

Botanical Biological Assessment & Biological Evaluation

Derby Mesa Project

Eagle Ranger District
White River National Forest
Rio Eagle County
Colorado

Prepared by:

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Introduction

The purpose of this Biological Assessment/Biological Evaluation (BA/BE) is to review the proposed Derby Mesa Project in sufficient detail to determine the potential effects on Threatened, Endangered, and Sensitive (TES) plant species. Specifically, the BA will analyze effects on federal candidate, proposed, threatened, or endangered species and/or critical habitat; and determines whether formal consultation or conference is required with the US Fish and Wildlife Service, pursuant to the Endangered Species Act. The BE will analyze effects on Forest Service sensitive plant species to determine whether the proposed action and/or alternatives would be likely to result in a trend toward a Sensitive species becoming federally listed. This BA/BE was prepared in compliance with direction established in Forest Service Manual 2670 and conforms to legal requirements set forth under Section 7 of the Endangered Species Act (19 U.S.C. 1536 (c), 50 CFR 402.12 (f) and 402.14 (c).

Consultation to Date

Because no federally listed, proposed, or candidate plant species or critical habitats occur in the Derby Mesa Project area, no effects to these species are expected, and no consultation with the US Fish and Wildlife Service is necessary.

Current Management Direction

Land and Resource Management Plan

Threatened, Endangered, and Sensitive Plants

The White River National Forest Land and Resource Management Plan (LRMP) provides the following direction for managing TES plants:

PROPOSED, THREATENED, AND ENDANGERED SPECIES AND SENSITIVE SPECIES

Standard #3 - Manage activities to avoid disturbance to sensitive species which would result in a trend toward Federal listing or loss of population viability. The protection will vary depending on the species, potential for disturbance, topography, location of important habitat components, and other pertinent factors. Give special attention during breeding, young rearing, and other time which are critical to survival of both flora and fauna.

Non-Native Invasive Plants

The White River National Forest Land and Resource Management Plan (LRMP) provides objectives, strategies, standards and guidelines outlining goals for managing the infestation of noxious and invasive plants. The following objectives, strategies, standards, and guidelines are applicable to noxious weeds and this particular project:

Objective 1d Increase the amount of forest and rangelands restored to or maintained in a healthy condition with reduced risk and damage from fires, insects, disease, and invasive species.

Strategy 1d.1 Over the life of the plan, continue to implement the Integrated Invasive plant species Management (IWM) approach. This includes prevention and detection, education and awareness, inventory, planning, integrated invasive plant species management, coordination and cooperation, monitoring, evaluation, research, and technology transfer.

Strategy 1d.2 Cooperatively work with federal, state, and county agencies and other non-government organizations for control of invasive plants.

Strategy 1d.3 An assessment will be completed for all proposed projects and activities to determine the risk of introduction and spread of invasive plants. Appropriate mitigation measures will be implemented.

Strategy 1d.4 Within five years of plan approval, all permits and contracts for use of National Forest System lands and resources shall include provisions necessary for the prevention of invasive plants.

Standards

1. For all proposed projects or activities, determine the risk of noxious weed introduction or spread and implement appropriate prevention and mitigation measures.
2. Manage noxious weeds and other undesirable exotic species of plants according to the Integrated Weed Management Principles.
3. Use only certified noxious weed-free hay, straw, seed, or mulch for feed or revegetation projects on National Forest System lands.
4. Include provisions that are necessary to prevent the spread of and to control the introduction of noxious weeds in contracts and permits for use of National Forest System lands and resources.

Guidelines

1. Maintain the noxious weed program that addresses the following Integrated Weed Management components: education and awareness; prevention; inventory, planning; integrated treatment; monitoring and evaluation; reporting; management activities; and coordination and cooperation with federal, state, and local governments and adjacent private landowners.
2. Priorities for controlling noxious weeds are: preventing the introduction of new invaders; conducting early treatment of new infestations; containing and controlling established infestations.
3. When setting priorities for the treatment of noxious weeds, give consideration to the following: rate of spread of the species; potential for environmental degradation; invasions found within remote areas and special management areas such as research natural areas and wilderness; probability that the treatment(s) will be successful.
4. Implement the White River National Forest's Noxious Weed Implementation Guide.

Forest Service Manual

The Forest Service has developed policy regarding the designation of plant and animal species. The Regional Supplement to Forest Service Manual (FSM) 2670 provides an updated Region 2 Sensitive Species List and further clarifies details of the Biological Evaluation process. The Biological Evaluation is therein defined as “a documented Forest Service review of Forest Service actions in sufficient detail to: 1) comply with the requirements of the Endangered Species Act; 2) ensure that actions do not contribute to loss of viability of native or desired non-native plant or animal species, or cause a trend towards listing under the ESA; and 3) provide a standard by which to ensure that endangered, threatened, proposed, and sensitive species and critical habitats receive full consideration in Forest Service decision-making.”

Forest Service Manual 2900 establishes policy and guidance for noxious weed management.

Federal Law

Endangered Species Act

The purpose of the Endangered Species Act (ESA) is to provide a means whereby the ecosystems upon which endangered species and threatened species depend may be conserved and to provide for the conservation of such endangered species and threatened species. The ESA directs federal agencies to ensure that actions authorized, funded, or carried out by these agencies are not likely to jeopardize the continued existence of threatened or endangered species, or result in the destruction or adverse modification of their critical habitats (ESA Section 7(a)(2)).

Other Federal Law

The Federal Noxious Weed Act of 1974 authorizes the Secretary of Agriculture to cooperate with other agencies to control and prevent invasive plants.

The National Forest Management Act of 1976 authorizes removal of deleterious plant growth.

The Plant Protection Act of 2000, Public Law 106-224, and the 1990 Farm Bill, Public Law 101-624, directed the Forest Service to develop and coordinate management programs for controlling undesirable plants.

Executive Orders

Executive Order 13112 of February 3, 1999 documents Presidential direction to affected federal agencies to “...identify actions subject to the availability of appropriations... encourage planning and action at local, State, and regional ecosystem-based levels... and prepare and issue Invasive Species Management Plans.... to prevent the introduction of invasive species and provide for their control and to minimize the economic, ecological, and human health impacts that invasive (plant) species cause.”

Other Guidance or Recommendations

The Rocky Mountain Region’s Invasive Species Strategy (USDA FS 2005) provides vision and direction for the management of invasive species, identifying strategic priorities and action items to effectively address the region’s invasive species challenges. This strategy guides the Rocky Mountain Region in achieving substantial and quantifiable improvement with respect to:

- Prevention
- Early detection and rapid response
- Control and management

- Restoration and rehabilitation

The Region 2 strategy references the USDA Forest Service Guide to Noxious Weed Prevention Practices (USDA FS 2001), including Best Management Practices (BMPs) for weed prevention. The national guide identifies weed prevention practices that can be applied to specific site-disturbing projects. It provides a toolbox of ideas for use in mitigating identified weed risks in resource management operations.

