses habitat.
  - Offsite impacts or indirect impacts should be avoided or minimized (i.e., install berms or catchment ditches to prevent spilled materials from reaching occupied or suitable habitat through either surface or groundwater).
  - Signing should be placed to limit off-road travel in sensitive areas.
  - Vehicles and equipment should be made to stay on designated routes and other cleared/approved areas.
  - All disturbed areas will be revegetated with species approved by FWS and BLM botanists.
- ***Ute Ladies'-Tresses Conservation Measure 5:*** Project-related construction activities will avoid individual plants by a minimum of 300 feet. In proximity to occupied habitat, Project infrastructure will be designed to avoid direct disturbance and minimize indirect impacts on populations and to individual plants:
  - Follow recommendations for Project design in suitable habitats.
  - Create designs that will avoid altering site hydrology and concentrating water flows or sediments into occupied habitat.

- Minimize the disturbed area through interim and final reclamation. Reclaim disturbance following construction to the smallest area possible.

- ***Ute Ladies'-Tresses Conservation Measure 6:*** In proximity to occupied habitat, all construction activities will be overseen by a biological monitor to ensure compliance with all applicable conservation measures. The biological monitor will also:
  - Make areas for avoidance visually identifiable in the field (e.g., flagging, temporary fencing, rebar, etc.) before and during construction.
  - Provide the FWS and BLM with a post-construction report of compliance, impacts, and extent of impacts on Ute ladies'-tresses no later than 4 months upon Project completion.
- ***Ute Ladies'-Tresses Conservation Measure 7:*** The following restrictions apply to herbicide use in suitable or occupied Ute ladies'-tresses habitat:
  - No aerial or broadcast herbicide treatments will be applied for vegetation management within 2,500 feet of suitable or occupied Ute ladies'-tresses habitat.
  - For noxious weed control within 2,500 feet of suitable or occupied Ute ladies'-tresses habitat, manual spot treatments (i.e. backpack sprayers) shall be used.
  - All those involved in the herbicide application shall be accompanied by a qualified botanist/ecologist familiar with Ute ladies'-tresses to help herbicide applicators identify Ute ladies'-tresses and avoid impacts on individual plants.
  - Treatments would not be done when wind speeds exceed 6 miles per hour.
  - Drift reducing agents shall be used when practical.
  - A reduced application rate would be used.
  - Pump pressure would be reduced, per label instructions.
  - Droplet size would be increased to the largest size possible while still effectively covering the target vegetation. This could be accomplished using larger nozzles or reduced pressure.
  - Herbicides shall be stored in spill proof containers away from special status plant habitats.
- ***Ute Ladies'-Tresses Conservation Measure 8:*** Notify the FWS immediately if any Ute Ladies' tresses are located during surveys or monitoring. In the event that Ute Ladies tresses are located, additional discussions between the BLM and FWS will be conducted to review site plans and ensure that the appropriate avoidance measures are implemented.