Energy Gateway South Transmission Project

Draft Vegetation and Special Status Plants Report

Prepared by:

Environmental Planning Group
Salt Lake City, Utah

Prepared for:

Ashley National Forest (Duchesne Ranger District)
Manti-La Sal National Forest (Ferron, Price, and Sanpete Ranger Districts)
Uinta National Forest (Heber-Kamas and Spanish Fork Ranger Districts)

February 2014

Nondiscrimination Notice

The U.S. Department of Agriculture (USDA) prohibits discrimination in all its programs and activities on the basis of race, color, national origin, sex, religion, age, disability, sexual orientation, marital status, family status, status as a parent (in education and training programs and activities), because all or part of an individual's income is derived from any public assistance program, or retaliation. (Not all prohibited bases apply to all programs or activities.)

If you require this information in alternative format (Braille, large print, audiotape, etc.), contact the USDA's TARGET Center at (202) 720-2600 (Voice or TDD).

If you require information about this program, activity, or facility in a language other than English, contact the agency office responsible for the program or activity, or any USDA office.

To file a complaint alleging discrimination, write USDA, Director, Office of Civil Rights, 1400 Independence Avenue, S.W., Washington, D.C. 20250-9410, or call toll free, (866) 632-9992 (Voice). TDD users can contact USDA through local relay or the Federal relay at (800) 877-8339 (TDD) or (800) 845-6136 (in Spanish). USDA is an equal opportunity provider, employer, and lender.

You may use USDA Program Discrimination Complaint Forms AD-3027 or AD-3027s (Spanish) which can be found at: http://www.ascr.usda.gov/complaint_filing_cust.html and http://www.ascr.usda.gov/es_us/sp_complaint_filing_cust.html or upon request from a local USDA office.

Declaración de política de no discriminación de USDA

El Departamento de Agricultura de los Estados Unidos (USDA por sus siglas en ingles), prohíbe la discriminación en sus programas y actividades ya sea por raza, color, nacionalidad, sexo, religión, edad, incapacidad, orientación sexual, estado civil, estado familiar, su estado como padre o madre (en programas de educación y adiestramiento), ya sea que todo o parte de los ingresos provengan de cualquier programa de asistencia pública de las personas, o por represalias. (No todas las prohibiciones se aplican a todos los programas o actividades).

Si usted necesita la información de este anuncio en un formato diferente (Braille, letras grandes, o por medio de sonido, etc.), llame al Centro TARGET del Departamento de Agricultura al teléfono 202-720-2600 (voz y TDD).

Si usted necesita información sobre este programa, actividad o instalaciones en un idioma diferente del inglés, llame a la agencia del Departamento que maneja este programa o actividad, o a cualquier oficina del Departamento de Agricultura.

Para someter una queja de discriminación, escriba al USDA, Office of Civil Rights, 1400 Independence Avenue, S.W., Washington, D.C. 20250-9410, o llame gratis at 1-866-632-9992 (voz). Para llamadas TDD, llame al USDA al número 1-800-877-8339 o (800) 845-6136 (en Español). Usted puede usar la forma de discriminación AD-3027 o AD-3027 en Español, la cual se puede encontrar en: http://www.ascr.usda.gov/es_us/sp_complaint_filing_cust.html o puede obtener en cualquier oficina local del Servicio Forestal. El Departamento de Agricultura ofrece oportunidades de programas y de empleo libres de discriminación.

Table of Contents

List of Tables

Acronyms

Applicant	PacifiCorp, doing business as Rocky Mountain Power
BLM	Bureau of Land Management
CIAA	Cumulative impact analysis area
COUT	Colorado to Utah – U.S. Highway 40 to Central Utah to Clover alternative routes
COUT BAX	Colorado to Utah – U.S. Highway 40 to Baxter Pass to Clover alternative routes
EIS	Environmental impact statement
GAP	Gap Analysis Program (appendix A only)
GIS	Geographic Information Systems
Project	Energy Gateway South Transmission Project
POD	Plan of development
RFFAs	Reasonably foreseeable future actions
UNHP	Utah Natural Heritage Program
UNPS	Utah Native Plant Society
USDA	U.S. Department of Agriculture
USFS	U.S. Forest Service
USGS	U.S. Geological Survey

Introduction

In December 2008, PacifiCorp (doing business as Rocky Mountain Power, the Applicant) submitted an Application for Transportation and Utility Systems and Facilities on Federal Lands (Standard Form 299) submitted to the Bureau of Land Management (BLM) and the U.S. Forest Service (USFS) for constructing, operating, and maintaining the Energy Gateway South Transmission Line Project (Project). In response, the BLM, as the lead agency, in coordination with the USFS and other cooperating agencies, are preparing an environmental impact statement (EIS) and land-use plan amendments to evaluate and disclose the potential Project-related environmental impacts that could result from the action proposed by the Applicant (Proposed Action) and alternatives of the Proposed Action. The Applicant's interests and objectives, the purpose of the federal action, and a description of the Project are provided in more detail in Chapters 1 and 2 of the Draft EIS (BLM 2014).

Approximately 1,425 miles of alternative routes, through 16 counties in the states of Wyoming, Colorado, and Utah are being evaluated for the transmission line and associated facilities (e.g., access roads, series compensation stations, and temporary construction workspaces). Portions of the alternative routes cross three national forests—the Ashley, Uinta-Wasatch-Cache[1], and Manti-La Sal. The Project could affect individuals and/or suitable habitat for USFS-listed sensitive plants on national forests.

This document evaluates the potential direct, indirect, and cumulative effects of the Project on USFS Region 4 sensitive plant species known or suspected to occur on USFS-administered lands affected by the Project. The purpose of this document is to provide analysis, determination, and rationale for the likely effects of the alternative routes on these species.

Overview of Issues Addressed

This report evaluates whether USFS could issue the Applicant a special-use authorization to construct, operate, and maintain the Project along the alternative routes crossing USFS-administered land evaluated in the EIS in compliance with sensitive species policies in the National Forest Management Act and USFS Manual 2670.

To evaluate compliance with USFS sensitive species policy, this report evaluates the potential effects of the proposed Project on habitat for USFS sensitive plant species and the effectiveness of Project design features for environmental protection and selective mitigation measures at reducing or avoiding impacts on these resources (refer to Page 7, subsection "Project Design Features and Selective Mitigation Measures" for descriptions of these features as applicable to this report).

Issue Indicators

Issue indicators and data used to evaluate effects on sensitive plants include the area (in acres) and location of suitable habitat and individual plants. Information from the Utah Natural Heritage Program (UNHP) and USFS regarding the locations of sensitive plants was used, when available, to determine species occurrences on USFS-administered land. However, inventories of sensitive plants have not been

[1]In March 2008, the Uinta National Forest and Wasatch-Cache National Forest were combined into one administrative unit. Each of these National Forests is still operating under individual Forest Plans approved in 2003. When the term Uinta is used in context with the USFS, it refers to the Uinta Planning Area of the Uinta-Wasatch-Cache National Forest.

conducted in all areas and comprehensive data regarding the area of habitat and location of individual sensitive plants on the Forests are generally not available. Therefore, habitat models have been created for each USFS sensitive species that may be affected by the Project using current and available information regarding habitat requirements and the distribution of these habitats across the landscape (Appendix A). Habitat descriptions, ranges, geologic substrates, and elevations from the Utah Native Plant Society (UNPS) (2012), *A Utah Flora* (Welsh et al. 2008), and the NatureServe Online Encyclopedia (NatureServe 2013) were used to inform geographic information systems (GIS) modeling. Potential habitat identified by the habitat models are used to quantify and report the extent (in acres) of habitat for each species affected by the Project on USFS-administered land. Extents of modeled habitat for a species are likely to be over-estimations of actual available habitat, as very conservative assumptions regarding habitat characteristics were used to inform habitat modeling.

Affected Environment

Seven USFS-listed sensitive species were selected for detailed analysis in this report due to proximity of known occurrences or mapped habitat to Project alternative routes. Forests where these species are known to occur and rationale for inclusion in analysis are presented in Table 1. A list of USFS sensitive plants considered but eliminated from further analysis and the rationale for elimination is presented in Appendix B.

TABLE 1
U.S. FOREST SERVICE SENSITIVE PLANT SPECIES KNOWN TO OCCUR OR WITH POTENTIAL TO OCCUR IN ALTERNATIVE ROUTE STUDY CORRIDORS

Common Name	Scientific Name	National Forest			Rationale for Inclusion in Analysis
		Ashley	Manti-La Sal	Uinta	
Canyon sweet-vetch	*Hedysarum occidentale var. canone*		✓		The species is known to occur in the Project area in Carbon, Emery, and Duchesne counties in Utah. Heritage data included one occurrence of the species near Tabiona approximately 7.5 miles from Link U420 (Utah Natural Heritage Program [UNHP] 2011).
Carrington daisy	*Erigeron carringtonae*		✓		The species is known to occur in the Project area. Heritage data included thousands of individual occurrences of the species near Pine Spring in the East Mountains, which is approximately 0.5 mile from Link U630 (UNHP 2011).

TABLE 1 U.S. FOREST SERVICE SENSITIVE PLANT SPECIES KNOWN TO OCCUR OR WITH POTENTIAL TO OCCUR IN ALTERNATIVE ROUTE STUDY CORRIDORS					
Common Name	Scientific Name	National Forest			Rationale for Inclusion in Analysis
		Ashley	Manti-La Sal	Uinta	
Creutzfeldt's cat's-eye	*Cryptantha creutzfeldtii*		✓		The species is known to occur in the Project area near Huntington and Kenilworth, Utah (Links U590, U630, and U765). The species also occurs northwest of Price, Utah (within 5 miles of Links U548, U595, U546, and U522) and near Soldier Creek (Links U522, U523, and U492) (UNHP 2011).
Goodrich's blazingstar	*Mentzelia goodrichii*	✓			The species is known to occur in the Project area. Heritage data included occurrences of the species in the vicinity of Argyle Canyon near Links U431 and U401 (UNHP 2011).
Green River greenthread	*Thelesperma caespitosum*	✓			The species is known to occur in the Project area. Heritage data included three occurrences of this species in 2 miles of alternative route centerlines (UNHP 2011).
Untermann's daisy	*Erigeron untermannii*	✓			The species is known to occur in the Project area. Heritage data included occurrences of two large populations located in Ashley National Forest along Link U431 (UNHP 2011).
Wheeler's angelica	*Angelica wheeleri*			✓	The species is known to occur in the Project area. Heritage data included two occurrences at the junction of Salt Creek Canyon and McCune Canyon in Uinta National Forest which is approximately 5 miles from Link U650. Suitable habitat and populations of this species are also known in Tie Fork and in the right and left forks of Indian Creek.
NOTES: [1]Nomenclature follows NatureServe Explorer 2013.					

Existing Condition

Sensitive plant species with potential to occur on national forests crossed by the alternative routes were identified on the Intermountain Region Sensitive Species list (USFS 2013). This list was refined to only

include species with potential to be affected by Project activities through communication with USFS personnel and review of habitat and occurrence data from the UNHP, and USFS personnel were consulted to refine the list of species that potentially could occur in the Project area. Relevant published literature was referenced to determine habitat suitability in the corridors for some species where gaps in occurrence data were identified.

Species Accounts for all U.S. Forest Service Sensitive Species on National Forests in the Project Area

Canyon Sweet-Vetch

Canyon sweet-vetch, also known as the coal-cliffs sweetvetch, is endemic to Carbon, Duchesne, and Emery counties, Utah (UNPS 2012). Canyon sweet-vetch is found in pinyon-juniper, serviceberry (*Amelanchier* spp.), maple (*Acer* spp.), alderleaf mountain mahogany, and sagebrush communities between 6,400 and 8,300 feet (UNPS 2012) on or below the coal measures of the Mesa Verde group in Carbon, Duchene, and Emery counties (Welsh et al. 2008). UNHP- and USFS-mapped occurrences in Utah range in elevation from 6,400 to 8,400 feet.

Carrington Daisy

Carrington daisy is found on Flagstaff Limestone in meadows and escarpment margins between 10,000 and 11,000 feet in elevation (UNPS 2012) in Emery and Sanpete counties (Welsh et al. 2008). UNHP- and USFS-mapped occurrences in Utah range in elevation from 9,900 to 11,100 feet.

Creutzfeldt's Cat's-eye

Creutzfeldt's cat's-eye occurs in scattered pinyon-juniper communities with an understory of black sagebrush and mat Atriplex communities on a silty-clay substrate of the Mancos Shale Formation overlain with Emery Sandstone at elevations from 5,250 to 6,500 feet (UNPS 2012; NatureServe 2013) in Carbon and Emery counties (Welsh et al., 2008). UNHP-, USFS-, and BLM-mapped occurrences in Utah range in elevation from 5,600 to 6,800 feet. Currently, it is known from scattered locations along the base of the Book Cliffs and Wasatch Plateau escarpments as they flank Castle Valley on the north and west edges (Franklin 2005) including the Manti-La Sal National Forest, BLM, and privately owned lands (UNPS 2012).