Resource Indicators and Measures

Table 1. TES plant indicators and measures for assessing effects

Resource Element	Resource Indicator	Measure
TES Plants	Species presence	Number of TES plant species possibly affected by proposed activities
TES Plants	Qualitative discussion of species' responses to proposed activities	Determination category
Non-Native Invasive Plants	Risk of weed spread from project activities	Level of risk from weeds risk assessment (low, moderate, or high)

Description of the Proposed Project

The Eagle-Holy Cross Ranger District proposes to manage vegetation in the vicinity of Derby Mesa to accomplish hazardous fuels reduction and wildlife habitat improvement. Vegetation management would include up to 3,000 acres of conventional mechanized treatments and broadcast burning. Mechanized harvesting and prescribed fire would be designed to maintain existing ponderosa pine, establish ponderosa pine regeneration, reduce the density of Douglas-fir, sub-alpine fir and lodgepole pine, and regenerate aspen.

Fire Regime Condition Class 1

Broadcast burning – Broadcast burning would be conducted to maintain fire regime condition class 1. Within broadcast burn blocks, whip (trees generally <5”DBH¹) felling may be conducted to prepare an adequate fuel bed and to remove small-diameter trees that could potentially scorch large, adjacent trees, during burning operations. Broadcast burning would be conducted on a 5 – 15 year entry cycle to maintain this condition class.

Fire Regime Condition Class 2 and 3

Improvement Cut – Retain all existing ponderosa pine trees. Other conifers species (≥5”DBH) within 30 to 50 feet of ponderosa pine trees (≥5”DBH) will be harvested. This treatment is intended to maintain existing ponderosa pine by removing competition from more shade-tolerant trees, remove potential ladder fuels, and favor ponderosa pine regeneration.

¹ DBH – Diameter at Breast Height, the diameter of the stem of a tree measured at breast height (4.5 ft) from the ground.

Group Selection – Small group openings, 1 to 2 acres in size, would be established adjacent to ponderosa pine trees, or in areas with evidence of historic ponderosa pine. Within these groups, all trees other than ponderosa pine would be harvested. Following harvesting and broadcast burn operations, natural regeneration of ponderosa pine is expected. If natural regeneration is below Forest Plan stocking standards five years following entry, openings created by group selection would be planted with ponderosa pine seedlings. Openings would be dispersed across the project area. Cumulatively, openings would not exceed 15% of the overall treatment area. This activity is designed to restore ponderosa pine composition within the landscape in areas it has been lost from competition and bark beetles.

Commercial Thin – In areas not included in an improvement cut or group selection, commercial thinning would be conducted to reduce densities in Douglas-fir stands. Thinning would reduce stocking to between 20-60 BA/Ac (basal area/acre). Commercial thinning would remove trees from any conifer species (Douglas-fir, lodgepole pine, subalpine fir) across all diameter classes. Douglas-fir would be preferentially retained over other conifer species, where other species are present. Tree selection would be irregular, or free, with the intent of maintaining some groups (1/4 to 1/2 acre) and clumps (2-10 trees) of trees with interlocking crowns across the landscape rather than an even spacing.

Harvest without Regeneration – Conifers that are encroaching on sagebrush parks will be removed by harvesting, felling with chainsaws, or masticating. This activity will restore sagebrush parks and prevent their conversion to other cover types and will improve habitat for the Brewer's sparrow, a Rocky Mountain Region 2 sensitive species.

Broadcast burning – Broadcast burning would be conducted following harvesting activities, and repeated every 5-15 years, to maintain fire regime condition class 1.

Wildlife Habitat

Brewer's sparrow habitat: Harvest without Regeneration – Conifers that are encroaching on sagebrush parks would be removed by harvesting, felling with chainsaws, or masticating. This would improve habitat for the Brewer's sparrow, a Rocky Mountain Region 2 sensitive species.

Flammulated owl habitat: Snag retention – In areas identified as flammulated owl habitat, prescriptions would be the same as those described under Fire Regime Condition Class 2 and 3. In addition, all snags and broken-top trees greater than 9 inches in diameter would be retained. Recruit (create) one large snag (greater than 20 inches in diameter) per acre (where feasible) where snags don't currently exist.

Roads/Temporary Roads

Existing Forest System Routes and County Roads would be used to access treatment areas and remove forest products from the project area. Temporary roads would be established as-needed to facilitate harvesting activities during project implementation and

decommissioned when silvicultural treatments have been completed. The location of all temporary roads would be approved by a Forest Service Timber Sale Administrator, Contracting Officers Representative, or Forest Service Representative and would be located in areas that cause the least amount of resource damage while still providing for harvesting feasibility. Temporary roads would utilize existing non-system routes to the extent possible.

Road reconstruction work is proposed for existing system roads in order to facilitate the conventional hauling of forest products. Reconstruction involves the improvement or realignment of National Forest system roads to enhance safety, service, and environmental standards. Road reconstruction activities could occur on any National Forest system road that is used for access to the project area.

Table 1 - Proposed Forest System Haul Routes.

Route Number	Route Name	Length (Miles)	Operational ML
609.1	Derby Road	1.22	2 – High Clearance Vehicles
611.1	Red Dirt Basin	2.5	2 – High Clearance Vehicles
611.1A	Unnamed Road	0.57	2 – High Clearance Vehicles
611.2A	Pennsylvania Creek	1.75	2 – High Clearance Vehicles
611.2B	Red Dirt Rim	0.75	2 – High Clearance Vehicles
613.1	South Derby	1.78	2 – High Clearance Vehicles

Table 2 – Non-System Haul Routes to be Decommissioned Following Hauling if Used.

Route Number	Route Name	Length (Miles)	TMP Closure Distance
611.1A	NA	0.31	0.31
611.2A	DEER CREEK	0.36	0.36
611.2C	NA	1.74	1.74
611.2D	NA	1.03	1.03
613.1C	NA	1.48	1.48
N238.1	NA	0.39	0.39
N239.1	NA	0.73	0.73
N242.1	NA	0.17	0.17
N243.1	NA	0.55	0.55

Methodology

Threatened, Endangered, and Sensitive Plants

Effects to TES plants are evaluated based on known presence of occurrences and suitable habitats, and the expected responses of each species to the proposed activities. Factors that may be considered in the analysis of effects include: the proportion of the species' total population and range that is in the analysis area or is affected by the action; whether the habitat affected by the action is necessary for critical life functions; timing, frequency and duration of human activity; any anticipated reductions in numbers or distribution of the species; and the potential of the species to recover from impacts.

