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Big Willow Packard's Milkvetch Management

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Environmental Assessment # DOI-BLM-ID-B010-2011-0048-EA
(Big Willow Packard's Milkvetch Management)

Table of Contents

1.0 Introduction 1
1.1 Need for and Purpose of Action 1
1.2 Location and Setting 2
1.3 Conformance with Applicable Land Use Plan 2
1.4 Relationship to Statutes, Regulations, and Other Requirements 2
1.5 Scoping and Development of Issues 4
2.0 Description of the Alternatives 6
2.1 Description of Proposed Action and Alternatives 6
2.1.1 Alternative A - No Action/Resume Use of Designated Trails 7
2.1.2 Alternative B – Limited Motorized Access 9
2.1.3 Alternative C – Maximum Motorized Access 15
2.1.4 Alternative D – Moderate Motorized Access 15
2.1.5 Alternative E – No Motorized Access 16
3.0 Affected Environment and Environmental Consequences 17
3.1 Watershed/Vegetation/Special Status Plants 18
3.1.1 Affected Environment – Watershed/Vegetation/Special Status Plants 18
3.1.2 Environmental Consequences – Watershed/Vegetation/Special Status Plants 26
3.1.2.1 General Discussion of Impacts 26
3.1.2.2 Alternative A - No Action/Resume Use of Designated Trails 32
3.1.2.3 Alternative B – Limited Motorized Access 34
3.1.2.4 Alternative C – Maximum Motorized Access 38
3.1.2.5 Alternative D – Moderate Motorized Access 39
3.1.2.6 Alternative E – No Motorized Access 41
3.1.3 Cumulative Impacts – Watershed/Vegetation/Special Status Plants 41
3.1.3.1 Scope of Analysis 41
3.1.3.2 Current Conditions and Present Effects of Past, Present, and Foreseeable Future Actions 42
3.1.3.3 Cumulative Impacts – Alternative A 44
3.1.3.4 Cumulative Impacts – Alternative B 45
3.1.3.5 Cumulative Impacts – Alternative C 45
3.1.3.6 Cumulative Impacts – Alternative D 45
3.1.3.7 Cumulative Impacts – Alternative E 45
3.2 Wildlife/Special Status Animals 46
3.2.1 Affected Environment – Wildlife/Special Status Animals 46
3.2.2 Environmental Consequences – Wildlife/Special Status Animals 48
3.2.2.1 General Discussion of Impacts 48
3.2.2.2 Alternative A - No Action/Resume Use of Designated Trails 50
3.2.2.3 Alternative B – Limited Motorized Access 51
3.2.2.4 Alternative C – Maximum Motorized Access 51
3.2.2.5 Alternative D – Moderate Motorized Access 52
3.2.2.6 Alternative E – No Motorized Access 52
3.2.3 Cumulative Impacts – Wildlife/Special Status Animals 53
3.2.3.1 Scope of Analysis 53

3.2.3.2 Current Conditions and Present Effects of Past, Present, and Foreseeable Future Actions 53
3.2.3.3 Cumulative Impacts – Alternative A 53
3.2.3.4 Cumulative Impacts – Alternatives B-E 54
3.3 Livestock Management 54
3.3.1 Affected Environment – Livestock Management 54
3.3.2 Environmental Consequences – Livestock Management 54
3.3.2.1 Alternative A - No Action/Resume Use of Designated Trails 54
3.3.2.2 Alternative B – Limited Motorized Access 55
3.3.2.3 Alternative C – Maximum Motorized Access 55
3.3.2.4 Alternative D – Moderate Motorized Access 55
3.3.2.5 Alternative E – No Motorized Access 55
3.3.3 Cumulative Impacts – Livestock Management 55
3.3.3.1 Scope of Analysis 55
3.3.3.2 Current Conditions and Present Effects of Past, Present, and Foreseeable Future Actions 56
3.3.3.3 Cumulative Impacts – Alternative A 56
3.3.3.4 Cumulative Impacts – Alternatives B-E 56
3.4 Recreation 56
3.4.1 Affected Environment – Recreation 56
3.4.2 Environmental Consequences - Recreation 57
3.4.2.1 Alternative A - No Action/Resume Use of Designated Trails 57
3.4.2.2 Alternative B – Limited Motorized Access 58
3.4.2.3 Alternative C – Maximum Motorized Access 59
3.4.2.4 Alternative D – Moderate Motorized Access 59
3.4.2.5 Alternative E – No Motorized Access 60
3.4.3 Cumulative Impacts - Recreation 60
3.4.3.1 Scope of Analysis 60
3.4.3.2 Current Conditions and Present Effects of Past, Present, and Foreseeable Future Actions 60
3.4.3.3 Cumulative Impacts – Alternatives A-D 61
3.4.3.4 Cumulative Impacts – Alternative E 62
4.0 Consultation and Coordination 62
4.1 List of Preparers 62
4.2 List of Agencies, Organizations, and Individuals Consulted 62
4.3 Public Participation 63
5.0 Literature Cited 64
6.0 Appendices 68
6.1 Appendix 1. Terms and conditions for the Bannister Basin, Little Willow, and Paddock Valley permits, Payette County, Idaho. 68
6.2 Appendix 2. Big Willow Adaptive Management Monitoring Plan 70
6.3 Appendix 3. Terms and conditions common to the Bannister Basin, Little Willow, and Paddock Valley permits, Payette County, Idaho. 77
7.0 Maps 78