Goodrich's Blazingstar

Goodrich's blazingstar grows on steep, white, marly, calciferous shale outcrops of the Green River Formation at 8,100 to 8,800 feet. It is endemic to southern Duchesne County where it is known to occur along the Bad Land Cliffs above Argyle Canyon and west into Avintaquin Canyon (Franklin 2005) and along the escarpment of Willow Canyon and the Anthro Mountain area of the West Tavaputs Plateau (Utah Division of Wildlife Resources 1998). Associated vegetation includes limber pine, pinyon pine, Douglas fir, mountain mahogany, and rabbitbrush (UNPS 2012). UNHP- and USFS-mapped occurrences in Utah range in elevation from 7,100 to 9,300 feet.

Green River Greenthread

The Green River greenthread occurs on white shale slopes and ridges of the Green River Shale and Uinta Formations at approximately 5,900 feet in Duchesne and Uintah counties (UNPS 2012; Welsh et al. 2008). UNHP- and USFS-mapped locations of Green River greenthread occur at elevations from 5,800 to 8,400 feet.

Untermann's Daisy

Untermann's daisy is found on calcareous shales and sandstones of the Uinta and Green River Formations in pinyon-juniper, mountain mahogany, limber pine, bristlecone pine (*Pinus longaeva*), and sagebrush communities between 7,000 and 9,400 feet in elevation (UNPS 2012) on the Tavaputs Plateau (Welsh et al. 2008). UNHP- and USFS-mapped occurrences in Utah range in elevation from 6,800 to 9,400.

Wheeler's Angelica

Wheeler's angelica inhabits boggy or very wet areas in riparian communities, seeps, and springs from 5,380 to 10,000 feet in elevation (UNPS 2012) in Cache, Juab, Piute, Salt Lake, Sevier, and Utah counties (Welsh et al. 2008). UNHP-mapped occurrences in Utah range in elevation from 5,700 to 6,400 feet.

Environmental Consequences

Methodology

The extent of Project-related disturbance to potentially suitable or known habitat for sensitive plants was analyzed quantitatively using GIS. The length of habitat for each species crossed by alternative routes on USFS-administered land was calculated by overlaying the modeled habitat for each species with the alternative route centerlines. To estimate the area (in acres) of impacts on these habitats, an average-acres-of-disturbance per mile of transmission line was calculated for each alternative route using the total length of each alternative route and the total disturbance estimated for the alternative route (presented in Table 2-11of the Project EIS [BLM 2014]). The average extent of disturbance per mile for each alternative route and the total length of habitat crossed were used to calculate the extent (in acres) of potential effects on sensitive plant habitat. Calculation of the extent of impacts on habitat using these methods is conservative, as much of the disturbance would be temporary and reclaimed following cessation of Project construction. However, reclamation of habitat for sensitive plants is extremely difficult and restoration of sensitive plant habitat is not always possible at all sites.

The total extent of modeled habitat in a cumulative effects analysis area (CIAA) was calculated to provide context for Project-related disturbance. For this analysis, CIAAs for all sensitive plant species are defined as species habitat in subwatersheds (12-digit hydrologic unit codes) crossed by Project alternative routes within national forest boundaries. As habitat modeling methods were very conservative, reported extents of habitat for sensitive plant species are likely to be overestimated in relation to actual habitat availability.

Types of Potential Effects

The construction, operation, and maintenance of the Project could result in both direct and indirect effects on USFS sensitive plants.

Project activities would directly negatively affect sensitive plant habitat and populations where vegetation removal in these areas is required. Impacts on populations would be long-term and most likely be irreversible. Impacts on potential habitat could be short-term if the area is to be revegetated; however, restoration of habitat to a predisturbance state that could support sensitive plants is unlikely in the short-term and is not assured even in the long-term. Impacts on potential habitat would be long-term with construction of any new permanent Project features such as roads or facilities (i.e., towers, series compensation stations). Additionally, soil disturbance and removal of vegetation increases the susceptibility of an area to colonization by invasive species (Hobbs and Huenneke 1992), which could

directly threaten the survival of sensitive plant species in adjacent areas through competitive exclusion in both the short- and long-term.

Indirect negative impacts on sensitive plant populations and habitat also could occur as a result of Project-related activities. Construction in sensitive plant habitat could increase habitat fragmentation, which could limit gene flow between populations, decrease genetic diversity in populations, and potentially negatively affect population long-term viability (Ellstrand and Elam 1993). Clearing of vegetation during construction also could result in increased soil erosion, which could result in the deposition of soil over populations and habitat for sensitive plants during extreme precipitation events. Additionally, any disturbance that results in the loss of flowering plants adjacent to sensitive plant populations could reduce the attractiveness of an area to pollinators and subsequently limit reproductive output of individual plants. Increases in fire frequencies known to result from invasion of certain invasive plant species (Whisenant 1990) could remove sensitive plant populations and habitat and favor the continued dominance of invasive species in the Project area. Drift of herbicide from the treatment of noxious weeds in adjacent areas inadvertently could cause mortality of sensitive plants. Increased construction-related and private vehicle use on new and existing roads could result in greater dust deposition, which would inhibit photosynthetic ability, reproductive ability, and various metabolic processes of individual plants (Farmer 1993). Increased vehicle use in the Project area also could increase access to sensitive plant species habitat and individuals, which may increase illegal collection of commercially desirable species.

Design Features and Selective Mitigation Measures

Design features of the Proposed Action for environmental protection and selective mitigation measures would be implemented with the Project to assist in avoiding and minimizing effects on sensitive plants. Design features are part of the Applicant's Project description and are measures the Applicant would implement as standard practices of construction, operation, and/or maintenance, as applicable. A list of design features are presented in Table 2-8 of the Project EIS (BLM 2014). Selective mitigation measures are those the Applicant agrees to apply selectively through the planning process to avoid, reduce, or minimize impacts of the Project. A list of selective mitigation measures are presented in Table 2-13 of the Project EIS (BLM 2014).

Project Design Features 1, 2, 3, 5, 9, 26, 27, 28, and 30 described in Section 3.2.6.4.3 of the Project EIS (BLM 2014) are applicable to sensitive plant resources on the national forests. A summary of these design features is presented in this section.

- **Design Feature 1 (minimization of vegetation clearing)**. Vegetation would be left in place wherever possible where recontouring is not required. This would minimize damage to habitats and populations of special status plant species through the minimization of vegetation disturbance in general.

- **Design Feature 2 (surface recontouring and reclamation)**. Areas subject to ground disturbance would be recontoured and revegetated as required by the land-management agency or landowner. This would generally include reseeding with a seed mix (approved by the BLM or USFS, as appropriate, or as negotiated by individual landowners) appropriate to the vegetation community in which the disturbance has occurred. Reseeding treatments on federally managed lands where sensitive plants occur or have the potential to occur would be established in coordination with the BLM and USFS, as appropriate. This design feature would minimize the temporal scope of disturbance and decrease the likelihood that a disturbance area would be colonized by invasive species, as well as providing the best opportunity for an area to return to functioning as habitat for special status species. A Reclamation, Revegetation, and Monitoring Framework Plan identifying reclamation requirements and stipulations would be developed and incorporated in the Project

plan of development (POD), which would be approved by the BLM and USFS prior to the issuance of a right-of-way grant or special-use authorization, respectively.

- **Design Feature 3 (management of special status species)**. Special status species would be considered in accordance with management policies set forth by land-management agencies. All actions that could affect federally listed plants would be subject to the conditions established during Section 7 consultation. Surveys for special status plants would be conducted prior to construction in suitable habitat (as designated by appropriate land-management agencies) along the proposed transmission line route and in vicinities of Project facilities to be constructed (e.g., access and spur roads, staging areas, etc.). Survey protocols accepted or recommended by BLM, USFS, U.S. Fish and Wildlife Service, and state agencies would be followed, as appropriate. Actions would be taken to avoid adverse impacts on special status plant populations and habitat where identified, which may include altering the placement of roads or towers, as practicable, and special reclamation measures (e.g., seed collection for revegetation, relocation of plants out of the right-of-way). Monitoring of identified special status plant populations and habitat also may be required in cases for which this need is identified by land-management agencies. This design feature would minimize adverse impacts on special status plants through the exact identification of populations and habitats and the establishment of site-specific avoidance and monitoring objectives.

- **Design Feature 5 (establishment of a noxious weed management plan)**. A noxious weed management plan would be developed and approved by the BLM, USFS, and county weed management officer and incorporated into the POD. This plan would include specific measures to be taken to reduce the spread of noxious weeds associated with Project construction activities. Implementation of this design feature would minimize spread of noxious weed species in the Project area and the associated negative ecological effects of invasive species such as increased wildfire risk (Balch et al. 2012) and the competitive exclusion of special status plant species.

- **Design Feature 9 (avoidance of special status plants and habitat)**. Special status plants and habitat identified during preconstruction surveys would be identified during development of the (POD) and flagged and spanned by Project structures, where feasible, and within the limits of standard structure design. Where avoidance is not feasible, special status plants and their habitats would be treated in accordance with applicable law, regulation, and agency policy. Application of this design feature would allow sensitive vegetation to remain undisturbed whenever possible.

- **Design Feature 26 (vehicle access restriction)**. All construction vehicle movement would be restricted to predesignated access roads. This design feature would minimize disturbance to special status plant habitat and populations from excess overland travel and the associated potential increased spread of noxious weeds and wildfire risk.

- **Design Feature 27 (construction activity access restriction)**. All Project-related construction activities would be limited to a predetermined spatial extent. This design feature would minimize disturbance to special status plant habitat and populations from construction activities and the associated potential increased spread of noxious weeds and wildfire risk.

- **Design Feature 28 (personnel instruction)**. All Project personnel would be instructed in the importance, purpose, necessity, and regulations of protecting natural resources. Instruction would also be given for reporting and stop-work procedures in the event of a resource conflict. This would minimize impacts on special status plant habitat and populations throughout the Project corridor, especially in habitat areas that may not have been identified prior to commencement of construction.

- **Design Feature 30 (hazardous materials restrictions)**. Hazardous materials would be contained and removed to a disposal facility and not drained into the ground, streams, or drainages. This design feature would minimize degradation to special status plant species habitat due to Project activities.

Selective Mitigation Measures 1, 2, 3, 5, 7, and 15 described in Section 3.2.6.4.3 of the Project EIS (BLM 2014) also are applicable to sensitive plant resources on the national forests. A summary of these mitigation measures is presented in this section.

- **Selective Mitigation Measure 1 (minimization of disturbance to sensitive soils and vegetation).** Existing access roads/trails would not be widened or otherwise upgraded for construction and maintenance in areas where soils and vegetation are particularly sensitive to disturbance, except in areas where repairs are necessary to make existing roads/trails passable and safe as determined by the land-management agency. This would minimize impacts on habitats for special status plant species.

- **Selective Mitigation Measure 2 (avoidance of sensitive resources)**. No blading of new access roads would occur in certain resource areas (e.g., special status plant habitats and populations) where feasible. Existing roads would be used in these areas. This mitigation measure would minimize degradation and fragmentation of special status plant species habitat.

- **Selective Mitigation Measure 3 (minimization of slope cut and fill)**. The alignment of any new access roads or cross-country routes in designated areas would follow the landform contours where practicable. This mitigation would minimize ground disturbance and potential habitat fragmentation for special status plant species.

- **Selective Mitigation Measure 5 (minimization of new or improved Project accessibility)**. All new or improved access that would not be required for maintenance would be closed or rehabilitated following Project construction using the most effective and least environmentally damaging methods. This would limit public access to special status plant populations and habitat and thereby reduce continued anthropogenic disturbance in these areas, as well as potentially mitigate any habitat losses or fragmentation due to these road features.

- **Selective Mitigation Measure 7 (spanning or avoiding of sensitive features)**. Project structures would be located to allow conductors to span or avoid identified sensitive features, such as special status plant populations and habitat. This mitigation measure would reduce overall special status plant habitat destruction and fragmentation in the Project area.

- **Selective Mitigation Measure 15 (limiting accessibility in sensitive habitats).** Where feasible, access roads that traverse sensitive habitats would be gated or otherwise blocked to limit public access. This would minimize impacts on habitats for special status plant species.

USFS would not authorize actions that cumulatively would result in disturbance to greater than 15 percent of occupied habitat for sensitive plant species as identified during preconstruction surveys. This threshold for disturbance will ensure that any action would not cause a trend to federal listing or a loss of viability of any sensitive plant species. To reduce overestimation of cumulative effects, Project impacts would be assessed on occupied habitat as identified during preconstruction surveys and not on modeled potential habitat, which is presented in this document. Cumulative impacts on occupied habitat from other past and present actions and reasonably foreseeable future actions (RFFA) would also be assessed on site-specific survey results, if available.

Additional mitigation measures to reduce impacts on USFS sensitive species may be implemented where impacts on habitat or populations could occur. These measures may include actions such as seed collection, reseeding, and site-specific monitoring of disturbed areas and affected populations to determine if reseeding using collected seed or controlling noxious weeds is necessary.