TES plant occurrences were overlain with the areas of proposed activity using a Geographic Information System and evaluated for their various habitats and likely responses to determine

areas of potentially significant effects. Design features have been developed in order to avoid adverse effects.

This biological evaluation/biological assessment reviews the proposed activities in sufficient detail to determine the level of effect that would occur to federally listed plants and Region 2 Sensitive plant species. One of three possible determinations is chosen based on the available literature, a thorough analysis of the potential effects of the project, and the professional judgment of the botanist who completed the evaluation. The three possible determinations (from FSM 2672.42) are:

- No impact
- May affect individuals, but is not likely to result in a trend toward Federal listing or loss of viability in the planning area
- May affect individuals, and is likely to result in a trend toward Federal listing or loss of viability in the planning area

Similar categories for federally listed threatened and endangered species are:

- No effect
- May affect, not likely to adversely affect
- May affect, likely to adversely affect

Information Sources

Information used in this analysis includes:

- 2019 survey data By Colorado Natural Heritage Program (CNHP)
- TES plant occurrence data
- Noxious weeds inventory data (by CNHP)
- Scientific literature regarding fire and disturbance effects on various plant groups or species.

Incomplete and Unavailable Information

Because field surveys were completed only during the summer of 2019, there may be undiscovered sensitive plant occurrences and weed infestations within activity areas. Any known plant locations or plant habitat on the project area was derived from the White River NF GIS database and field surveys during summer of 2019.

Spatial and Temporal Context for Effects Analysis

The project area boundary serves as the analysis boundary for direct, indirect, and cumulative effects. Effects to vegetation would be expected to have occurred or become evident within one or two years of disturbance and this constitutes the short term. Effects that linger beyond 2 years are considered long term effects, and may extend to several decades. Such long term effects beyond 20 years become increasingly difficult to predict due to unknown interactions and the many environmental variables with numerous possible outcomes.

Direct/Indirect Effects Boundaries

The spatial boundary for analyzing the direct and indirect effects to these botanical resources is the project area boundary, because all expected effects relevant to these resources would occur and remain within this area.

Cumulative Effects Boundaries

Because effects from the proposed activities would interact with effects from other ongoing or future projects only within the project area boundary, the cumulative effects boundary is also the project area boundary.

Affected Environment

Existing Condition

CNHP ecologists surveyed approximately 30 km (19 miles) of the high priority areas identified by the WRNF wildlife biologist. Habitat in the survey area is characterized by a mosaic of: conifer forests including Ponderosa (*Pinus ponderosa*) woodlands, lodgepole pine (*Pinus contorta*) woodlands, Douglas Fir (*Pseudotsuga menziesii*) forest, and Englemann spruce-subalpine fir (*Picea engelmannii-Abies lasiocarpa*) forest; deciduous woodlands dominated by aspen (*Populus tremuloides*); sage (*Artemisia tridentata* ssp. *vaseyana*) and oak (*Quercus gambelii*) shrublands; wet meadows characterized by graminoids; and, along stream channels, riparian vegetation characterized by willow (*Salix* spp.) and alder (*Alnus incana*) shrublands with herbaceous cover typically characterized by graminoids.

Surveys documented nine Natural Communities that are tracked by the CNHP. Five of these communities are wetland or riparian communities and four are upland communities. No CNHP tracked vascular plant species or Forest Sensitive species were documented in the survey area. One orchid species that is somewhat uncommon in Colorado (Smith 2008), but is not tracked by CNHP, *Piperia unalascensis* was commonly abundant in several sites in the Derby Mesa survey area in mesic and dry conifer forests. Figures 2 and 3 provide maps of survey routes and locations of Element Occurrences documented at Derby Mesa. Table 1 provides a list of Element Occurrences documented at Derby Mesa in 2019 and Table 2 provides a list noxious weed species observed at Derby Mesa.

White River National Forest, Derby Mesa North Survey, 2019

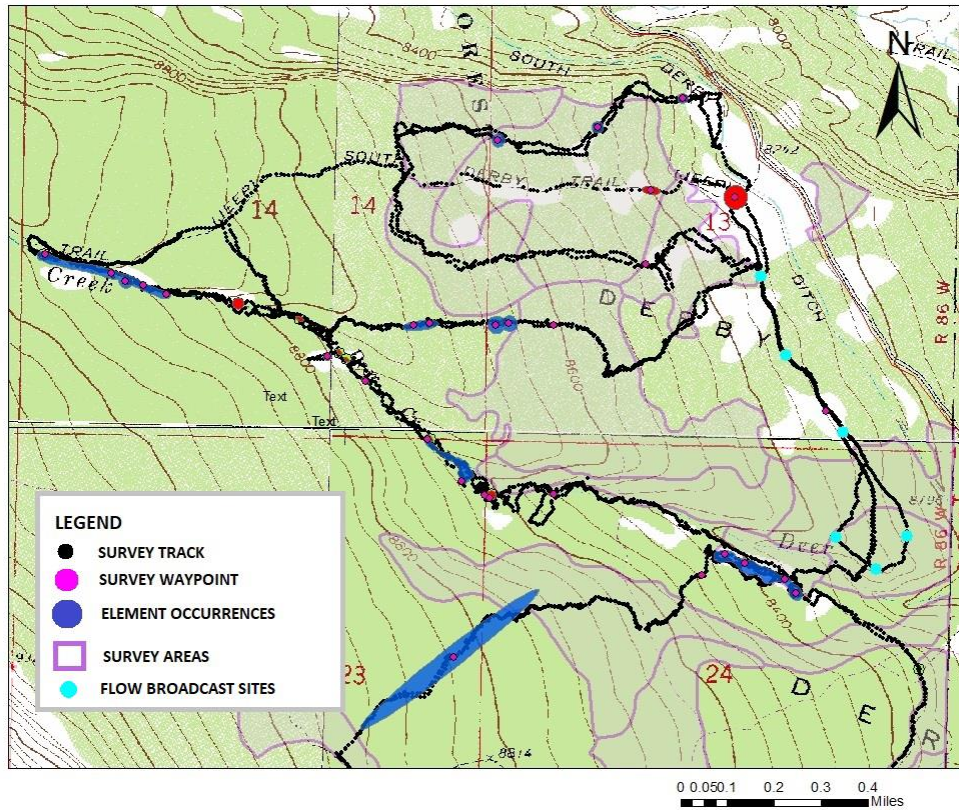


TABLE 1. Element Occurrences and Watch List Species documented at Derby Mesa in 2019. UTM's are in NAD83, Zone 13, and the list is ordered by EO_ID. ELEMENT