Environmental Assessment # DOI-BLM-ID-B010-2011-0048-EA
Big Willow Packard's Milkvetch Management

1.0 Introduction

1.1 Need for and Purpose of Action

In 2010, Packard's milkvetch (*Astragalus cusickii* var. *packardiae*), a perennial forb with a narrow endemic distribution, was listed as a candidate species under the Endangered Species Act (ESA) by the U.S. Fish and Wildlife Service (USFWS). The primary threats to Packard's milkvetch include wildland fire, exotic annual grasses, off-highway vehicle (OHV) use, and livestock trampling (Mancuso 2010, USFWS 2012).

The Big Willow area encompasses nearly the entire known habitat for Packard's milkvetch. The plant communities surrounding Packard's milkvetch habitat are degraded, and this has implications for both exotic plants entering milkvetch habitat and the flammability of the rangeland surrounding the habitat (DiTomaso 2000). The vegetation and fire regime has changed dramatically due to many factors including: more than a century of managing vegetation for livestock forage, livestock trampling and herbivory, frequent wildland fires, and a ready seed source of exotic annual grasses (Whisenant 1990, Brooks 2007). Fire return intervals have changed from greater than (>) 150 years to less than (<) 20 years. This interval is too short to maintain the dominant shrub, sagebrush (*Artemisia tridentata*), which is readily killed by fire. Now, abundant annual grasses and frequent wildland fires threaten to displace milkvetch from its habitat.

The 1988 Cascade Resource Management Plan (RMP) designated OHV use in the Big Willow area as limited to existing or designated routes (USDI 1988). At that time, approximately 42 miles of roads and trails existed in the area. Following the RMP, a road and trail network was not designated. Since that time many new trails have been created by unauthorized cross-country OHV use. Repeat aerial photography analysis determined cross-country OHV use increased trail mileage nearly four-fold between 1988 and 2011, from 42 miles to at least 172 miles. Additionally, there were 244 acres of steep slopes with OHV "hill-climb" trails that were not evident in 1988. This uncontrolled expansion of trails has resulted in direct impacts to Packard's milkvetch, increased soil erosion, spread of noxious weeds, and degraded native plant and animal habitat.

Livestock grazing has occurred in the area since at least the mid-1800s and has been regulated by the Federal Government since 1934. Packard's milkvetch populations on BLM-administered (public) lands are within three BLM grazing allotments (Bannister Basin, Little Willow, and Paddock Valley).

The purpose of this environmental assessment is to identify management actions that will allow the BLM to maintain and enhance Packard's milkvetch habitat while providing for other sustainable uses by:

- restoring and maintaining native vegetation surrounding Packard's milkvetch element occurrences (EOs);

- reducing exotic annuals in and around EO restoration buffers;
- eliminating direct OHV impacts to EOs;
- minimizing indirect impacts to vegetation communities that support milkvetch pollinators;
- identifying trails and areas available for OHV use to meet user demand while avoiding impacts to adjacent private lands; and
- minimizing direct livestock impacts to EOs.