If an action alternative is selected, the Project mitigation measures will be carried forward for the alternative route selected into the plan of development (POD) (refer to Project Draft EIS Section 2.4). In the case of some resources (e.g., biological resources, water resources), post-EIS, pedestrian, agency-approved surveys would be required to refine the environmental protection requirements and further develop the detail of the POD and POD mapping. Implementation plans that would be included in the POD include a Noxious Weed Management Plan and a Reclamation, Revegetation, and Monitoring Framework Plan.

Spatial and Temporal Context for Effects Analysis

The geographic scope of analysis for direct impacts on sensitive plant resources is the CIAA for each Project alternative route that crosses potentially suitable habitat for each species analyzed on USFS-administered land within the boundaries of the Ashley, Manti-La Sal, and Uinta National Forests.

Short-term impacts are defined as those anticipated to begin during construction and dissipate in 5 years. Long-term impacts are defined as those that would begin during construction and persist through the life of the Project (50 years or longer). Because the Project description does not include decommissioning, long-term impacts associated with the presence of the transmission line (e.g., tower foundations) may be permanent.

Cumulative Effects Analysis

Cumulative disturbance from all past and present actions and RFFAs on species' habitat in the CIAAs was calculated using shapefiles of specific projects received from agencies and local governments. The extent of all impacts from past and present actions, RFFAs, and Project-related disturbance was calculated for all lands, regardless of jurisdiction, in the CIAAs for sensitive plant species. Variations in actual degrees of disturbance from past and present actions and RFFAs are disregarded to provide a consistent and conservative estimate of cumulative effects; all RFFAs identified in shapefiles provided for activities are considered to be disturbed equally for the purposes of this analysis.

The approach for analysis of cumulative effects on sensitive plant resources is presented in Table 4-3 of the Project EIS (BLM 2014). The cumulative effects analysis for sensitive plant resources considers past and present actions and RFFAs (Tables 4-1 and 4-2 of the Project EIS [BLM 2014]) in CIAAs for relevant alternative routes.

Results

U.S. Forest Service Sensitive Species on National Forests in the Project Area

Canyon Sweet-Vetch (Manti-La Sal and Uinta National Forests)

Environmental Consequences

Canyon sweet-vetch habitat would be crossed on USFS-administered land on the Manti-La Sal National Forest by Alternatives COUT BAX-B; COUT BAX-C; COUT BAX-E; COUT-A, COUT-B, and COUT-C and route variations; COUT-H; and COUT-I. Habitat for canyon sweet-vetch also would be crossed on USFS-administered land on the Uinta National Forest by Alternative COUT-A and Route Variation COUT-A-1 and Route Variations COUT-B-1, COUT-B-2, COUT-B-4, COUT-C-1, COUT-C-2, and COUT-C-4. Areas of potential habitat for canyon sweet-vetch in relevant CIAAs for these alternative routes and route variations and estimated areas of Project-related disturbance in this habitat are shown in Table 2 (Manti-La Sal National Forest) and Table 3 (Uinta National Forest).

TABLE 2
SUMMARY OF ESTIMATED GROUND DISTURBANCE IN CANYON SWEET-VETCH HABITAT FROM ALTERNATIVE ROUTES ON THE MANTI-LA SAL NATIONAL FOREST

Ground Disturbance	COUT BAX-B	COUT BAX-C	COUT BAX-E	COUT-A and Route Variation	COUT-B and Route Variations	COUT-C and Route Variations	COUT-H	COUT-I
Total area of modeled habitat in CIAA (acres)	10,593.8	10,593.8	13,710.7	11,682.5	11,682.5	11,682.5	13,710.7	10,593.8
Length of habitat crossed on forest (miles)	0.7	0.7	0.7	0.3	0.3	0.3	0.7	0.7
Area of disturbance in forest (acres)	12.1	11.8	11.7	6.3	6.3[1]	6.6[1]	13.1	12.7
Percent of habitat disturbed by Project activities in CIAA	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%

NOTE: [1]Small differences (0.2 acres or less) exist between areas of disturbance under these route variations due to varying overall lengths of the centerlines. Mean areas of impacts (in acres) are reported for these groupings.
CIAA = Cumulative impact analysis area

TABLE 3 SUMMARY OF ESTIMATED GROUND DISTURBANCE IN CANYON SWEET-VETCH HABITAT FROM ALTERNATIVE ROUTES ON THE UINTA NATIONAL FOREST			
Ground Disturbance	**COUT-A and Route Variation**	**Route Variations COUT-B-1, COUT-B-2, and COUT-B-4**	**Route Variations COUT-C-1, COUT-C-2, and COUT-C-4**
Total area of modeled habitat in CIAA (acres)	20,143.2	27,573.5	27,573.5
Length of habitat crossed on forest (miles)	0.01	0.5	0.5
Area of disturbance in forest (acres)	0.2	8.8	9.3
Percent of habitat disturbed by Project activities in CIAA	Less than 0.1%	Less than 0.1%	Less than 0.1%
NOTE: CIAA = Cumulative impact analysis area			

Minor areas of canyon sweet-vetch habitat would be affected directly by Project activities on the Manti-La Sal and Uinta National Forests; disturbance in these habitats would affect a very small portion of available habitat in relevant CIAAs (Tables 2 and 3).

No known occurrences of canyon sweet-vetch are located within 1 mile of Project alternative centerlines on the national forests. One known occurrence of this species is located within 1 mile of Alternative COUT-H. This occurrence is outside forest boundaries; however, modeled habitat for this species is contiguous between this occurrence and the alternative route centerline on USFS-administered land. Surveys for this species would occur along the selected route, and the Project would be designed to avoid or minimize impacts on occupied habitat and individual plants located during surveys.

Cumulative Effects

The magnitude of cumulative disturbance on canyon sweet-vetch habitat for all relevant alternatives is summarized in Table 4 (Manti-La Sal National Forest) and Table 5 (Uinta National Forest).

TABLE 4 CANYON SWEET-VETCH HABITAT CUMULATIVE EFFECTS SUMMARY ON THE MANTI-LA SAL NATIONAL FOREST IN ACRES							
		No Action Alternative					
Alternative Route	**Total Available Resource**	**Past and Present Development**	**Reasonably Foreseeable Future Actions**	**Project Disturbance[1]**	**Estimated Cumulative Development**	**Remaining Available Resource**	**Percent of Resource Cumulatively Disturbed**
Colorado to Utah – U.S. Highway 40 to Baxter Pass to Mona (COUT BAX)							
COUT BAX-B	10,593.8	2,002.1	107.0	50.8	2,159.9	8,433.9	20.4%
COUT BAX-C	10,593.8	2,002.1	107.0	49.9	2,159.0	8,434.8	20.4%
COUT BAX-E	13,710.7	1,212.9	231.4	14.0	1,458.3	12,252.4	10.6%
Colorado to Utah – U.S. Highway 40 to Central Utah to Clover (COUT)							
COUT-A route variation	11,682.5	1,744.5	15.7	8.9	1,769.1	9,913.4	15.1%
COUT-B and route variations	11,682.5	1,744.5	15.7	8.8[2]	1,769.0[2]	9,913.5[2]	15.1%
COUT-C and route variations	11,682.5	1,744.5	15.7	9.3[2]	1,769.2[2]	9,913.0[2]	15.1%

TABLE 4
CANYON SWEET-VETCH HABITAT CUMULATIVE EFFECTS SUMMARY ON THE MANTI-LA SAL NATIONAL FOREST IN ACRES

Alternative Route	Total Available Resource	No Action Alternative		Project Disturbance[1]	Estimated Cumulative Development	Remaining Available Resource	Percent of Resource Cumulatively Disturbed
		Past and Present Development	Reasonably Foreseeable Future Actions				
COUT-H	13,710.7	1,744.5	231.4	15.7	1,460.0	12,250.7	10.6%
COUT-I	10,593.8	1,744.5	107.0	50.8	2,159.9	8,433.9	20.4%

NOTES:
[1]The area of Project disturbance for cumulative effects analysis was calculated based on all land in the cumulative impact analysis areas regardless of jurisdiction and will not necessarily match the area of Project disturbance in Table 2, which was based solely on disturbance in USFS-administered land.
[2]Small differences (0.3 acres or less) exist between areas of Project disturbance under these route variations due to varying overall lengths of the centerlines. Mean areas of impacts (in acres) are reported for these groupings.

TABLE 5
CANYON SWEET-VETCH HABITAT CUMULATIVE EFFECTS SUMMARY ON THE UINTA NATIONAL FOREST IN ACRES

Alternative Route	Total Available Resource	No Action Alternative		Project Disturbance[1]	Estimated Cumulative Development	Remaining Available Resource	Percent of Resource Cumulatively Disturbed
		Past and Present Development	Reasonably Foreseeable Future Actions				
Colorado to Utah – U.S. Highway 40 to Central Utah to Clover (COUT)							
COUT-A and route variation	20,143.2	450.0	1,223.6	16.5	1,690.1	18,453.2	8.4%
COUT-B-1, COUT-B-2, and COUT-B-4	27,573.5	1,308.4	318.6	122.3[2]	1,749.3[2]	25,824.1[2]	6.3%
COUT-C-1, COUT-C-2, and COUT-C-4	27,573.5	1,308.4	318.6	128.3[2]	1,755.4[2]	25,817.7[2]	6.4%

NOTES:
[1]The area of Project disturbance for cumulative effects analysis was calculated based on all land in the cumulative impact analysis areas regardless of jurisdiction and will not necessarily match the area of Project disturbance in Table 3, which was based solely on disturbance in USFS-administered land.
[2]Small differences (0.8 acres or less) exist between areas of Project disturbance under these route variations due to varying overall lengths of the centerlines. Mean areas of impacts (in acres) are reported for these groupings.

The direct loss of canyon sweet-vetch habitat under these alternative routes and route variations would contribute to the cumulative loss, fragmentation, and modification of canyon sweet-vetch habitat in relevant CIAAs. On the Manti-La Sal National Forest, areas of Project disturbance account for a very small proportion of overall cumulative effects with Alternative COUT-H contributing the greatest extent of impacts on all cumulative impacts in the CIAA (Table 4). On the Uinta National Forest, Route Variations COUT-B-1, COUT-B-2, COUT-B-4, COUT-C-1, COUT-C-2, and COUT-C-4 would contribute the greatest extent of impacts on cumulative impacts on habitat for this species (Table 5). Historic fires account for the majority of past and present actions in CIAAs for all alternatives on both

forests. Incremental effects of the Project may be larger and overall cumulative effects may be smaller than reported in Tables 4 and 5, depending on the degree to which fires affected populations and habitat of this species.

The majority of canyon sweet-vetch habitat in both national forests would be unaffected by cumulative effects of all past and present actions and RFFAs (Tables 4 and 5). All Project activities on USFS-administered land would be designed to reduce impacts on occupied habitat and individuals as identified during preconstruction surveys.

Findings

Alternatives COUT BAX-B; COUT-BAX-C; COUT BAX-E; COUT-A, COUT-B, and COUT-C and route variations; COUT-H, and COUT-I may affect canyon sweet-vetch individuals and habitat but are not likely to cause a trend to federal listing or loss of viability on USFS-administered land. All Colorado to Utah alternative routes or route variations cross modeled habitat for this species.

Carrington Daisy (Manti-La Sal National Forest)

Environmental Consequences

Carrington daisy habitat is crossed on USFS-administered land on the Manti-La Sal National Forest by Alternatives COUT BAX-B, COUT BAX-C, COUT BAX-E, COUT-H, and COUT-I. Areas of potential habitat for Carrington daisy in relevant CIAAs for these alternatives and estimated areas of Project-related disturbance in this habitat are shown in Table 6.

TABLE 6
SUMMARY OF ESTIMATED GROUND DISTURBANCE IN CARRINGTON DAISY HABITAT FROM ALTERNATIVE ROUTES ON THE MANTI-LA SAL NATIONAL FOREST

Ground Disturbance	COUT BAX-B	COUT BAX-C	COUT BAX-E	COUT-H	COUT-I
Total area of modeled habitat in CIAA (acres)	42,305.2	42,305.2	25,396.3	25,396.3	42,305.2
Length of habitat crossed on forest (miles)	4.7	4.7	3.0	3.0	4.7
Area of disturbance in forest (acres)	81.1	79.7	49.4	55.5	85.5
Percent of habitat disturbed by Project activities in CIAA	0.2%	0.2%	0.2%	0.2%	0.2%

NOTE: CIAA = Cumulative impact analysis area

Minor areas of Carrington daisy habitat would be affected directly by Project activities on the Manti-La Sal National Forest; disturbance in these habitats would affect a very small portion of available habitat in relevant CIAAs (Table 6).

Although modeled habitat for Carrington daisy also occurs on the Uinta National Forest, Project alternative centerlines would not cross habitat in this forest. All areas of modeled habitat crossed by Project alternative route centerlines are found within the boundaries of the Manti-La Sal National Forest, and impacts on this habitat are expected only on this national forest.

Several occurrences of Carrington daisy are located within 1 mile of Project alternative routes on the Manti-La Sal National Forest near Link U629. Modeled habitat is contiguous between these occurrences and the centerlines of Alternatives COUT BAX-B, COUT BAX-C, and COUT-I. Surveys for this species

would occur along the selected route and the Project would be designed to avoid or minimize impacts on occupied habitat and individual plants located during surveys.