Species/Community	EO_ID	EO RANK	GLOBAL & STATE RANK; OTHER RANKING	Disturbance	UTM X/Y LOCATION
<i>Alnus incana</i> /Mesic graminoids Wet Shrubland	WRNF_DERBY_002_ALNINC_MESIC GRAMS	C	G3 S2 Fully tracked	CATTLE	329338/4415685
<i>Carex utriculata</i> Peat-forming Wetland	WRNF_DERBY_003_CARUTR_PERCHED WETLAND	B	G3 S3 Fully tracked	CATTLE	330402/4415315
<i>Eleocharis acicularis</i> Marsh	WRNF_DERBY_005.1_ELEACI_MARSH	D	G4 SU Fully tracked	CATTLE	330582/4412906
<i>Eleocharis acicularis</i> Marsh	WRNF_DERBY_005.2_ELEACI_MARSH	D	G4 SU Fully tracked	CATTLE	330793/4412952
<i>Eleocharis acicularis</i> Marsh	WRNF_DERBY_005_ELEACI_MARSH	D	G4 SU Fully tracked	CATTLE	330532/4412892
<i>Salix bebbiana</i> Wet Shrubland	WRNF_DERBY_006_SALBEB_SHRUBLAND	C	G3? S2 Fully tracked	CATTLE	330931/4412934
<i>Artemisia tridentata</i> ssp.	WRNF_DERBY_007_ARTTRIVAS_BASSAG	C	GNR SU	CATTLE	330035/4413207

<i>vaseyana/Balsamorhiza sagitata</i> Shrubland			Fully tracked		
<i>Pinus ponderosa/Quercus gambelii</i> Woodland	WRNF_DERBY_008_PINPON_QUE GAM	B	G5 S5 Partial Tracking	CATTL E	330555/ 4413160
<i>Pinus ponderosa/Carex geyeri</i> Woodland	WRNF_DERBY_009.1_PINPON_CA RGEY	B	G3G4 SU Fully tracked	CATTL E	329965/ 4413533

Surveys included documentation of noxious weed species. A list of locations where noxious weed species were encountered during these surveys is provided in Table 2. All non-native plant species that are included on Colorado’s Noxious Weed List and classified as “A” or “B” list weed species were documented with a waypoint. Although no “A” list species were found, several occurrences of “B” list species were documented. List “B” species are those for which the Commissioner, in consultation with the state noxious weed advisory committee, local governments, and other interested parties, develops and implements state noxious weed management plans designed to stop the continued spread of these species (CDA 2019). Both Oxeye daisy (*Chrysanthemum leucanthemum*) and Canada thistle (*Cirsium arvense*) are “B” list species with recommended suppression status, and were common in riparian habitat throughout the site.

TABLE 2. Locations of noxious weeds documented at Derby Mesa in 2019. UTM’s are in NAD83, Zone 13, and the list is ordered by WEED_ID.

SCIENTIFIC NAME	COMMON NAME	WEED_ID	UTM X/Y LOCATION	NOXIOUS WEED LIST	MANAGEMENT STATUS
<i>Cirsium arvense</i>	Canada thistle	CIRARV_001	328810 / 4416175	B	SUPPRESSION
<i>Cirsium arvense</i>	Canada thistle	CIRARV_002	328943 / 4416059	B	SUPPRESSION
<i>Cirsium arvense</i>	Canada thistle	CIRARV_003	328967 / 4416031	B	SUPPRESSION
<i>Chrysanthemum leucanthemum</i>	Oxeye daisy	CHRLEU_004	329467 / 4415566	B	SUPPRESSION
<i>Chrysanthemum leucanthemum</i>	Oxeye daisy	CHRLEU_005	328902 / 4416044	B	SUPPRESSION
<i>Chrysanthemum leucanthemum</i>	Oxeye daisy	CHRLEU_006	329034 / 4415958	B	SUPPRESSION
<i>Chrysanthemum leucanthemum</i>	Oxeye daisy	CHRLEU_007	329255 / 4415765	B	SUPPRESSION
<i>Cirsium arvense</i>	Canada thistle	CIRARV_008	329680 / 4415568	B	SUPPRESSION
<i>Chrysanthemum leucanthemum</i>	Oxeye daisy	CHRLEU_009	330013 / 4416615	B	SUPPRESSION
<i>Chrysanthemum leucanthemum</i>	Oxeye daisy	CHRLEU_019	330668 / 4412919	B	SUPPRESSION
<i>Cirsium arvense</i>	Canada thistle	CIRARV_011	330692 / 4412909	B	SUPPRESSION
<i>Chrysanthemum leucanthemum</i>	Oxeye daisy	CHRLEU_012	329135 / 4414578	B	SUPPRESSION
<i>Acroptilon repens</i>	Russian knapweed	ACRREP_013	330305 / 4416593	B	SUPPRESSION
<i>Cirsium arvense</i>	Canada thistle	CIRARV_014	327933 / 4416393	B	SUPPRESSION
<i>Cirsium arvense</i>	Canada thistle	CIRARV_015	328593 / 4416222	B	SUPPRESSION
<i>Cirsium arvense</i>	Canada thistle	CIRARV_016	330563 / 4412875	B	SUPPRESSION

Threatened, Endangered and Sensitive Species Considered

The following plant species were reviewed to determine if they may occur in the project area and if they may be affected by activities associated with the proposed action and alternatives.

Table 3. Threatened or Endangered plants considered

Scientific Name Common Name	Habitat/Life Form	Species present?	Further Analysis Needed?
<i>Eutrema penlandii</i> Penland alpine fen mustard	Alpine tundra, stream banks and wetlands. Mosquito Range above 11,800 ft. Dillon RD.	No	No. No Effect. The project area is outside the geographic and elevation range of this species.
<i>Phacelia submutica</i> DeBeque phacelia	Semi desert shrublands and pinyon-juniper. Wasatch Formation. Below 6,700 ft. Rifle RD.	No	No. No Effect. The project area is outside the geographic and elevation range of this species.
<i>Sclerocactus glaucus</i> Colorado hookless cactus	Semi desert shrublands and pinyon-juniper. Wasatch Formation. Below 6,200 ft. Rifle RD.	No	No. No Effect. The project area is outside the geographic and elevation range of this species.
<i>Spiranthes diluvialis</i> Ute ladies'-tresses	Seasonally moist soils and wet meadows of drainages and margins of ditches. Below 7,200 ft. Suspected in Eagle, Garfield and Pitkin counties.	No	No. No Effect. The project area is outside the elevation range of this species.

Because no suitable habitats for Threatened, Endangered, or Proposed plant species exist in the project area, there would be no effect to *Eutrema penlandii*, *Phacelia submutica*, *Sclerocactus glaucus*, or *Spiranthes diluvialis*. There is no need to consult with the U. S. Fish and Wildlife Service for these species and will not be discussed further in this document.