1.2 Location and Setting

The area known locally as "Big Willow" is located approximately 9 miles southeast of Payette, Idaho and 13 miles northwest of Emmett, Idaho. The general location is east of Stone Quarry Gulch Road, north of Big Willow Creek Road, south of Little Willow Creek Road, and west of Dry Creek Road (Map 1). The area encompasses about 7,400 acres of public land administered by the BLM. The land is characterized by rolling hills, between 2,600 and 3,300 feet elevation. Vegetation is characterized by exotic annual grasslands (45% of the 20,105 acre area identified as the Cumulative Effects Area), shrubland (38%), bunchgrass (10%), and other cover types (7%). The majority (67%) of shrub and bunchgrass types occur on northerly aspects, while the majority of exotic annual grasslands occur on southerly aspects.

1.3 Conformance with Applicable Land Use Plan

The BLM-administered lands currently have an OHV area designation of "limited to existing or designated routes." A change in OHV area designations would require a land use plan amendment. The RMP uses the term route; however, the term trail will be used in this document in conformance with current guidance, BLM Handbook H-8342-1. The Proposed Action would be in conformance with the following objectives from the 1988 Cascade RMP (USDI 1988):

Vegetative Resources

Objective: Protect Federal candidate and sensitive plants.

Recreation

Objective: Provide for OHV recreation activity on public lands.

1.4 Relationship to Statutes, Regulations, and Other Requirements

The following laws, acts, manuals, policies, and regulations provide the foundation for managing wildlife habitat, livestock, recreation, and cultural resources on BLM-administered lands.

The Federal Land Policy and Management Act (FLPMA) of 1976: Authorizes the following: inventory and identification of BLM-administered lands, land use planning, public involvement and participation. FLPMA also provides BLM with broad management authority under principles of multiple use and sustained yield. Land use planning resulted in the preparation of the Cascade RMP.

Vegetation Treatments

Endangered Species Act (ESA) of 1973 as amended (16 USC 1531): Section 7 of the ESA outlines the procedure for federal interagency cooperation to conserve federally listed species and their designated habitats. Section 7(a) (4) of the ESA states that "each federal agency shall confer with the Secretary on any agency action which is likely to jeopardize the continued existence of any species proposed to be listed under section 4 or result in the destruction or adverse modification of critical habitat proposed to be designated for such species."

Final Programmatic Environmental Impact Statement Vegetation Treatments Using Herbicides on BLM Lands in 17 Western States (2007): This final environmental impact statement (FEIS) assessed the environmental consequences of federal approval of different vegetative treatments on a variety of vegetative species on public land in the western United States. The proposed action included manual, mechanical, biological, prescribed burning, and chemical treatments.

Special Status Species Management Manual for the Bureau of Land Management (BLM Manual 6840): National policy directs BLM State Directors to designate sensitive species in cooperation with the State fish and wildlife agency and further provides that all federal candidate species are BLM sensitive species. This manual establishes policy for management of species listed or proposed for listing pursuant to the ESA and Bureau sensitive species that are found on BLM-administered lands, for conservation of sensitive species, including their habitats, and for mitigation of adverse impacts. Where relevant to the activities associated with this project, effects to special status species are analyzed in this Environmental Assessment (EA).

Off-highway Vehicle (OHV) Management

Executive Order 11644 (1972): The executive order directs federal agencies "to establish policies and provide for procedures that will ensure that the use of off-road vehicles on public lands will be controlled and directed so as to protect the resources of those lands, to promote the safety of all users of those lands, and to minimize conflicts among the various users of those lands." The executive order also requires Federal agencies to designate specific areas where the use of off-road vehicles may or may not be permitted, and "to monitor the effects of off-road vehicles on public lands and amend or rescind management decisions in order to further the policy of this order." Further, off-road vehicle areas and trails are to be located so as "to ensure the compatibility of such uses with existing conditions in populated areas, taking into account noise and other factors."

Executive Order 11989 (1977): The order directs federal land managers to immediately close areas or trails to certain off-road vehicles whenever the land manager determines that "the use of off-road vehicles will cause or is causing considerable adverse effects on the soil, vegetation, wildlife, wildlife habitats or cultural or historic resources of particular areas or trails … until such time he determines that such adverse effects have been eliminated and that measures have been implemented to prevent further recurrence."