Cumulative Effects

The magnitude of cumulative disturbance on Carrington daisy habitat for all relevant alternatives is summarized in Table 7.

TABLE 7
CARRINGTON DAISY HABITAT CUMULATIVE EFFECTS SUMMARY
ON THE MANTI-LA SAL NATIONAL FOREST IN ACRES

Alternative Route	Total Available Resource	No Action Alternative		Project Disturbance[1]	Estimated Cumulative Development	Remaining Available Resource	Percent of Resource Cumulatively Disturbed
		Past and Present Development	Reasonably Foreseeable Future Actions				
Colorado to Utah – U.S. Highway 40 to Baxter Pass to Clover (COUT-BAX)							
COUT BAX-B	42,305.2	20.433.2	95.0	55.8	20,584.0	21,721.3	48.7%
COUT BAX-C	42,305.2	20,433.2	95.0	54.8	20,583.0	21,722.3	48.7%
COUT BAX-E	25,396.3	3,251.4	737.3	23.5	4,012.2	21,384.1	15.8%
Colorado to Utah – U.S. Highway 40 to Central Utah to Clover (COUT)							
COUT-H	25,396.3	3,251.4	737.3	26.3	4,015.1	21,381.2	15.8%
COUT-I	42,305.2	20,433.2	95.0	58.8	20,586.9	21,718.3	48.7%

NOTE: [1]The area of Project disturbance for cumulative effects analysis was calculated based on all lands in the cumulative impact analysis areas regardless of jurisdiction and will not necessarily match the area of Project disturbance in Table 6, which was based solely on disturbance in USFS-administered land.

The direct loss of Carrington daisy habitat under Alternatives COUT BAX-B, COUT BAX-C, COUT BAX-E, COUT-H, and COUT-I would contribute to the cumulative loss, fragmentation, and modification of Carrington daisy habitat in relevant CIAAs. The varying areas of Project disturbance account for a very small proportion of overall cumulative effects (Table 7). The majority of Carrington daisy habitat would be affected by cumulative effects of all past and present actions and RFFAs under Alternatives COUT BAX-B and COUT BAX-C (Table 7); however, the majority of this development is the extensive Miller Flat vegetation management project, which is not likely to result in disturbance to Carrington daisy habitat or populations and may in fact result in a net long-term benefit to the species. Carrington daisy habitat in the CIAA for Alternatives COUT BAX-E and COUT-H would be less affected by cumulative effects than the other alternative routes that cross habitat for this species (Table 7), though the majority of past and present development in the CIAAs for these alternative routes is oil and gas development, which is likely to affect habitat for this species. All Project activities on USFS-administered land would be designed to reduce impacts on occupied habitat and individuals as identified during preconstruction surveys.

Findings

If selected, Alternatives COUT BAX-B, COUT BAX-C, COUT BAX-E, COUT-H, and COUT-I could affect Carrington daisy individuals and habitat on USFS-administered land but are not likely to cause a trend to federal listing or loss of viability on USFS-administered land. No other alternative routes would affect habitat for Carrington daisy on USFS-administered land.

Creutzfeldt's Cat's-eye (Manti-La Sal National Forest)

Environmental Consequences

Creutzfeldt's cat's-eye habitat are crossed on USFS-administered land on the Manti-La Sal National Forest by Alternatives COUT BAX-B, COUT BAX-C, and COUT-I. Areas of potential habitat for Creutzfeldt's cat's-eye in relevant CIAAs for these alternative routes and estimated areas of Project-related disturbance in this habitat are shown in Table 8.

TABLE 8
SUMMARY OF ESTIMATED GROUND DISTURBANCE
IN CREUTZFELDT'S CAT'S-EYE HABITAT FROM ALTERNATIVE ROUTES
ON THE MANTI-LA SAL NATIONAL FOREST

Ground Disturbance	COUT BAX-B	COUT BAX-C	COUT-I
Total area of modeled habitat in CIAA (acres)	10,229.3	10,229.3	10,229.3
Length of habitat crossed on forest (miles)	0.2	0.2	0.2
Area of disturbance in forest (acres)	3.3	3.2	3.4
Percent of habitat disturbed by Project activities in CIAA	0.0%	0.0%	0.0%
NOTE: CIAA = cumulative impact analysis area			

Minor areas of Creutzfeldt's cat's-eye habitat would be affected directly by Project activities on the Manti-La Sal National Forest; disturbance in these habitats would affect a very small portion of available habitat in relevant CIAAs (Table 8).

No known occurrences of Creutzfeldt's cat's-eye are located within 1 mile of Project alternative route centerlines within the boundaries of the national forest. Several occurrences of this species are crossed by or are located within 1 mile of Project centerlines of Alternatives COUT BAX-B and COUT BAX-C in an area just east of the Manti-La Sal National Forest. Modeled habitat for this species is not contiguous between these occurrences and route alternative centerlines that cross this habitat on USFS-administered land. Surveys for this species would occur along the selected route and the Project would be designed to avoid or minimize impacts on occupied habitat and individual plants located during surveys.

Cumulative Effects

The magnitude of cumulative disturbance on Creutzfeldt's cat's-eye habitat for all relevant alternatives is summarized in Table 9.

TABLE 9
CREUTZFELDT'S CAT'S-EYE HABITAT CUMULATIVE EFFECTS SUMMARY
ON THE MANTI-LA SAL NATIONAL FOREST IN ACRES

Alternative Route	Total Available Resource	No Action Alternative		Project Disturbance[1]	Estimated Cumulative Development	Remaining Available Resource	Percent of Resource Cumulatively Disturbed
		Past and Present Development	Reasonably Foreseeable Future Actions				
Colorado to Utah – U.S. Highway 40 to Baxter Pass to Clover (COUT-BAX)							
COUT BAX-B	10,229.3	894.4	114.6	41.5	1,050.5	9,178.8	10.3%
COUT BAX-C	10,229.3	894.4	114.6	40.8	1,049.8	9,179.5	10.3%

TABLE 9 CREUTZFELDT'S CAT'S-EYE HABITAT CUMULATIVE EFFECTS SUMMARY ON THE MANTI-LA SAL NATIONAL FOREST IN ACRES							
		No Action Alternative					
Alternative Route	Total Available Resource	Past and Present Development	Reasonably Foreseeable Future Actions	Project Disturbance[1]	Estimated Cumulative Development	Remaining Available Resource	Percent of Resource Cumulatively Disturbed
Colorado to Utah – U.S. Highway 40 to Central Utah to Clover (COUT)							
COUT-I	10,229.3	894.4	114.6	14.5	1,023.5	9,205.8	10.0%
NOTE: [1]The area of Project disturbance for cumulative effects analysis was calculated based on all lands in the cumulative impact analysis areas regardless of jurisdiction and will not necessarily match the area of Project disturbance in Table 8, which was based solely on disturbance in USFS-administered land.							

The direct loss of Creutzfeldt's cat's-eye habitat under Alternatives COUT BAX-B, COUT BAX-C, and COUT-I would contribute to the cumulative loss, fragmentation, and modification of Creutzfeldt's cat's-eye habitat in relevant CIAAs. The areas of Project disturbance among these alternative routes account for a very small proportion of overall cumulative effects (Table 9). The majority of Creutzfeldt's cat's-eye habitat would be unaffected by cumulative effects of all past and present actions and RFFAs (Table 9). All Project activities on USFS-administered land would be designed to reduce impacts on occupied habitat and individuals as identified during preconstruction surveys.

Findings

If selected, Alternatives COUT BAX-B, COUT BAX-C, and COUT-I could affect Creutzfeldt's cat's-eye habitat or individuals on USFS-administered land but are not likely to cause a trend to federal listing or loss of viability on USFS-administered land. Other alternative routes would not affect habitat for Creutzfeldt's cat's-eye on USFS-administered land.

Goodrich's Blazingstar (Ashley National Forest)

Environmental Consequences

Goodrich's blazingstar habitat would be crossed on USFS-administered land on the Ashley National Forest by Alternative COUT-B and route variations. Areas of potential habitat for Goodrich's blazingstar in relevant CIAAs for this alternative route and route variations and estimated areas of Project-related disturbance in this habitat are shown in Table 10.

TABLE 10 SUMMARY OF ESTIMATED GROUND DISTURBANCE IN GOODRICH'S BLAZINGSTAR HABITAT FROM ALTERNATIVE ROUTES ON THE ASHLEY NATIONAL FOREST				
Ground Disturbance	COUT-B	COUT-B-1	COUT-B-2, COUT-B-3, COUT-B-4	COUT-B-5
Total area of modeled habitat in CIAA (acres)	27,104.5	32,332.9	27,104.5	27,104.5
Length of habitat crossed on forest (miles)	2.7	2.7	2.7	2.7
Area of disturbance in forest (acres)	48.7	49.0	48.9	50.0
Percent of habitat disturbed by Project activities in CIAA	0.2%	0.2%	0.2%	0.2%
NOTE: CIAA = Cumulative impact analysis area				

Minor areas of Goodrich's blazingstar habitat would be affected directly by Project activities on the Ashley National Forest; disturbance in these habitats would affect a very small portion of available habitat in the CIAA (Table 10).

One occurrence of Goodrich's blazingstar is located within 1 mile of Project alternative routes on the Ashley National Forest near Link U431. Contiguous modeled habitat exists between this occurrence and the centerline of Alternative COUT-B and route variations. Surveys for this species would occur along the selected route and the Project would be designed to avoid or minimize impacts on occupied habitat and individual plants located during surveys.

Cumulative Effects

The magnitude of cumulative disturbance on Goodrich's blazingstar habitat for all relevant alternatives is summarized in Table 11.

TABLE 11
GOODRICH BLAZINGSTAR HABITAT CUMULATIVE EFFECTS SUMMARY ON THE ASHLEY NATIONAL FOREST IN ACRES

Alternative Route	Total Available Resource	No Action Alternative		Project Disturbance[1]	Estimated Cumulative Development	Remaining Available Resource	Percent of Resource Cumulatively Disturbed
		Past and Present Development	Reasonably Foreseeable Future Actions				
Colorado to Utah – U.S. Highway 40 to Central Utah to Clover (COUT)							
COUT-B	27,104.5	2,044.6	109.2	0.0	2,153.8	24,950.7	7.9%
COUT-B-1	32,332.9	2,113.6	109.2	0.0	2,222.8	30,110.1	6.9%
COUT-B-2	27,104.5	2,044.6	109.2	0.0	2,153.8	24,950.7	7.9%
COUT-B-3	27,104.5	2,044.6	109.2	0.0	2,153.8	24,950.7	7.9%
COUT-B-4	27,104.5	2,044.6	109.2	0.0	2,153.8	24,950.7	7.9%
COUT-B-5	27,104.5	2,044.6	109.2	0.0	2,153.8	24,950.7	7.9%

NOTE: [1]The area of Project disturbance for cumulative effects analysis was calculated based on all lands in the cumulative impact analysis areas regardless of jurisdiction and will not necessarily match the area of Project disturbance in Table 10, which was based solely on disturbance in USFS-administered land.

Impacts on Goodrich's blazingstar habitat under Alternative COUT-B and route variations would not contribute to the cumulative loss, fragmentation, and modification of Goodrich's blazingstar habitat in the CIAA for these alternative routes, as all areas where the Project would affect habitat for this species are in the extent of past and present actions and RFFAs. Oil and gas development and historic fires are the predominant past and present activities in this CIAA. The Project is not likely to contribute impacts beyond what has already occurred with oil and gas development but may affect habitat within the boundaries of historic fires, depending on the degree to which fires affected populations and habitat of this species. Therefore, incremental effects of the Project may in actuality be larger and overall cumulative effects may be smaller than reported in Table 11.

The majority of Goodrich's blazingstar habitat would be unaffected by cumulative effects of all past and present actions and RFFAs (Table 11). All Project activities on USFS-administered land would be designed to reduce impacts on occupied habitat and individuals as identified during preconstruction surveys.

Findings

Alternative COUT-B and route variations may affect Goodrich's blazingstar individuals and suitable habitat on the Ashley National Forest but are not likely to cause a trend to federal listing or loss of viability on USFS-administered land. No other alternative routes would affect habitat for Green River greenthread on USFS-administered land.

Green River Greenthread (Ashley and Uinta National Forests)

Environmental Consequences

Green River greenthread habitat is crossed on USFS-administered land on the Ashley National Forest by Alternative COUT-B and route variations and the Uinta National Forest by Alternatives COUT-A, COUT-B, and COUT-C and route variations.

Areas of potential habitat for Green River greenthread in relevant CIAAs for these alternative routes and route variations and estimated areas of Project-related disturbance in this habitat are shown in Table 12 (Ashley National Forest) and Table 13 (Uinta National Forest).