Table 4. Sensitive plants considered

Scientific Name Common Name	Habitat	Species present?	Habitat present?	Further analysis needed?
<i>Armeria maritima</i> ssp. <i>sibirica</i> Siberian sea thrift	Grassy tundra slopes, wet, sandy or spongy organic soils on south-facing slopes. Hoosier Pass and Hoosier Ridge. 11,900 to 13,000 ft.	No	No	No. No Impact. The analysis area is below the elevation range of this species.
<i>Astragalus leptaleus</i> Park milkvetch	Moist, sedge-grass meadows, swales, turfy hummocks on edge of meandering brooks, and typically on level to gently sloping ground. 6,500 to 9,500 ft.	no	no	No. No Impact. The analysis area is outside the project area
<i>Botrychium ascendens</i> Trianglelobe moonwort	Road sides, trails, earthen dams, and old ski runs. Montane short and tall riparian willow communities with high moss, gravel and cobble ground cover, on volcanic or granitic alluvium. 8,000 to 10,845 ft.	No	Yes	Yes
<i>Braya glabella</i> Smooth northern-rockcress	Alpine. On sparsely vegetated, gravelly slopes of calcareous substrates above timberline; on disturbed sites related to inactive mines. 11,200 to 13,200 ft.	No	No	No. No Impact. The analysis area is below the elevation range of this species.

Scientific Name Common Name	Habitat	Species present?	Habitat present?	Further analysis needed?
<i>Carex diandra</i> Lesser panicked sedge	Fen on peat or on mossy floating logs in spring fed ponds. 6,100 to 8,600 ft.	No	No	No
<i>Carex livida</i> Livid sedge	Fen on peat. Often calcareous or rich fens. Above 6,398 ft.	NO	No	No. No Impact.
<i>Cypripedium parviflorum</i> Yellow lady's slipper	Riparian/wetlands or transitional to cottonwood, aspen and conifers. 7,400 to 8,500 ft.	No	No	No. No Impact
<i>Draba exunguiculata</i> Clawless draba	Alpine fell fields. 11,700 to 14,000 ft.	No	No	No. No Impact. The analysis area is below the elevation range for this species.
<i>Draba grayana</i> Gray's draba	Alpine in gravelly slopes and fell fields. 11,500 to 14,000 ft.	No	No	No. No Impact. The analysis area is below the elevation range for this species.
<i>Draba weberi</i> Weber's draba	Splash zones, among the rocks along streams and lakes and spruce forests. Above 11,000 ft.	No	No	No. No Impact. The analysis area is below the elevation range for this species.
<i>Drosera rotundifolia</i> Roundleaf sundew	Fens which are poor or intermediate poor on floating mats, also in iron fens. 9,100 to 9,800 ft.	No	no	No. No Impact.
<i>Epipactis gigantea</i> Giant helleborine	Seeps on sandstone cliffs and hillsides; springs, especially hot springs when elev. above 8,500 ft.	No	No	No. No Impact. Thermal springs are not present in the analysis area.
<i>Eriophorum chamissonis</i> Chamisso's cottongrass	Bogs, swamps, and marshes in montane and subalpine zones. 7,350 to 8,320 ft.	No	No	no
<i>Eriophorum gracile</i> Slender cottongrass	Fens on floating mats of peat. Often calcareous. 6,900 to 12,000 ft.	No	No	No No Impact.
<i>Kobresia simpliciuscula</i> Simple bog sedge	Fen in flooded marly areas often with <i>Carex simulata</i> & <i>Triglochin</i> spp. 6,000 to 12,800 ft.	No	no	No. No Impact.
<i>Machaeranthera coloradoensis</i> Colorado tansyaster	Mountain parks to dry alpine tundra, little competing vegetation. Open exposure. 7,675 to 12,940 ft.	No	No	No. No Impact
<i>Parnassia kotzebuei</i> Kotzbue's grass of Parnassus	Riparian subalpine and alpine wet, rocky ledges, in mossy streamlets. 10,000 to 12,000 ft.	No	no	No. No Impact.
<i>Penstemon harringtonii</i> Harrington's beardtongue	Open sagebrush slopes or among pinyon-juniper. Calcareous parent material. 6,800 to 9,200 ft.	No	Yes	Yes
<i>Ptilagrostis porteri</i> Porter's false needlegrass	Fens on hummocks among willows, mostly on peat soils. 9,200 to 12,000 ft.	No	No	No. No Impact.

Scientific Name Common Name	Habitat	Species present?	Habitat present?	Further analysis needed?
<i>Ranunculus grayi</i> (previously <i>Ranunculus karelinii</i>) Ice cold buttercup	Among rocks and scree on exposed summits, slopes. 12,000 to 14,100 ft.	No	No	No. No Impact. The analysis area is below the elevation range for this species.
<i>Rubus arcticus ssp. acaulis</i> Dwarf raspberry	Riparian/wetland species with willow or wet partially shaded under spruce. 8,600 to 9,700 ft.	No	Possible	Yes
<i>Salix candida</i> Sageleaf willow	Fens which are calcareous, among other willows. 6,600 to 9,200 ft.	No	No	No. No Impact
<i>Salix serissima</i> Autumn willow	Fens which are calcareous, among other willows. 7,800 to 9,720 ft.	No	No	No. No Impact
<i>Sphagnum angustifolium</i> Peat moss	Nutrient-poor fens including iron fens and intermediate poor fens. Found in depressions between hummocks or on large hummocks or "carpets" of peat mosses. 9,600 to 11,483 ft.	No	No	No. No Impact
<i>Sphagnum balticum</i> Baltic bog moss	Wet portions of acidic peatlands (iron fens). Iron fens, strongly acidic yet high calcium content. Hollows of fens or bogs rather than hummocks. 9,600 to 11,483 ft.	NO	NO	No. No Impact.
<i>Thalictrum heliophilum</i> Cathedral Bluff meadow-rue	Steep talus slopes. Open, hot, dry sites. Soils from Green River Formation; light colored saline/clays. Shifting substrates harsh sites 6,300 to 8,800 ft.	No	No	No. No Impact. Steep talus slopes on hot, dry sites are not present in the analysis area.
<i>Utricularia minor</i> Lesser bladderwort	Fens in shallow water. Open grown or partially shaded. 5,500 to 9,000 ft.	No	No	No. No Impact. Fens do not exist in the analysis area.
<i>Viburnum opulus var. americanum</i> American cranberrybush	Riparian and riparian transition to cottonwood, river birch and hawthorn. 6,000 to 7,000 ft.	No	No	No. No Impact. The analysis area is above the elevation range for this species.

Although no occurrences are known in the analysis area, the absence of specific R2 sensitive plants cannot be reasonably established because comprehensive botanical surveys have not been completed and suitable habitats may be present in the analysis area. For this analysis, they are assumed to be present in areas of suitable habitat. Only the following species will be carried forward into the effects analysis.