Code of Federal Regulations (CFR): Designation of public lands as open, limited, or closed to motorized use is required and authorized under 43 CFR subpart 8342 Designation of Areas and Trails. These designations would be effective upon issuance of the Record of Decision to amend the Cascade RMP. Designation of areas as open, closed, or limited for non-motorized and other

uses (mechanical, mountain bike, equestrian, and foot), or conditions of use, is authorized under 43 CFR § 8364.1 Closure and Restriction Orders, and 43 CFR § 8365.1-6 Supplementary Rules. Designations under 43 CFR § 8364.1 and 43 CFR § 8365.1-6 require publication in the Federal Register and local media and are not effective until such publication.

Travel and Transportation Management Handbook for the Bureau of Land Management (BLM Handbook H-8342-1): Clarifies national policy and establishes procedures for implementing travel and transportation planning and management in the BLM land use and implementation plans. The handbook describes how to comprehensively manage travel and transportation on public lands through the development of comprehensive travel networks.

Livestock Management

The Taylor Grazing Act (TGA) of 1934 as amended: Provides for the orderly use of public land. The goals of the TGA are: to stop injury to the public grazing lands by preventing overgrazing and soil deterioration; to provide for their orderly use, improvement, and development; to stabilize the livestock industry dependent upon the public range; and for other purposes.

The Public Rangelands Improvement Act (PRIA) of 1978: Mandates that livestock grazing be managed to improve range condition and maintain the highest level of productivity.

Title 43 CFR, Subpart 4100(2005) – Grazing Administration, Exclusive of Alaska: The regulations embody the Acts, as amended, listed above. Specifically, 43 CFR § 4180.2 (2005) is the regulatory requirement that implements Idaho's Standards for Rangeland Health and Guidelines for Livestock Grazing Management, 1997 (Standards; USDI 1997).

Cultural Resources

Idaho BLM has the responsibility to manage cultural resources on public lands pursuant to the National Historic Preservation Act of 1966 (as amended), the 2012 Programmatic Agreement Among the Bureau of Land Management, the Advisory Council on Historic Preservation, and the National Conference of State Historic Preservation Officers and the State Protocol Agreement Between the Idaho State Director of the BLM and the Idaho State Historic Preservation Officer (1998) and other internal policies.

1.5 Scoping and Development of Issues

Internal scoping included a staff review of the existing situation and identification of known conflicts between OHV use, private property, special status species, and other resources and possible management opportunities. External scoping included separate meetings with the U.S. Fish & Wildlife Service, local landowners, grazing permittees where current OHV and grazing management and known issues were discussed. Public meetings were held on June 8, 2011 in Payette, Idaho and on June 9, 2011 in Emmett, Idaho to explain management actions taken to deal with immediate resource threats and to solicit input and assistance. BLM staff met with the OHV group Idaho Rough Riders during one of their regular meetings (June 15, 2011) to solicit assistance and identify additional concerns. An on-site meeting was held with OHV users on November 5, 2011 to identify trails most used by riders.

On May 2, 2012, an EA Scoping Package or notification letter was sent to all affected parties, interested publics, and agencies to inform the public of the proposal and solicit comments regarding the NEPA review of alternatives. Public meetings were held on May 23, 2012 in Payette Idaho, and May 24, 2012 in Emmett, Idaho to discuss alternative development options. Comments received in response to the scoping package and public meetings were used to identify potential environmental issues related to the Proposed Action, and to identify alternatives that meet the purpose and need. Written comments were received from two individuals, Idaho Department of Fish and Game, Idaho Department of Lands, Idaho Department of Parks and Recreation, and the U.S. Fish and Wildlife Service. E-mail comments were received from 11 individuals.

Changing the OHV area designation identified in the Cascade RMP would require a plan amendment. As part of this process, a Notice of Intent to consider amending the RMP was published in the Federal Register (FR) on June 5, 2012 (FR Vol. 77, No. 108, pp. 33232-33234).