TABLE 12
SUMMARY OF ESTIMATED GROUND DISTURBANCE IN GREEN RIVER GREENTHREAD HABITAT FROM ALTERNATIVE ROUTES ON THE ASHLEY NATIONAL FOREST

Ground Disturbance	COUT-B	COUT-B-1	COUT-B-2	COUT-B-3	COUT-B-4	COUT-B-5
Total area of modeled habitat in CIAA (acres)	33,296.2	52,421.2	37,628.7	33,296.2	37,628.7	33,296.2
Length of habitat crossed on forest (miles)	1.6	1.6	1.6	1.6	1.6	1.6
Area of disturbance in forest (acres)	29.1	29.3	29.2	29.2	29.2	29.9
Percent of habitat disturbed by Project activities in CIAA	0. 1%	0.1%	0.1%	0.1%	0.1%	0.1%

NOTE: CIAA = Cumulative impact analysis area

Minor areas of Green River greenthread habitat would be affected directly by Project activities on the Ashley and Uinta National Forests; disturbance in these habitats would affect a very small portion of available habitat in the CIAA (Tables 12 and 13).

No occurrences of Green River greenthread occur within 1 mile of Project alternative route centerlines on the national forests. Several occurrences of this species are within 1 mile of centerlines of Alternatives COUT-C and route variations, COUT-H, and COUT-I (Links U401 and U404); however, these occurrences are not within the national-forest boundaries. Modeled habitat for this species is not contiguous between these occurrences and Project alternative route centerlines that cross habitat on USFS-administered land. Surveys for this species would occur along the selected route and the Project would be designed to avoid or minimize impacts on occupied habitat and individual plants located during surveys.

TABLE 13
SUMMARY OF ESTIMATED GROUND DISTURBANCE IN GREEN RIVER GREENTHREAD HABITAT FROM ALTERNATIVE ROUTES ON THE UINTA NATIONAL FOREST

Ground Disturbance	COUT-A and COUT-A-1	COUT-B	COUT-B-1	COUT-B-2	COUT-B-3	COUT-B4	COUT-B-5	COUT-C	COUT-C-1	COUT-C-2	COUT-C-3	COUT-C-4	COUT-C-5
Total area of modeled habitat in CIAA (acres)	14,724.4	23,459.7	24,342.0	24,342.0	23,459.7	24,342.0	23,459.7	23,459.7	24,342.0	24,342.0	23,459.7	24,342.0	23,459.7
Length of habitat crossed on forest (miles)	3.9	5.6	5.6	5.6	5.6	5.6	5.6	5.6	5.6	5.6	5.6	5.6	5.6
Area of disturbance in forest (acres)	72.1	102.8	103.5	103.3	103.3	103.2	105.7	108.6	108.4	108.4	109.4	109.3	105.8
Percent of habitat disturbed by Project activities in CIAA	0.5%	0.4%	0.4%	0.4%	0.4%	0.4%	0.5%	0.5%	0.4%	0.4%	0.5%	0.4%	0.5%

NOTE: CIAA = Cumulative impact analysis area

Cumulative Effects

The magnitude of cumulative disturbance on Green River greenthread habitat for all relevant alternatives is summarized in Table 14 (Ashley National Forest) and Table 15 (Uinta National Forest).

TABLE 14
GREEN RIVER GREENTHREAD HABITAT CUMULATIVE EFFECTS SUMMARY ON THE ASHLEY NATIONAL FOREST IN ACRES

Alternative Route	Total Available Resource	No Action Alternative		Project Disturbance[1]	Estimated Cumulative Development	Remaining Available Resource	Percent of Resource Cumulatively Disturbed
		Past and Present Development	Reasonably Foreseeable Future Actions				
Colorado to Utah – U.S. Highway 40 to Central Utah to Clover (COUT)							
COUT-B	33,296.2	1,962.6	121.3	0.0	2,083.8	31,212.4	6.3%
COUT-B-1	52,421.2	2,693.3	216.0	0.0	2,909.3	49,511.9	5.5%
COUT-B-2	37,628.7	2,281.7	121.3	0.0	2,403.0	35,225.7	6.4%
COUT-B-3	33,296.2	1,962.6	121.3	0.0	2,083.8	31,212.4	6.3%
COUT-B-4	37,628.7	2,281.7	121.3	0.0	2,403.0	35,225.7	6.4%
COUT-B-5	33,296.2	1,962.6	121.3	0.0	2,083.8	31,212.4	6.3%

NOTE: [1]The area of Project disturbance for cumulative effects analysis was calculated based on all lands in the cumulative impact analysis areas regardless of jurisdiction and will not necessarily match the area of Project disturbance in Table 12, which was based solely on disturbance in USFS-administered land.

TABLE 15
GREEN RIVER GREENTHREAD HABITAT CUMULATIVE EFFECTS SUMMARY ON THE UINTA NATIONAL FOREST IN ACRES

Alternative Route	Total Available Resource	No Action Alternative		Project Disturbance[1]	Estimated Cumulative Development	Remaining Available Resource	Percent of Resource Cumulatively Disturbed
		Past and Present Development	Reasonably Foreseeable Future Actions				
Colorado to Utah – U.S. Highway 40 to Central Utah to Clover (COUT)							
COUT-A	14,724.4	2,084.9	183.1	8.0	2,276.0	23,448.4	15.5%
COUT-A-1	14,724.4	2,084.9	183.1	8.0	2,276.0	23,448.4	15.5%
COUT-B	23,459.7	5,392.8	297.6	39.3	5,729.7	17,730.0	24.4%
COUT-B-1	24,342.0	5,398.2	332.0	42.5	5,772.7	18,569.3	23.7%
COUT-B-2	24,342.0	5,398.2	332.0	42.5	5,772.7	18,569.3	23.7%
COUT-B-3	23,459.7	5,392.8	297.6	39.3	5,729.7	17,730.0	24.4%
COUT-B-4	24,342.0	5,398.2	332.0	42.5	5,772.7	18,569.3	23.7%
COUT-B-5	23,459.7	5,392.8	297.6	39.3	5,729.7	17,730.0	24.4%

TABLE 15 GREEN RIVER GREENTHREAD HABITAT CUMULATIVE EFFECTS SUMMARY ON THE UINTA NATIONAL FOREST IN ACRES							
		No Action Alternative					
Alternative Route	Total Available Resource	Past and Present Development	Reasonably Foreseeable Future Actions	Project Disturbance[1]	Estimated Cumulative Development	Remaining Available Resource	Percent of Resource Cumulatively Disturbed
COUT-C	23,459.7	5,392.8	297.6	41.2	5,731.6	17,728.1	24.4%
COUT-C-1	24,342.0	5,398.2	332.0	44.7[2]	5,774.8[2]	18,567.1[2]	23.7%
COUT-C-2	24,342.0	5,398.2	332.0	44.7[2]	5,774.8[2]	18,567.1[2]	23.7%
COUT-C-3	23,459.7	5,392.8	297.6	41.8	5,732.2	17,727.5	24.4%
COUT-C-4	24,342.0	5,398.2	332.0	44.7[2]	5,774.8[2]	18,567.1[2]	23.7%
COUT-C-5	23,459.7	5,392.8	297.6	40.5	5,730.8	17,728.9	24.4%

NOTES:
[1]The area of Project disturbance for cumulative effects analysis was calculated based on all lands in the cumulative impact analysis areas regardless of jurisdiction and will not necessarily match the area of Project disturbance in Table 13, which was based solely on disturbance in USFS-administered land.
[2]Small differences (0.4 acres or less) exist between areas of Project disturbance under these route variations due to varying overall lengths of the centerlines. Mean areas of impacts (in acres) are reported for these groupings.

The direct loss of Green River greenthread habitat under these alternative routes and route variations would contribute to the cumulative loss, fragmentation, and modification of Green River greenthread habitat in relevant CIAAs.

On the Ashley National Forest, impacts on Green River greenthread habitat under Alternative COUT-B and route variations are in the extent of past and present actions and RFFAs (Table 15). Oil and gas development and historic fires are the predominant past and present activities in this CIAA. The Project is not likely to contribute impacts beyond what has already occurred with oil and gas development but may affect habitat within the boundaries of historic fires, depending on the degree to which fires affected populations and habitat of this species. Therefore, incremental effects of the Project may be larger and overall cumulative effects may be smaller than reported in Table 15.

On the Uinta National Forest, Alternatives COUT-B and COUT-C and route variations would contribute the greatest extent of cumulative impacts on habitat for this species in the CIAA (Table 13). The majority of Green River greenthread habitat in both national forests would be unaffected by cumulative effects of all past and present actions and RFFAs (Tables 14 and 15). All Project activities on USFS-administered land would be designed to reduce impacts on occupied habitat and individuals as identified during preconstruction surveys.

Findings

Alternatives COUT-A, COUT-B, and COUT-C and route variations may affect Green River greenthread individuals or habitat but are not likely to cause a trend to federal listing or loss of viability on USFS-administered land. No other alternative routes would affect habitat for Green River greenthread on USFS-administered land.

Untermann's Daisy (Ashley National Forest)

Environmental Consequences

Untermann's daisy habitat is crossed on USFS-administered land on the Ashley National Forest by Alternative COUT-B and route variations. Areas of potential habitat for Untermann's daisy in relevant CIAAs for this alternative route and route variations and estimated areas of Project-related disturbance in this habitat are shown in Table 16.

TABLE 16
SUMMARY OF ESTIMATED GROUND DISTURBANCE IN UNTERMANN'S DAISY HABITAT FROM ALTERNATIVE ROUTES ON THE ASHLEY NATIONAL FOREST

Ground Disturbance	COUT-B	COUT-B-1	COUT-B-2	COUT-B-3, COUT-B4	COUT-B-5
Total area of modeled habitat in CIAA (acres)	49,474.1	55,039.6	49,474.1	49,474.1	49,474.1
Length of habitat crossed on forest (miles)	3.2	3.2	3.2	3.2	3.2
Area of disturbance in forest (acres)	59.3	59.7	59.6	59.5	60.5
Percent of habitat disturbed by Project activities in CIAA	0.1%	0.1%	0.1%	0.1%	0.1%

NOTE: CIAA = Cumulative impact analysis area

Minor areas of Untermann's daisy habitat would be affected directly by Project activities on the Ashley National Forest; disturbance in these habitats would affect a very small portion of available habitat in relevant CIAAs (Table 16).

Several occurrences of Untermann's daisy are located within 1 mile of Project alternative routes on the Ashley National Forest near Link U431. Modeled habitat for this species is contiguous between these occurrences and the centerlines of Alternative COUT-B and route variations.

Modeled habitat for this species also occurs on the Ashley National Forest within 1 mile of Alternatives COUT-C and route variations, COUT-H, and COUT-I (Link U401); however, these alternative routes only cross modeled habitat for this species outside of forest boundaries. Surveys for this species would occur along the selected route and the Project would be designed to avoid or minimize effects on occupied habitat and individual plants located during surveys.

Cumulative Effects

The magnitude of cumulative disturbance on Carrington daisy habitat for all relevant alternative routes is summarized in Table 17.

TABLE 17 UNTERMANN'S DAISY HABITAT CUMULATIVE EFFECTS SUMMARY ON THE ASHLEY NATIONAL FOREST IN ACRES							
		No Action Alternative					
Alternative Route	Total Available Resource	Past and Present Development	Reasonably Foreseeable Future Actions	Project Disturbance[1]	Estimated Cumulative Development	Remaining Available Resource	Percent of Resource Cumulatively Disturbed
Colorado to Utah – U.S. Highway 40 to Central Utah to Clover (COUT)							
COUT-B	49,474.1	3,802.7	124.8	4.4	3,931.9	45,542.2	7.9%
COUT-B-1	55,039.6	3,802.3	124.8	4.4	4,024.4	51,015.1	7.3%
COUT-B-2	49,474.1	3,802.7	124.8	4.4	3,931.9	45,542.2	7.9%
COUT-B-3	49,474.1	3,802.7	124.8	4.4	3,931.9	45,542.2	7.9%
COUT-B-4	49,474.1	3,802.7	124.8	4.4	3,931.9	45,542.2	7.9%
COUT-B-5	49,474.1	3,802.7	124.8	4.5	3,932.0	45,542.1	7.9%

NOTE: [1]The area of Project disturbance for cumulative effects analysis was calculated based on all lands in the cumulative impact analysis areas regardless of jurisdiction and will not necessarily match the area of Project disturbance in Table 16, which was based solely on disturbance in USFS-administered land.

The direct loss of Untermann's daisy habitat under Alternative COUT-B and route variations would contribute to the cumulative loss, fragmentation, and modification of Untermann's daisy habitat in relevant CIAAs. The varying areas of Project disturbance among these alternative routes are minimal and account for a very small proportion of overall cumulative effects (Table 17). The majority of Untermann's daisy habitat in the CIAA would be unaffected by cumulative effects of all past and present actions and RFFAs (Table 17). All Project activities on USFS-administered land would be designed to reduce impacts on occupied habitat and individuals as identified during preconstruction surveys.

Findings

If selected, Alternative COUT-B and route variations may affect Untermann's daisy individuals or habitat on USFS-administered land but are not likely to cause a trend to federal listing or loss of viability on USFS-administered land. No other alternative routes would affect habitat for Untermann's daisy on USFS-administered land.