- *Botrychium ascendens*
- *Penstemon harringtonii*
- *Rubus arcticus ssp. Acaulis*

For the remaining sensitive plants, no suitable habitats are present and, therefore, the Derby Mesa Project would have no impact on these species, and they will not be discussed further.

Species Information

Botrychium ascendens

Botrychium species (moonworts) are small perennial ferns, and produce just one short-lived leaf with sporangia above ground each year. For a number of years, new plants exist entirely underground as the juvenile plants mature into reproductive individuals. It is also common for individual mature moonwort plants to remain dormant underground in a given year and produce no above ground leaf (Ahlenslager and Potash 2007). Some moonwort habitats, especially those created by human disturbances as well as fire, are considered to be ephemeral, and moonworts must colonize newly available habitats to stay ahead of successional changes (Zika et al. 1995). They commonly occupy previously disturbed sites, where exposed mineral soil provides conditions necessary for germination of its spores. In addition, moonworts require endophytic mycorrhizae for at least a portion of their life cycle, and the presence or absence of this fungal associate probably plays a major role in the initiation of new populations. Moonworts tend to occur in areas where some mineral soil is exposed or has been exposed within the last 10 -30 years. This probably has to do with the ability of arriving spores to percolate into the soil and perhaps also with the establishment and ecology of the appropriate mycorrhizal fungi. Moonworts generally occupy mesic habitats such as those found near lakes, streams, springs, and other damp sites, but they can also occur in relatively dry locations, including roadsides and openings at higher elevations. It is common for several Botrychium species to occur together in “genus communities”, where individuals of different species are growing side-by-side in the same habitats (Beatty et al. 2003).

Botrychium ascendens generally prefers open or early successional habitats. While it is sometimes found in the understory of forested habitat within its distribution in Oregon, most sites are in open, mesic meadows (Beatty et al. 2003). Within Region 2, Botrychium ascendens is found within short and tall riparian willow communities with significant moss, gravel, and cobble groundcover on volcanic or granitic alluvium at 8,000 to 9,000 feet. On the Shoshone National Forest, Botrychium ascendens occurs within openings of a dense willow canopy cover.

The major threat to moonwort species from logging and other vehicular activities is the actual physical disturbance of the soil that may break root and mycorrhizae connections or uproot the moonwort plants (Ahlenslager and Potash 2007). Additional effects from vegetation management activities can result from changing habitat conditions such as shading, soil moisture, and possible weed influxes.

Botrychium ascendens, B. crenulatum, and B. lineare are considered to be very rare, with few documented occurrences, small population abundances, and widely-disjunct occurrences within large ranges. Botrychium species throughout western North America may be threatened by a variety of factors: road construction and maintenance, herbicide application, recreational activities, grazing and trampling by wildlife and/or livestock, structure construction, timber harvest, competition from non-native species, and changes to natural disturbance regimes. Disturbances and land management activities may create and maintain suitable habitat for this species or may negatively impact existing populations, depending on the disturbance intensity and frequency. The specific threats to B. ascendens, B. crenulatum, and B. lineare within Region 2 are largely unknown or unassessed. Although no immediate concerns have been identified, existing populations of B. ascendens and B. lineare have few individuals and cover a small area. Thus, a random, catastrophic disturbance could destroy these populations completely. The only population of B. crenulatum in Region 2 has not been confirmed or relocated in recent years, and

the status of this occurrence is unknown. The primary threats to existing populations of *B. ascendens*, *B. crenulatum*, and *B. lineare* in Region 2, given the current understanding, are: road, trail, or structure construction and maintenance; trampling by wildlife, livestock, or off-trail recreational activities; competition from non-native plant species; natural habitat succession or fire suppression; and changes in hydrology affecting soil moisture or mycorrhizal existence. Specific populations could be at a greater risk than other populations, depending on the landscape context, characteristics of the natural and human disturbance regimes, and biological characteristics of each species. For example, *B. crenulatum* tends to be found in wetter habitats, and some populations of this species could potentially be less threatened by damage from recreational activities than *B. ascendens* or *B. lineare*.

Botrychium ascendens or *Botrychium lineare* are not known to occur in the project area. Potentially suitable and occupied habitats for both are assumed to be present within areas of proposed activities.

Penstemon harringtonii

Penstemon harringtonii is usually found in open sagebrush shrublands on gentle slopes between 6,400 and 9,400 ft. (1,951 and 2,865 m) elevation (Colorado Natural Heritage Program 2006). *Penstemon harringtonii* Penland (Harrington's beardtongue) is a narrowly endemic vascular plant with a global range limited to an 82 by 48 mile area in the Colorado River drainage in northwestern Colorado. It is known from 74 occurrences in Eagle, Garfield, Grand, Pitkin, Routt, and Summit counties and is found primarily in dry, sagebrush-dominated communities between 6,400 and 9,400 ft. (1,951 and 2,865 m) elevation. Five of the 74 occurrences are partially or entirely located on lands managed by the USDA Forest Service. The total population of *P. harringtonii* is estimated to be at least 43,000 plants within 10,000 acres (roughly 15 square miles) of occupied habitat. Although it is likely that more occurrences will be found with additional surveys, it is not likely that the species will be found to be common outside of its narrow range. NatureServe and the Colorado Natural Heritage Program both rank this species as vulnerable (G3 and S3). USDA Forest Service Region 2 has designated *P. harringtonii* a sensitive species; it is also included on the Bureau of Land Management Colorado State Sensitive Species List. It is not listed as threatened or endangered under the Federal Endangered Species Act, nor is it currently a candidate for listing. There is sagebrush habitat within the proposed project area that is potential habitat for Harrington penstemon. No Harrington penstemon was found within the project area, however populations of Harrington's penstemon are found to the east of the project area. Harrington penstemon is a species that is adapted to a fire environment. The individual response of the plant varies from fire to fire, however.

Rubus arcticus* ssp. *acaulis

Rubus arcticus ssp. *acaulis* (dwarf raspberry) is a small, perennial, herbaceous plant in the rose family that is restricted to North America and possibly Siberia. Although a relatively widespread species, occurrences of *Rubus arcticus* ssp. *acaulis* are few and tend to be widely separated and particularly disjunct within the continental United States. In Region 2, this plant is known from mountainous areas in Colorado and Wyoming. It is similar in appearance to wild strawberry, but with pink to rose colored flowers.

Rubus arcticus ssp. *acaulis* typically requires mesic to wet conditions. It has been found in the understory of moderate to dense canopy cover in spruce, spruce/willow, and occasionally willow dominated communities (Fertig 2000), but generally prefers more open habitats. It has also been reported to grow in boggy woods, marshes, mountain meadows, and alpine tundra (Fertig 2000). The current distribution data suggest that this taxon may be found in any bog or fen area above 7,000 feet within Region 2 (Ladyman 2006).