Resource issues and concerns identified through the scoping process included:

Endangered Species Act - Because of its limited distribution (26 known sites in northeastern Payette County), the Service has placed a high priority on implementing actions that would preclude the need for listing Packard's milkvetch as Threatened or Endangered. The area also provides habitat for southern Idaho ground squirrel (SIDGS), a candidate species.

Off-highway Vehicle Use - The Clay Peak Motorcycle Park is located 9 miles west of Big Willow and was established to provide an open area for OHV use. Much of the increase in unauthorized Big Willow OHV use occurred between 2005 and 2010 when Clay Peak, leased by Payette County under the Recreation and Public Purposes Act, was managed by a contractor that charged admission. A lawsuit temporarily closed the motorcycle park in 2009. Management of the park changed in 2010 and admission is no longer charged and is open for free public use. The Big Willow area is temporarily closed to OHV use (FR Vol. 76, No. 143, pp. 44602-44603). OHV users expressed a desire for open areas and extended trail loop systems for a variety of skill levels that Clay Peak doesn't provide.

Adjacent Private Landowners – Almost all access to public lands in the area is through surrounding private property. Each of the four adjacent landowners has seen increased unauthorized OHV activity on their properties. Increases on one parcel have been substantially greater than those observed on public lands.

Livestock Grazing – Three livestock grazing allotments, including a 680-acre parcel of State lands, would be affected. Increased OHV activity has resulted in reduced forage availability (through direct habitat loss) and disturbance to grazing animals. Livestock grazing management may need to be modified to allow implementation and maintenance of vegetation treatments.

Vegetation – One-and-a-half centuries of sheep and cattle grazing, wildland fires (1958, 1975, 1976, and 1992), and establishment and expansion of exotic plants have altered vegetation conditions. Approximately 40% of the area is currently occupied by scattered pockets of basin big sagebrush, with small inclusions of bitterbrush, and a cheatgrass/medusahead dominated

understory. The remaining 60% is dominated by cheatgrass/medusahead with no shrub overstory. Widely scattered pockets of native grasses and forbs remain; however, they are limited in size and distribution.

Noxious Weeds – Establishment and expansion of noxious weeds is a concern. Payette County Noxious Weed Control has invested a significant amount of time and resources (BLM Assistance Agreements and American Recovery and Reinvestment Act funds) for treatment of rush skeletonweed, scotch thistle and yellow starthistle. There is concern that continued disturbance by OHVs would adversely affect noxious weed management.

Cultural Resources – Ground disturbing activities such as fencing, vegetation treatments, or OHV trails can damage or destroy cultural resources. Proposed fencelines were inventoried and no historic properties (sites listed or eligible for listing on the National Register of Historic Places) were identified. Areas proposed for ground-disturbing vegetation treatments would be inventoried prior to treatment and historic properties would be avoided. Proposed OHV activities would occur in previously disturbed areas; therefore, historic properties that could occur in these areas have already been affected and would not likely suffer further damage. Because historic properties are not present and adequate mitigation measures would be taken to avoid newly identified historic properties, cultural resources will not be discussed further in this document.

2.0 Description of the Alternatives

This chapter describes and compares the alternatives considered for the management of the Big Willow area. This section presents the alternatives in comparative form, in order to define the differences between each alternative and provide a clear basis for choice among options by the decision maker and the public. Design criteria and monitoring measures incorporated into the alternatives are also described.

2.1 Description of Proposed Action and Alternatives

The following alternatives have been identified based on the scoping process:

Alternative A – No Action/Resume Use of Designated Trails
Alternative B – Limited Motorized Access
Alternative C – Maximum Motorized Access
Alternative D – Moderate Motorized Access
Alternative E – No Motorized Access

Trail Designation Criteria

The Travel and Transportation Handbook 8342-1 identifies the following four items as the minimum criteria to be used for route selection:

a) Areas and trails shall be located to minimize damage to soil, watershed, vegetation, air, or other resources of the public lands, and to prevent impairment of wilderness suitability.
b) Areas and trails shall be located to minimize harassment of wildlife or significant disruption of wildlife habitats. Special attention will be given to protect endangered or threatened species and their habitats.

c) Areas and trails shall be located to minimize conflicts between off-road vehicle use and other existing or proposed recreational uses of the same or neighboring public lands, and to ensure the compatibility of such uses with existing conditions in populated areas, taking into account noise and other factors.
d) Areas and trails shall not be located in officially designated wilderness areas or primitive areas. Areas and trails shall be located in natural areas only if the authorized officer determines that off-road vehicle use in such locations will not adversely affect their natural, esthetic, scenic, or other values for which such areas are established.