Wheeler's Angelica (Uinta National Forest)

Environmental Consequences and Cumulative Effects

The Project would not cross any modeled habitat for Wheeler's angelica on USFS-administered land. Areas of modeled habitat are located within 1 mile of all COUT and COUT BAX alternative-routes and route variations on the Uinta National Forest in an area near Nephi, Utah; however, it is highly unlikely that Project construction would occur in these areas. The closest occurrences of Wheeler's angelica are located approximately 4 miles north of Link U639 on the Uinta National Forest.

The Project would not contribute to loss, fragmentation, and modification of habitat for Wheeler's angelica in the CIAA. Wetlands and riparian areas that would have the potential to be habitat for this species would be avoided or spanned under Selective Mitigation Measures 2 and 7. Extensive preconstruction surveys would be conducted in suitable habitat and any located populations would be avoided or spanned to the extent feasible. All Project activities on USFS-administered land would be

designed to reduce impacts on occupied habitat and individuals as identified during preconstruction surveys.

Findings

Impacts would not be anticipated to Wheeler's angelica habitat or individuals from Project activities on USFS-administered land.

Summary of Effects

Impacts on habitat for some USFS sensitive plant species would occur with implementation of certain Project alternative routes on USFS-administered land (Tables 18, 19, and 20). For all the species analyzed in this report, impacts on habitat would be minimal and affect a very small portion of available habitat in the CIAAs for these alternative routes. Surveys would be conducted in suitable habitat as identified by or approved by the USFS, the results of which would be used for application of selective mitigation measures and micro-siting of Project facilities. It is not expected that construction of the Project would result in a trend to federal listing or loss of viability for any of the USFS sensitive species discussed in this report.

Adequacy of Project Design Features and Selective Mitigation Measures

Project design features and selective mitigation measures would be sufficient to authorize any of the alternative routes in compliance with relevant laws, regulations, and USFS policies.

Other Relevant Mandatory Disclosures

No other mandatory disclosures apply to the resources identified in this report.

TABLE 18 SUMMARY OF PROJECT IMPACTS ON SPECIAL STATUS PLANTS ON THE ASHLEY NATIONAL FOREST							
Alternative Route	**Canyon Sweet-vetch**	**Carrington Daisy**	**Creutzfeldt's Cat's-eye**	**Goodrich's Blazingstar**	**Green River Greenthread**	**Untermann's Daisy**	**Wheeler's Angelica**
COUT BAX-B	No effect	No effect	No effect	No effect	No effect	No effect	No effect
COUT BAX-C	No effect	No effect	No effect	No effect	No effect	No effect	No effect
COUT BAX-E	No effect	No effect	No effect	No effect	No effect	No effect	No effect
COUT-A and route variation	No effect	No effect	No effect	No effect	No effect	No effect	No effect
COUT-B and route variations	No effect	No effect	No effect	May affect individuals or habitat on U.S. Forest Service (USFS) administered land but are not likely to cause a trend to federal listing or loss of viability	May affect individuals or habitat on USFS-administered land but are not likely to cause a trend to federal listing or loss of viability	May affect individuals or habitat on USFS-administered land but are not likely to cause a trend to federal listing or loss of viability	No effect
COUT-C and route variations	No effect	No effect	No effect	No effect	No effect	No effect	No effect
COUT-H	No effect	No effect	No effect	No effect	No effect	No effect	No effect
COUT-I	No effect	No effect	No effect	No effect	No effect	No effect	No effect

TABLE 19 SUMMARY OF PROJECT IMPACTS ON SPECIAL STATUS PLANTS ON THE MANTI-LA SAL NATIONAL FOREST							
Alternative Route	**Canyon Sweet-vetch**	**Carrington Daisy**	**Creutzfeldt's Cat's-eye**	**Goodrich's Blazingstar**	**Green River Greenthread**	**Untermann's Daisy**	**Wheeler's Angelica**
COUT BAX-B	May affect individuals or habitat on U.S. Forest Service (USFS) administered land but are not likely to cause a trend to federal listing or loss of viability	May affect individuals or habitat on USFS-administered land but are not likely to cause a trend to federal listing or loss of viability	May affect individuals or habitat on USFS-administered land but are not likely to cause a trend to federal listing or loss of viability	No effect	No effect	No effect	No effect

TABLE 19 SUMMARY OF PROJECT IMPACTS ON SPECIAL STATUS PLANTS ON THE MANTI-LA SAL NATIONAL FOREST							
Alternative Route	**Canyon Sweet-vetch**	**Carrington Daisy**	**Creutzfeldt's Cat's-eye**	**Goodrich's Blazingstar**	**Green River Greenthread**	**Untermann's Daisy**	**Wheeler's Angelica**
COUT BAX-C	Same as COUT BAX-B	Same as COUT BAX-B	Same as COUT BAX-B	No effect	No effect	No effect	No effect
COUT BAX-E	Same as COUT BAX-B	Same as COUT BAX-B	No effect	No effect	No effect	No effect	No effect
COUT-A and route variation COUT-A-1	May affect individuals or habitat on USFS-administered land but are not likely to cause a trend to federal listing or loss of viability	No effect	No effect	No effect	No effect	No effect	No effect
COUT-B and route variations	Same as COUT-A	No effect	No effect	No effect	No effect	No effect	No effect
COUT-C and route variations	Same as COUT-A	No effect	No effect	No effect	No effect	No effect	No effect
COUT-H	Same as COUT-A	May affect individuals or habitat on USFS-administered land but are not likely to cause a trend to federal listing or loss of viability	No effect	No effect	No effect	No effect	No effect
COUT-I	Same as COUT-A	Same as COUT-H	May affect individuals or habitat on USFS-administered land but are not likely to cause a trend to federal listing or loss of viability	No effect	No effect	No effect	No effect

TABLE 20 SUMMARY OF PROJECT IMPACTS ON SPECIAL STATUS PLANTS ON THE UINTA NATIONAL FOREST							
Alternative Route	**Canyon Sweet-vetch**	**Carrington Daisy**	**Creutzfeldt's Cat's-eye**	**Goodrich's Blazingstar**	**Green River Greenthread**	**Untermann's Daisy**	**Wheeler's Angelica**
COUT BAX-B	No effect	No effect	No effect	No effect	No effect	No effect	No effect
COUT BAX-C	No effect	No effect	No effect	No effect	No effect	No effect	No effect
COUT BAX-E	No effect	No effect	No effect	No effect	No effect	No effect	No effect
COUT-A and route variation COUT-A-1	May affect individuals or habitat on U.S. Forest Service administered land but are not likely to cause a trend to federal listing or loss of viability	No effect	No effect	No effect	May affect individuals or habitat on U.S. Forest Service administered land but are not likely to cause a trend to federal listing or loss of viability	No effect	No effect
COUT-B and route variations	Same as COUT-A (Route Variations COUT-B-1, COUT-B-2, and COUT-B-4 only)	No effect	No effect	No effect	Same as COUT-A	No effect	No effect
COUT-C and route variations	Same as COUT-A (Route Variations COUT-C-1, C2, and C4 only)	No effect	No effect	No effect	Same as COUT-A	No effect	No effect
COUT-H	No effect	No effect	No effect	No effect	No effect	No effect	No effect
COUT-I	No effect	No effect	No effect	No effect	No effect	No effect	No effect

Monitoring Recommendations

Reclamation monitoring plans will be created as part of the Reclamation, Revegetation, and Monitoring Framework Plan to be included in the Project POD, which would be approved by the USFS prior to the issuance of a special-use authorization. This plan will include all relevant USFS-specified vegetation reclamation standards and guidelines, including those for monitoring.

Monitoring of construction activities should be conducted by a qualified botanist if federally listed or USFS sensitive plant species are found near the selected alternative route during preconstruction surveys. Monitoring construction activities would maximize efficiency of stipulations applied in the Project POD to reduce impacts on habitat and to avoid plants where feasible. Construction monitoring also would assist construction activities to be in compliance with appropriate standards and guidelines from applicable land and resource management plans. Should construction activities be unavoidable in occupied special status plant habitat, monitoring should be implemented so reclamation methods and techniques are appropriate for restoring the suitable habitat conditions for the affected species. Post-construction monitoring of affected special status plant populations may be appropriate to monitor re-establishment of sensitive plants and the communities that support them as well as minimize the colonization and establishment of noxious weeds and other undesirable plant species.

References

Balch, J.K., B.A. Bradley, C.M. D'Antonio, and J. Gomez-Dans. 2012. Introduced Annual Grass Increases Regional Fire Activity Across the Arid Western USA (1980-2009). *Global Change Biology* 19:173-183.

Bureau of Land Management (BLM). 2014. Draft Environmental Impact Statement and Land-use Plan Amendments for the Energy Gateway South Transmission Project. Case File WYM-174597. February 2014.

Ellstrand, N.C. and D.R. Elam. 1993. Population Genetic Consequences of Small Population Size: Implications for Plant Conservation. *Annual Review of Ecology and Systematics* 24:217-242.

Farmer, A.M. 1993. The Effects of Dust on Vegetation: A Review. *Environmental Pollution* 79:63-75.

Franklin, M.A. 2005. Plant Information Compiled by the Utah Natural Heritage Program: A Progress Report. Utah Department of Natural Resources, Salt Lake City.

Hobbs, R.J. and L.F. Huenneke. 1992. Disturbance, Diversity, and Invasion: Implications for Conservation. *Conservation Biology* 6(3):324-337.

NatureServe. 2013. NatureServe Explorer: An online encyclopedia of life [web application]. Version 7.1. Arlington, Virginia. Available at: http://www.natureserve.org/explorer, accessed April 2013.

U.S. Fish and Wildlife Service. 2012. U.S. Fish and Wildlife Service Species Reports: Listed plants. Environmental Conservation Online System. Available at: http://ecos.fws.gov/tess_public/pub/listedPlants.jsp, accessed October 30, 2012.

U.S. Forest Service. 2013. Intermountain Region (R4) Threatened, Endangered, Proposed, and Sensitive Species: Known and Suspected Distribution by Forest. Ogden, Utah.

U.S. Geological Survey (USGS). 1999. National Elevation Dataset. U.S. Geological Survey, EROS Data Center. Sioux Falls, South Dakota. Available at: http://ned.usgs.gov/, accessed September 2012.

_____. 2012. Southwest Regional Gap Analysis Project. U.S. Geological Survey Gap Analysis Program. Available at: http://fws-nmcfwru.nmsu.edu/swregap/, accessed September 2012.

Utah Division of Wildlife Resources. 1998. Inventory of sensitive species and ecosystems in Utah. Endemic and rare plants of Utah: An overview of their distribution and status. Prepared for Utah Reclamation Mitigation and Conservation Commission and the U.S. Department of the Interior. June 1998. 696 pp.

Utah Geological Survey. 1980. Geologic maps for quadrangles of Utah. GIS shapefiles. Available online at: http://geology.utah.gov/maps/gis/.

Utah Native Plant Society (UNPS). 2012. List of Vascular Plant Taxa. Available at: http://www.utahrareplants.org/rpg_species.html, accessed October 17, 2012.

Utah Natural Heritage Program (UNHP). 2011. GIS shapefiles depicting locations of special status species in Utah. GIS data received on January 6, 2012 from S. Lindsey, Salt Lake City.

Welsh, S.L., S. Atwood, S. Goodrich, and L.C. Higgins. 2008. *A Utah Flora*. 4th edition, revised. Brigham Young University, Provo, Utah.

Whisenant, S.G. 1990. Changing Fire Frequencies on Idaho's Snake River Plains: Ecological and Management Implications. Symposium on Cheatgrass Invasion, Shrub DieOff, and Other Aspects of Shrub Biology and Management. Las Vegas, Nevada. April 5-7, 1989.

Appendix A – Modeling Protocols

Appendix A – Modeling Protocols

Habitat Modeling Protocols for U.S. Forest Service Sensitive Plants Known to Occur in Proximity to Project Alternative Routes on the Ashley, Manti-La Sal, and Uinta National Forests

General Modeling Protocols

Habitat descriptions for analyzed species were collected from the Utah Native Plant Society (UNPS), *A Utah Flora* (Welsh et al. 2008), and the NatureServe Online Encyclopedia (NatureServe 2013). This information was used to determine the geographic extent, elevation range, geologic substrate, and vegetation associations to be used in Geographic Information Systems (GIS) habitat modeling.

Vegetation communities listed in sensitive species habitat descriptions were compared to those in descriptions of Gap Analysis Program (GAP) landcover associations (U.S. Geological Survey [USGS] 2012) to determine which associations were appropriate to include in habitat models. U.S. Forest Service (USFS) Landcover Association data was also provided by the USFS for certain species. Geological units and Geological Formations of Utah (Utah Geological Survey 1980) were selected for inclusion in habitat modeling based on habitat requirements of sensitive species.

Non-historical Utah Natural Heritage Program (UNHP) element occurrence data and species-specific occurrence mapping from the USFS and Bureau of Land Management (BLM) were used to further refine selection of both GAP vegetation communities and geologic units to include in habitat models. For all species, GAP landcover associations and geologic units not matching habitat descriptions for sensitive species were selected for inclusion in models based on their association with known populations of sensitive species. Highly disturbed or altered GAP landcover associations (e.g., quarries, mines, gravel pits and oil wells) that underlie species occurrences were considered anomalous and therefore not selected for use in analysis.