The most likely immediate and potential threat to *Rubus arcticus* ssp. *acaulis* occurrences is habitat loss (Ladyman 2006). Anthropogenic causes of habitat loss include human recreation activities, livestock grazing, and extraction of natural resources (e.g., timber and peat). Logging, recreation, and water impoundments have been reported as the main threats to *Rubus arcticus* ssp. *acaulis* populations in Wyoming. Road construction and improvements may pose a threat to some occurrences, particularly those in Region 2. Water availability may be one of the most critical environmental variables for *Rubus arcticus* ssp. *acaulis*, and any circumstance that leads to drier habitat conditions is likely to pose a substantial threat (Ladyman 2006).

Rubus arcticus ssp. *acaulis* is not known to occur in the analysis area or on the White River National Forest, and the nearest documented occurrence is several miles to the northeast in Boulder County, Colorado. For this analysis, potentially suitable and occupied habitats are assumed to be present within the project area.

Environmental Consequences

Alternative 1 – No Action

The analysis of the no action alternative provides reviewers a baseline to compare the effects of proposed actions and the potential long-term impacts from not implementing the actions. Under the no action alternative, the proposed actions described in alternative 2 would not take place, resulting in no direct or indirect effects. Because there would be no direct or indirect effects, no cumulative effects would occur.

Alternative 1 (No Action) would have **no impact** to any Region 2 sensitive plant species.

Alternative 2 – Proposed Action

Project Design Features

The following design features were designed to protect these botanical resources (include invasive plant species) and would be implemented as part of the proposed action:

Botany & Noxious Weeds

Where Threatened (T), Endangered (E) or Sensitive (S) plant species and plant species of Local Concern (LC) are found in the project area the following will apply:

Buffering

- The protection buffers would be a minimum of 50 feet in radius from the identified population boundaries.
- Exclude mechanized equipment from identified buffered sites.
- Exclude tree felling from within identified buffered sites.
- Fell trees away from identified buffered populations.
- Do not place or burn slash piles or broadcast burn slash in buffered areas.
- It is not required to move existing roads if they occur within the 50 feet buffer of the LC species.

Over the snow

- Over-snow operations, using the BMP will provide adequate protection for these occurrences.

Landings, temporary roads, burn scars from pile burning, and borrow sites will be re-vegetated with native plant species. Utilize seed mix approved by the Forest Botanist and certified to be free of weed species. Seed mixes that incorporate native plant species similar to those within the project area are desirable. Any mulch used in re-vegetation efforts must be certified to be free of weed species.

Avoid activities within 330 feet of fens. Should activity need to be conducted within 330 feet of a fen the Forest Service botanist, hydrologist, or soil scientist would be consulted to ensure actions avoid impacts to the fen, soils, and water tables.

Off-road equipment shall not be moved into project area without having first taken reasonable measures to make sure it is free of soil, seeds, vegetative matter, or other debris that could contain noxious weed seeds.

USFS Representative shall be notified at least 24 hours in advance of off-road equipment arriving on the Forest, to provide the option of inspecting the equipment to ensure it has been cleaned as required.

Equipment may also require inspection prior to moving it from areas infested with invasive species of concern to areas free of such invasive species.

Reasonable measures include pressure-washing or steam cleaning in an offsite location so oil, grease, soil and plant debris can be contained and provide optimal protection of project areas.

All equipment surfaces should be cleaned especially drive systems, tracks and “pinch points” to ensure removal of potentially invasive debris.

Pre-treat existing infestations within, near, or along travel routes prior to implementing the proposed project. This will help to eradicate existing weeds and/or suppress seed production.

Monitor the harvest units for a minimum of three years after project completion and treat any new infestations in a timely manner.

Direct and Indirect Effects

Direct effects occur at the same time and place as the action causing the effect. Direct impacts may include breaking, crushing, or uprooting sensitive plants from contact by equipment, materials or personnel. Individual plants or populations may be covered by slash, chips, or soil and could also have trees fallen on them, potentially damaging the plants or interrupting photosynthesis and reproduction processes. Individuals or populations could also be burned by prescribed fire.

Indirect effects occur at a later time or in a different location as the action causing the effect. Examples of indirect effects include changes in microclimate conditions such as increased light or reduced moisture caused by canopy thinning or removal, the introduction of fire or invasive plants and subsequent changes in plant communities and competition, or increased erosion caused by bare, disturbed soil. The proposed action could indirectly impact sensitive plants through the following processes:

- Causing changes in vegetation composition and cover
- Changing local hydrologic functions in plant habitat
- Changing soil characteristics and erosion potential
- Introducing and creating habitat for invasive plants
- Impacting pollinators or mycorrhizal fungi associated with sensitive plants

If present, individual Sensitive plants may be damaged or killed by the felling of trees, and associated trampling of vegetation by project personnel. Equipment may also damage Sensitive plants during road maintenance activities and the creation and/or use of landings. Pile burning may scorch or consume Sensitive plants. These direct effects could result in the loss of individuals or small occurrences if they are present and undetected. Because their habitats may be present within areas of proposed activities, direct effects are possible for *Botrychium ascendens*, *Penstemon harringtonii*, and *Rubus arcticus* ssp. *acaulis*. Due to the limited area of activity, continued existence of known occurrences throughout their ranges, and future protection of sensitive plant occurrences if they are found, these direct effects would not likely result in loss of viability or a trend toward federal listing for these plants.

Because *Botrychium ascendens* is small and easily overlooked, and related species are known to occur in the analysis area, it is the one TES plant most likely to be affected. Other TES plants have a much lower probability of occurring in the analysis area.

All of the actions listed above involve ground disturbance and/or changes to vegetation structure. All of the actions have potential to impact *Botrychium ascendens*, *Penstemon harringtonii*, or *Rubus arcticus* ssp. *acaulis* or their habitats where they might occur. Pre-disturbance surveys would identify any areas of concern to be protected. If occurrences are found, appropriate management actions would be developed; for instance, a population may be experiencing too much shading, and the proposed actions would benefit the rare plant population, but would need to be implemented using cautionary measures at the site. If the proposed action would provide a benefit to an occurrence, the action would be allowed to proceed, likely with some cautionary measures, but otherwise, disturbance to occurrences would be avoided.

Soil disturbance and movement of vehicles and personnel in the area may also provide opportunity for invasive plant species to become established or spread within the analysis area. If invasive plants become established within occupied habitat, individuals or whole populations of Sensitive plants could be lost as a result of the change in plant community and resulting competition for resources. With project design features specifying treatment and monitoring of weeds as well as requiring weed-free equipment, the risk of increased weed infestations is reduced. Soil disturbances may also negatively affect the soil biota, including mycorrhizal fungi needed for the successful germination and establishment of new *Botrychium* plants. The magnitude of effect to the soil biota is not expected to be enough to prevent the possible establishment of new Sensitive plants.