Elevation ranges of mapped sensitive plant species occurrences were checked using USGS 10-meter digital elevation models (USGS 1999) to determine sufficiency for elevation ranges referenced in species habitat descriptions. In some cases, elevation ranges were expanded to include those at which known sensitive plant species populations occur.

Canyon Sweet-Vetch (Hedysarum occidentale var. canone)

Habitat Description

Canyon sweet-vetch is found in pinyon-juniper, serviceberry (*Amelanchier* spp.), maple (*Acer* spp.), alderleaf mountain mahogany, and sagebrush communities between 6,400 and 8,300 feet (UNPS 2012) on or below the coal measures of the Mesa Verde group in Carbon, Duchene, and Emery counties (Welsh 2008). UNHP- and USFS-mapped occurrences in Utah range in elevation from 6,400 to 8,400 feet.

Habitat Modeling Protocols

(1) The following data layers were intersected to identify areas of potentially suitable habitat:
   a. Elevation from 6,400 to 8,400 feet
   b. Geological units and formations
   c. GAP landcover associations

(2) The following geological units and formations were used:
   a. Lower unit of Mesaverde Group
   b. Mesaverde Formation
   c. Mesaverde Group, Undifferentiated
   d. Upper unit of Mesaverde Group
   e. Blackhawk Formation
   f. Castlegate Sandstone
   g. Colton Formation
   h. Duchesne River Formation, undivided
   i. Flagstaff Limestone and North Horn Formation
   j. Masuk Member of the Mancos Shale
   k. North Horn Formation
   l. Pediment mantle
   m. Price River Formation
   n. Star Point Sandstone
   o. Upper part of Blue Gate Member of the Mancos Shale
   p. Upper part of Price River Formation
   q. Duchesne River, Uinta, Bridger, Crazy Hollow and other Fms

(3) The following wetland or riparian GAP landcover associations were used:
   a. Colorado Plateau Mixed Bedrock Canyon and Tableland
   b. Colorado Plateau Mixed Low Sagebrush Shrubland
   c. Colorado Plateau Pinyon Juniper Shrubland
   d. Colorado Plateau Pinyon Juniper Woodland
   e. Great Basin Xeric Mixed Sagebrush Shrubland
   f. Inter-Mountain Basins Big Sagebrush Shrubland
   g. Inter-Mountain Basins Big Sagebrush Steppe
   h. Inter-Mountain Basins Curl-leaf Mountain-mahogany Woodland and Shrubland
   i. Inter-Mountain Basins Mixed Salt Desert Scrub
   j. Inter-Mountain Basins Montane Sagebrush Steppe
   k. Inter-Mountain Basins Semi-Desert Shrub-Steppe
   l. Northern Rocky Mountain Montane-Foothill Deciduous Shrubland
   m. Rocky Mountain Aspen Forest and Woodland
   n. Rocky Mountain Cliff, Canyon, and Massive Bedrock
   o. Rocky Mountain Gambel Oak-Mixed Montane Shrubland
   p. Rocky Mountain Lower Montane-Foothill Shrubland
   q. Southern Rocky Mountain Mesic Montane Mixed Conifer Forest and Woodland
   r. Wyoming Basins Dwarf Sagebrush Shrubland and Steppe

Carrington Daisy (Erigeron carringtoniae)

Habitat Description

Carrington daisy is found on Flagstaff Limestone in meadows and escarpment margins between 10,000 and 11,000 feet in elevation (UNPS 2012) in Emery and Sanpete counties (Welsh et al. 2008). UNHP- and USFS-mapped occurrences in Utah range in elevation from 9,900 to 11,100 feet.

No vegetation associations were provided in referenced habitat description for this species. GAP landcover associations that underlie known UNHP- and USFS-mapped locations of this species will therefore be used to determine vegetation strata for habitat modeling.

Habitat Modeling Protocols

(1) The following data layers were intersected to identify areas of potentially suitable habitat:
   a. Elevation from 9,900 and 11,100 feet
   b. Geological units and formations
   c. GAP landcover associations

(2) The following geological units and formations were used:
   a. Colton Formation and Flagstaff Limestone, undivided
   b. Flagstaff Limestone
   c. Flagstaff Limestone and North Horn Formation
   d. North Horn Formation

(3) The following wetland or riparian GAP landcover associations were used:
   a. Inter-Mountain Basins Montane Sagebrush Steppe
   b. Rocky Mountain Alpine Bedrock and Scree
   c. Rocky Mountain Aspen Forest and Woodland
   d. Rocky Mountain Dry Tundra
   e. Rocky Mountain Subalpine Dry-Mesic Spruce-Fir Forest and Woodland
   f. Rocky Mountain Subalpine Mesic Spruce-Fir Forest and Woodland

Creutzfeldt's Cat's-Eye (Cryptantha creutzfeldtii)

Habitat Description

Creutzfeldt's cat's-eye occurs in scattered pinyon-juniper communities with an understory of black sagebrush and mat atriplex communities on a silty-clay substrate of the Mancos Shale Formation overlain with Emery Sandstone at elevations from 5,250 to 6,500 feet (UNPS 2012; NatureServe 2013) in Carbon and Emery counties (Welsh et al. 2008). UNHP-, USFS-, and BLM-mapped occurrences in Utah range in elevation from 5,600 to 6,800 feet.

Habitat Modeling Protocols

(1) The following data layers were intersected to identify areas of potentially suitable habitat:
   a. Elevation from 5,250 to 6,800 feet
   b. Geological units and formations
   c. GAP landcover associations

(2) The following geological units and formations were used:
   a. Emery Sandstone Member of the Mancos Shale

b. Garley Canyon Beds of the Emery Sandstone Member of the Mancos Shale
c. Lower unit of the Emery Sandstone Member of the Mancos Shale
d. Lower sandstone unit of Emery Sandstone Member of Mancos Shale
e. Middle shale unit of Emery Sandstone Member of Mancos Shale
f. Middle unit of the Emery Sandstone Member of the Mancos Shale
g. Upper sandstone unit of Emery Sandstone Member of Mancos Shale
h. Upper unit of the Emery Sandstone Member of the Mancos Shale
i. Blue Gate Member of the Mancos Shale
j. Indianola, Mancos, Frontier, Straight Cuffs, Iron Springs and other Fms
k. Masuk Member of the Mancos Shale
l. Upper part of Blue Gate Member of the Mancos Shale

(3) The following wetland or riparian GAP landcover associations were used:
a. Colorado Plateau Mixed Bedrock Canyon and Tableland
b. Colorado Plateau Pinyon-Juniper Shrubland
c. Colorado Plateau Pinyon-Juniper Woodland
d. Inter-Mountain Basins Big Sagebrush Shrubland
e. Inter-Mountain Basins Greasewood Flat
f. Inter-Mountain Basins Mat Saltbush Shrubland
g. Inter-Mountain Basins Mixed Salt Desert Scrub
h. Inter-Mountain Basins Semi-Desert Grassland
i. Inter-Mountain Basins Semi-Desert Shrub Steppe
j. Inter-Mountain Basins Shale Badland
k. Rocky Mountain Cliff, Canyon and Massive Bedrock
l. Rocky Mountain Lower Montane Riparian Woodland and Shrubland

Goodrich's Blazingstar (Mentzelia goodrichii)

Habitat Description

Goodrich's blazingstar grows on steep, white, marly, calciferous shale outcrops of the Green River Formation at 8,100 to 8,800 feet. It is endemic to southern Duchesne County where it is known to occur along the Bad Land Cliffs above Argyle Canyon and west into Avintaquin Canyon (Franklin 2005) and along the escarpment of Willow Canyon and the Anthro Mountain area of the West Tavaputs Plateau (Utah Division of Wildlife Resources 1998). Associated vegetation includes limber pine, pinyon pine, Douglas fir, mountain mahogany, and rabbitbrush (UNPS 2012). UNHP- and USFS-mapped occurrences in Utah range in elevation from 7,100 to 9,300 feet.

USFS provided information identifying USFS Landtype Associations AP110 and AP115 as underlying populations of this species. The single discreet location of this species within USFS boundaries as mapped by UNHP does occur in USFS Landtype Association AP110. However, the five remaining element occurrences occur outside USFS boundaries and would, therefore, not be accounted for using modeling based on USFS Landtype Associations. GAP landcover associations corresponding with UNPS habitat description and/or that underlie known locations of this species were therefore used to determine vegetation strata for habitat modeling.

Habitat Modeling Protocols

(1) Habitat modeling extent: The Bad Land Cliffs above Argyle Canyon and west into Avintaquin Canyon and along the escarpment of Willow Canyon and the Anthro Mountain area of the West Tavaputs Plateau.

(2) The following data layers were intersected to identify areas of potentially suitable habitat:
   a. Elevation from 7,100 to 9,300 feet
   b. Geological units and formations
   c. GAP landcover associations

(3) The following geological units and formations were used:
   a. Douglas Creek Member of Green River Formation
   b. Flagstaff Member of Green River Formation and North Horn Formation
   c. Green River Formation
   d. Lower member of the Green River Formation
   e. Lower part of Parachutte Creek Member of Green River Formation
   f. Main body of the Green River Formation
   g. Middle member of the Green River Formation
   h. Parachute Creek Member of Green River Formation
   i. Saline facies of the Green River Formation
   j. Sandstone and limestone facies of Bryant (in press) of the Green River Formation
   k. sandstone and limestone facies of Green River Formation
   l. Sandstone and limestone facies of the Green River Formation
   m. Sandstone facies of the Green River Formation
   n. Tongue a of the Douglas Creek Member of the Green River Formation
   o. Tongue c of the Douglas Creek Member of the Green River Formation
   p. Upper member of the Green River Formation
   q. Upper part of Parachutte Creek Member of Green River Formation
   r. Lower member of the Uinta Formation
   s. member B of Uinta Formation
   t. Green River, Fowkes and other Fms

(4) The following wetland or riparian GAP landcover associations were used:
   a. Colorado Plateau Mixed Bedrock Canyon and Tableland
   b. Colorado Plateau Pinyon-Juniper Shrubland
   c. Colorado Plateau Pinyon-Juniper Woodland
   d. Great Basin Foothill and Lower Montane Riparian Woodland and Shrubland
   e. Great Basin Pinyon-Juniper Woodland
   f. Inter-Mountain Basins Aspen-Mixed Conifer Forest and Woodland
   g. Inter-Mountain Basins Cliff and Canyon
   h. Inter-Mountain Basins Curl-leaf Mountain-Mahogany Woodland and Shrubland
   i. Inter-Mountain Basins Montane Sagebrush Steppe
   j. Middle Rocky Mountain Montane Douglas-fir Forest and Woodland
   k. Northern Rocky Mountain Dry-Mesic Montane Mixed Conifer Forest
   l. Northern Rocky Mountain Foothill Conifer Wooded Steppe
   m. Northern Rocky Mountain Mesic Montane Mixed Conifer Forest
   n. Rocky Mountain Cliff, Canyon and Massive Bedrock
   o. Rocky Mountain Foothill Limber Pine-Juniper Woodland
   p. Rocky Mountain Gambel Oak-Mixed Montane Shrubland
   q. Rocky Mountain Lower Montane-Foothill Shrubland
   r. Rocky Mountain Subalpine-Montane Limber-Bristlecone Pine Woodland
   s. Southern Rocky Mountain Dry-Mesic Montane Mixed Conifer Forest and Woodland
   t. Southern Rocky Mountain Mesic Montane Mixed Conifer Forest and Woodland

u. Southern Rocky Mountain Pinyon-Juniper Woodland
v. Southern Rocky Mountain Montane-Subalpine Grassland

Green River Greenthread (Thelesperma caespitosum)

Habitat Description

The Green River greenthread occurs on white shale slopes and ridges of the Green River Shale and Uinta Formations at approximately 5,900 feet in Duchesne and Uintah counties (UNPS 2012; Welsh et al. 2008). UNHP- and USFS-mapped locations of Green River greenthread occur at elevations from 5,800 to 8,400 feet.

USFS provided information identifying USFS Landtype Associations AP110, AP115, AP135, AP1551, and GR100 as underlying populations of this species. The single location of this species within USFS boundaries as mapped by UNHP does occur in USFS Landtype Association AP135; however, the five remaining element occurrences are outside USFS boundaries and would not be accounted for using modeling based on USFS Landtype Associations. GAP landcover associations that underlie known locations of this species were therefore be used to determine vegetation strata for habitat modeling.