Cumulative Effects

Past, Present, and Reasonably Foreseeable Activities Relevant to Cumulative Effects Analysis

Other activities

Ongoing activities by recreational users on National Forest System lands in the project area include hiking, snowshoeing, skiing, snowmobiling, hunting, and others. These ongoing activities are not expected to have any significant effects to Region 2 sensitive plants or their habitats. No other current uses have been identified.

Cumulative Effects Discussion

Soil disturbances from the numerous salvage projects would likely result in conditions suitable for colonization by weeds. However, project design features to prevent or minimize weed increases should be effective. These measures greatly reduce the likelihood of weed infestations expanding due to the projects. When the moderate likelihood of weed increases from the currently proposed Derby Mesa Project is added to the expected level of weed increases from the current and previous activities, the cumulative level of risk from expanding weed infestations would still be only moderate, due to prevention measures and additional monitoring and treatments of weeds.

Although the ground disturbances from all of the activities described above have potential to harm Region 2 sensitive plant individuals and habitats, they also may provide suitable sites for establishment of some species, particularly *Botrychium ascendens*. Together, the combined effects expected from all these activities is expected to have minimal influence on the presence of Region 2 sensitive plant species and their habitats.

Because there are policies, standards and guidelines that limit effects to sensitive plant species habitats, the cumulative effects are not expected contribute to any change in status or viability.

Also, the cumulative effects are not expected contribute to an increase in any current or predicted downward trend in population numbers or density or to current or predicted downward trends in habitat capability that would reduce the existing distribution of any of the Region 2 sensitive plant species carried forward into this analysis.

Determination of Effects and Rationale

Although no occurrences are known in the analysis area, the absence of listed R2 sensitive plants cannot be reasonably established because comprehensive botanical surveys have not been completed and suitable habitats may be present in the analysis area. For this analysis, they are assumed to be present in areas of suitable habitat.

Scientific Name Common Name	Determination	Rational
<i>Botrychium ascendens</i> Trianglelobe moonwort	MAII	See below
<i>Rubus arcticus ssp. acaulis</i> Dwarf raspberry	MAII	See below
<i>Penstemon harringtonii</i> Harrington's beardtongue	MAII	See Below

* Assuming presence, may adversely impact individuals, but not likely to result in a loss of viability in the planning area, nor cause a trend toward federal listing.

Botrychium ascendens

Botrychium ascendens is not currently known to exist in the analysis area. It is my determination that Proposed Action of the Derby Mesa Project **may adversely impact individuals, but is not likely to result in a loss of viability in the planning area, nor cause a trend toward federal listing** for *Botrychium ascendens*.

Rationale for this determination:

- No occurrences are known to exist in the analysis area, but suitable and possibly occupied habitat may exist within areas of proposed activity.
- The small size of this species makes it more likely that it may have been overlooked during field reconnaissance.
- Project activities may directly affect undiscovered occurrences, possibly damaging or killing individuals.
- Ground disturbances may create or maintain suitable conditions for establishment of new occurrences or persistence of undiscovered occurrences.
- Ground disturbances and movement of vehicles, equipment, and personnel may provide opportunities for introduction or expansion of weed infestations.
- Adverse effects are expected to be none or minimal due to the small area of activity and project design features for protection of sensitive plants and prevention of weed infestations.

- Riparian/wetland buffers would prevent or minimize impacts to a portion of the *Rubus arcticus ssp. acaulis*

Penstemon harringtonii

It is my determination that proposed action **may adversely impact individuals, but is not likely to result in a loss of viability in the planning area, nor cause a trend toward federal listing** for *Penstemon harringtonii*.

Rationale for this determination:

- Occurrences are known to exist in the analysis area near the prescribed burns in north of Avon, CO. Suitable and occupied habitat exist within other areas of proposed activity.
- Project activities may directly affect undiscovered occurrences, possibly damaging or killing individuals.
- Ground disturbances may create or maintain suitable conditions for establishment of new occurrences.
- Ground disturbances and movement of vehicles, equipment, and personnel may provide opportunities for introduction or expansion of weed infestations.
- Adverse effects are expected to be none or minimal due to the small area of activity and project design features for protection of sensitive plants and prevention of weed infestations.
- Riparian/wetland buffers would prevent or minimize impacts to a portion of the potentially suitable habitats for these species.

It is my determination that Proposed Action of the Derby Mesa Project **may adversely impact individuals, but is not likely to result in a loss of viability in the planning area, nor cause a trend toward federal listing** for *Rubus arcticus ssp. acaulis*.

Rationale for this determination:

- No occurrences are known to exist in the analysis area, but suitable and possibly occupied habitat may exist within the analysis area.
- Ground disturbances and movement of vehicles, equipment, and personnel may provide opportunities for introduction or expansion of weed infestations, which may encroach into the species' riparian/wetland habitat.
- Adverse effects are expected to be none or minimal due to the project design features for protection of sensitive plants and prevention of weed infestations.
- Riparian/wetland buffers would prevent or minimize impacts to much of the potentially suitable habitat for these species.

Summary of Effects

No Threatened, Endangered, or Sensitive plants are known to be present in the Derby Mesa Project area. No Threatened or Endangered plants are suspected of occurring in the project area, therefore none would be affected.

Within the project area, habitat may be present for the following Region 2 Sensitive plants:

- *Botrychium ascendens*
- *Rubus arcticus ssp. Acaulis*

- *Penstemon harringtonii*

Due to vegetation and soil disturbances and the possibility of increased weed infestations, these plants and their habitats may be impacted by the proposed action, but it would not likely result in a loss of viability in the planning area, nor cause a trend toward federal listing. Effects include the possibility of direct damage to undiscovered occurrences as well as the possibility of habitats being maintained or created by the disturbance (for *Botrychium ascendens*). Even though design features will reduce the risk of increased weed infestation to a moderate level, there is the possibility that some increases in weeds could occur and may affect any Region 2 Sensitive plant habitats present. All other Sensitive plants would be unaffected by the proposed action because their habitats are not present.

Compliance with LRMP and Other Relevant Laws, Regulations, Policies and Plans

Alternative 1 and Alternative 2 would comply with the Endangered Species Act because no federally listed or proposed species would be affected. Both alternatives would maintain viable populations of all native and desired nonnative plants, and the proposed activities were reviewed for potential effects on rare species, and thus would be compliant with Forest Service Manual direction. With the evaluation of project effects, risk of weed spread, and implementation of design features for botanical resources, compliance with the White River National Forest Land and Resource Management Plan, Forest Service Manual 2900, and Executive Order 13112 would also be achieved.

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