Habitat Modeling Protocols

(1) The following data layers were intersected to identify areas of potentially suitable habitat:
   a. Elevation from 5,800 to 8,400 feet
   b. Geological units and formations
   c. GAP landcover associations
(2) The following geological units and formations were used:
   a. Douglas Creek Member of Green River Formation
   b. Flagstaff Member of Green River Formation and North Horn Formation
   c. Green River Formation
   d. Lower member of the Green River Formation
   e. Lower part of Parachutte Creek Member of Green River Formation
   f. Main body of the Green River Formation
   g. Middle member of the Green River Formation
   h. Parachute Creek Member of Green River Formation
   i. Saline facies of the Green River Formation
   j. Sandstone and limestone facies of Bryant (in press) of the Green River Formation
   k. sandstone and limestone facies of Green River Formation
   l. Sandstone and limestone facies of the Green River Formation
   m. Sandstone facies of the Green River Formation
   n. Tongue a of the Douglas Creek Member of the Green River Formation
   o. Tongue c of the Douglas Creek Member of the Green River Formation
   p. Upper member of the Green River Formation
   q. Upper part of Parachutte Creek Member of Green River Formation
   r. Lower member of the Uinta Formation
   s. member B of Uinta Formation
   t. Green River, Fowkes and other Fms
(3) The following wetland or riparian GAP landcover associations were used:
   a. Colorado Plateau Pinyon-Juniper Shrubland
   b. Colorado Plateau Pinyon-Juniper Woodland

c. Inter-Mountain Basins Montane Sagebrush Steppe
d. Rocky Mountain Cliff, Canyon and Massive Bedrock

Untermann's Daisy (Erigeron untermannii)

Habitat Description

Untermann's daisy is found on calcareous shales and sandstones of the Uinta and Green River Formations in pinyon-juniper, mountain mahogany, limber pine, bristlecone pine (*Pinus longaeva*), and sagebrush communities between 7,000 and 9,400 feet in elevation (UNPS 2012) on the Tavaputs Plateau (Welsh et al. 2008). UNHP- and USFS-mapped occurrences in Utah range in elevation from 6,800 to 9,400 feet.

Note: USFS provided information identifying USFS Landtype Associations AP110 and AP115 as underlying populations of this species. Of 56 discreet locations of this species mapped by the UNHP, 26 are found within one of these Landtype Associations; however, the remaining 29 locations would not be accounted for using modeling based on USFS Landtype Associations. Therefore, GAP landcover associations corresponding with UNPS habitat description and/or that underlie known occurrences of this species will be used to determine vegetation strata for habitat modeling.

Habitat Modeling Protocols

(1) Habitat modeling extent: Tavaputs Plateau
(2) The following data layers were intersected to identify areas of potentially suitable habitat:
    a. Elevation from 6,800 and 9,400 feet
    b. Geological units and formations
    c. GAP landcover associations
(3) The following geological units and formations were used:
    a. Lower member of the Uinta Formation
    b. Member A of Uinta Formation
    c. Member B of Uinta Formation
    d. Member C of Uinta Formation
    e. Uinta Formation
    f. Upper member of the Uinta Formation
    g. Douglas Creek Member of Green River Formation
    h. Flagstaff Member of Green River Formation and North Horn Formation
    i. Green River Formation
    j. Lower member of the Green River Formation
    k. Lower part of Parachutte Creek Member of Green River Formation
    l. Main body of the Green River Formation
    m. Middle member of the Green River Formation
    n. Parachute Creek Member of Green River Formation
    o. Saline facies of the Green River Formation
    p. Sandstone and limestone facies of Bryant (in press) of the Green River Formation
    q. sandstone and limestone facies of Green River Formation
    r. Sandstone and limestone facies of the Green River Formation
    s. Sandstone facies of the Green River Formation
    t. Tongue a of the Douglas Creek Member of the Green River Formation
    u. Tongue c of the Douglas Creek Member of the Green River Formation
    v. Upper member of the Green River Formation
    w. Upper part of Parachutte Creek Member of Green River Formation

(4) The following wetland or riparian GAP landcover associations were used:
   a. Colorado Plateau Mixed Bedrock Canyon and Tableland
   b. Colorado Plateau Mixed Low Sagebrush Shrubland
   c. Colorado Plateau Pinyon-Juniper Shrubland
   d. Colorado Plateau Pinyon-Juniper Woodland
   e. Great Basin Pinyon-Juniper Woodland
   f. Great Basin Xeric Mixed Sagebrush Shrubland
   g. Inter-Mountain Basins Aspen-Mixed Conifer Forest and Woodland
   h. Inter-Mountain Basins Big Sagebrush Shrubland
   i. Inter-Mountain Basins Big Sagebrush Steppe
   j. Inter-Mountain Basins Cliff and Canyon
   k. Inter-Mountain Basins Curl-leaf Mountain-mahogany Woodland and Shrubland
   l. Inter-Mountain Basins Juniper Savanna
   m. Inter-Mountain Basins Mixed Salt Desert Scrub
   n. Inter-Mountain Basins Montane Sagebrush Steppe
   o. Inter-Mountain Basins Semi-Desert Shrub-Steppe
   p. Rocky Mountain Cliff, Canyon and Massive Bedrock
   q. Rocky Mountain Foothill Limber Pine-Juniper Woodland
   r. Rocky Mountain Gambel Oak-Mixed Montane Shrubland
   s. Rocky Mountain Lower Montane-Foothill Shrubland
   t. Rocky Mountain Subalpine Mesic Spruce-Fir Forest and Woodland
   u. Rocky Mountain Subalpine-Montane Limber-Bristlecone Pine Woodland
   v. Southern Rocky Mountain Dry-Mesic Montane Mixed Conifer Forest and Woodland
   w. Southern Rocky Mountain Mesic Montane Mixed Conifer Forest and Woodland
   x. Southern Rocky Mountain Montane-Subalpine Grassland
   y. Southern Rocky Mountain Pinyon-Juniper Woodland
   z. Wyoming Basins Dwarf Sagebrush Shrubland and Steppe

Wheeler's Angelica (Angelica wheeleri)

Habitat Description

Wheeler's angelica inhabits boggy or very wet areas typically in riparian communities, seeps, and springs from 5,380 to 10,000 feet in elevation (UNPS 2012) in Cache, Juab, Piute, Salt Lake, Sevier, and Utah counties (Welsh et al. 2008). UNHP-mapped occurrences in Utah range in elevation from 5,700 to 6,400 feet above mean sea level. No geologic information from this species is available; geologic units used in modeling are those that underlie known occurrences of this species.

Habitat Modeling Protocols

(1) The following data layers were intersected to identify areas of potentially suitable habitat:
   a. Elevation from 5,380 to 10,000 feet above mean sea level
   b. Geological units and formations
   c. GAP landcover associations
(2) The following geological units and formations were used:
   a. Chainman, Manning Canyon, Doughnut and other Fms
   b. Great Blue, Humbug, Deseret and other Fms
   c. Oquirrh Group, Wells, Weber, Ely, Callville and other Fms
   d. Oquirrh Formation

(3) The following wetland or riparian GAP landcover associations were used:
   a. Great Basin Foothill and Lower Montane Riparian Woodland and Shrubland
   b. Introduced Riparian and Wetland Vegetation
   c. North American Arid West Emergent Marsh
   d. Northwestern Great Plains Riparian
   e. Rocky Mountain Bigtooth Maple Ravine Woodland
   f. Rocky Mountain Gambel Oak-Mixed Montane Shrubland
   g. Rocky Mountain Lower Montane Riparian Woodland and Shrubland
   h. Rocky Mountain Subalpine-Montane Fen
   i. Rocky Mountain Subalpine-Montane Riparian Shrubland
   j. Rocky Mountain Subalpine-Montane Riparian Woodland
   k. Western Great Plains Closed Depression Wetland
   l. Western Great Plains Floodplain
   m. Western Great Plains Open Freshwater Depression Wetland
   n. Western Great Plains Riparian Woodland and Shrubland

Notes on GIS Modeling and Input Data Layers for all U.S. Forest Service Sensitive Plant Species

(1) Elevation – 10-meter National Elevation Dataset was used to delineate elevation range for each species.

(2) Geological Units
   a. Geological Units of Utah (100k-scale) dataset was used to identify geological units in the Project area for the following 100k Quadrangles: Duchesne, Dutch John, Huntington, Kings Peak, Manti, Moab, Nephi, Price, Seep Ridge, Vernal, and Westwater.
      i. 100k-scale geological unit data was not available for the Provo, Lynndyl, Rush Valley, and San Rafael Desert 100k Quadrangles.

   b. Geological Formation of Utah (500k-scale) dataset was used to identify geological units in the Project area for the following 100k Quadrangles: Provo, Lynndyl, Rush Valley, and San Rafael Desert.

   c. Habitat modeling was performed using a combined data set consisting of both the 100k and 500k-scale datasets listed above in the Project Area within the State of Utah.

(3) Southwest Regional Gap Analysis Program was used to identify landcover associations for all species

(4) All GIS processing methods run to create the potential habitat layers were done in ArcGIS ModelBuilder

Appendix B – Special Status Plants Not Carried Forward for Analysis

TABLE B-1
SPECIAL STATUS PLANT SPECIES NOT CARRIED FORWARD FOR ANALYSIS

Common Name	Scientific Name	Endangered Species Act	U.S. Forest Service Sensitive Species			Rationale and Nearest Known Location to the Project Area
			Ashley National Forest	Manti-La Sal National Forest	Uinta National Forest	
Abajo daisy	*Erigeron abajoensis*			✓		The species is not known to occur in the Project area (Utah Natural Heritage Program [UNHP] 2011).
Abajo peak draba	*Draba abajoensis*			✓		The species is not known to occur in the Project area (UNHP 2011).
Arctic poppy	*Papaver radicatum*		✓			The species is not known to occur in the Project area (UNHP 2011).
Arizona willow	*Salix arizonica*			✓		The species is not known to occur in the Project area (UNHP 2011).
Barneby woody aster	*Tonestus (=Aster) kingii* var. *barnebyana*				✓	The species is not known to occur in the Project area (UNHP 2011).
Brownie ladyslipper	*Cypripedium fasciculatum*		✓			The species is not known to occur within 10 miles of Reference centerlines (UNHP 2011).
Canyonlands Lomatium	*Lomatium latilobum*			✓		The species is not known to occur within 5 miles of Reference centerlines (UNHP 2011).
Chatterley onion	*Allium geyeri* var. *chatterleyi*			✓		The species is not known to occur in the Project area (UNHP 2011).
Dainty moonwort	*Botrychium crenulatum*		✓		✓	The species is not known to occur in the Project area (UNHP 2011).
Garrett bladderpod	*Lesquerella garrettii*				✓	The species is not known to occur in the Project area (UNHP 2011).
Garrett's fleabane	*Erigeron garrettii*				✓	The species is not known to occur in the Project area (UNHP 2011).
Graham columbine	*Aquilegia grahamii*		✓			The species is not known to occur in the Project area (UNHP 2011).
Isely's milkvetch	*Astragalus iselyi*	P		✓		The species is not known to occur in the Project area (UNHP 2011).
Kachina daisy	*Erigeron kachinensis*			✓		The species is not known to occur in the Project area (UNHP 2011).
La Sal daisy	*Erigeron mancus*			✓		The species is not known to occur in the Project area. (UNHP 2011).
Link Trail columbine	*Aquilegia flavescens* var. *rubicunda*			✓		The species was recorded 4.75 miles from Link U630 in 1972. No other occurrences of the species have been recorded in the Project area (UNHP 2011).
Maguire campion	*Silene petersonii*			✓		The species is not known to occur within 10 miles of Reference centerlines in the past 30 years (UNHP 2011).
Musinea groundsel	*Senecio musiniensis*			✓		The species is not known to occur in the Project area (UNHP 2011).
Petiolate wormwood	*Artemisia campestris ssp. borealis* var. *petiolata*		✓			The species is not known to occur in the Project area (UNHP 2011).
Pinnate spring-parsley	*Cymopterus beckii*			✓		The species is not known to occur in the Project area (UNHP 2011).
Rockcress draba	*Draba globosa (=D. densifolia* var. *apiculata)*		✓		✓	The species is not known to occur within 4 miles of Reference centerlines (UNHP 2011).
Santaquin draba	*Draba santaquinensis*				✓	The species is not known to occur in the Project area (UNHP 2011).

TABLE B-1
SPECIAL STATUS PLANT SPECIES NOT CARRIED FORWARD FOR ANALYSIS

Common Name	Scientific Name	Endangered Species Act	U.S. Forest Service Sensitive Species			Rationale and Nearest Known Location to the Project Area
			Ashley National Forest	Manti-La Sal National Forest	Uinta National Forest	
Slender moonwort	*Botrychium lineare*		✓			The species is not known to occur within 1.5 miles of Reference centerlines in the last 60 years (UNHP 2011). Surveys at the site in 2003 failed to locate the species (Franklin 2005).
Stemless beardtongue	*Penstemon acaulis* var. *acaulis*		✓			The species is not known to occur within 20 miles of Reference centerlines in Utah (UNHP 2011).
Sweet-flowered rock jasmine	*Androsace chamaejasme ssp. carinata*			✓		The species is not known to occur in the Project area (UNHP 2011).
Utah ivesia	*Ivesia utahensis*				✓	The species is not known to occur in the Project area (UNHP 2011).

SOURCE: Nomenclature follows (U.S. Fish and Wildlife Service 2012a) for federally listed Threatened and Endangered species and NatureServe Explorer (NatureServe 2013) for all others.
NOTES:
P = Proposed
✓ = Sensitive species with known habitat on Forest