Road and trail designations will be based on the protection of the public land resources, the promotion of the safety of all public land users, and the minimization of conflicts among various public land uses. The following criteria were used in developing trail designations for each alternative:

- Trail lies within area designated as "limited" to designated roads and trails or "open."
- No trails would be designated in "closed" areas.
- Trail existed in 1988 when Cascade RMP was signed and still exists.
- Trail does not direct users onto or across private land.
- Trail provides loop opportunities.
- Trail provides link to other areas of public land.
- Trail is not parallel to another existing route.

2.1.1 Alternative A - No Action/Resume Use of Designated Trails

Management of vegetation, OHVs, and livestock would continue as described in the 1988 Cascade RMP, subsequent activity plans, and applicable policies.

Vegetation Treatments

Noxious weed control would be carried out by BLM and Payette County noxious weed control personnel as needed. No other vegetation or fuels treatments would occur.

OHV Management

OHV Area Designations – Approximately 7,366 acres would continue to be designated as "limited to designated roads and trails" for OHV use (Map 2).

OHV Trail Designations – Forty-two miles of trails present on BLM-administered lands (plus 8 miles of linking trails on State land inholdings) when the 1988 Cascade RMP was signed would be available for use by motorized vehicles ≤50 inches in width (Table 1, Map 2). Trails created since 1988 (up to 68 miles[1]) would be marked "Closed to OHVs" and would not be available for motorized use except by permission of the authorized officer.

[1] Aerial photography from 1988, 2006, 2009, and 2011 were used to delineate OHV trails. Consistently used trails were visible through time; however, locations and amounts of irregularly used trails changed through time. To provide consistency in this document, mileage figures presented after Table 1 will remain consistent with those in Table 1 for designated trails, but will use a lower mileage figure for undesignated trails. The lower mileage for undesignated trails represents those that appeared consistently in 2009 and 2011 aerial photos and were outside hill climb areas (unless they represent a transit trail through hill climb areas). County maintained roads are not included in totals.

Table 1. OHV area and trail designations for motorized use on BLM-administered lands, alternatives A-E, Big Willow area, Payette County, Idaho.

OHV Designation		Alternative				
		A	B	C	D	E
Area (acres)	Limited	7,366	1,651	5,965	2,697	227
	Open	0	95	127	95	0
	Closed	0	5,620	1,274	4,574	7,139
Trail (miles)	Designated	42.1	9.3	57.5	22.1	0.4
	Undesignated[1]	129	162	113	149	171

[1] These represent the maximum number of trail miles based on 2009 aerial photography.

Livestock Management

A total of 2,683 animal unit months (AUMs) would be permitted in three allotments (Table 2, Map 3). Cattle and sheep use would occur primarily during the spring.

Table 2. Permitted livestock grazing use for three allotments in the Big Willow area, Payette County, Idaho.

Allotment (Allotment Number)	Permittee	Class	Number	On Date	Off Date	% Public Land	Active AUMs	Suspended AUMs	Permitted AUMs
Bannister Basin (00312)	J.G. Schwarz	Cattle	340	4/1	6/1	58	367	0	367
Little Willow (00295)	H. Hook Ranch	Cattle	178	4/15	6/1	32	98	0	98
			141	10/15	11/14		50	0	50
Paddock Valley (00370)[1]	Soulen Livestock	Sheep	2,000	3/28	4/15	30	75	0	75
			3,000	3/28	6/5		414	0	414
			2,000	5/2	6/20		197	0	197
		Cattle	230	4/1	4/30		68	0	68
			900	4/1	6/20		719	0	719
			365	4/1	10/10		695	0	695

[1]Only Pasture 1 of the Paddock Valley Allotment contains Packard's milkvetch. This pasture is grazed by sheep only and accounts for 11% of the allotment and the associated AUMs.

In addition to standard terms and conditions (Appendix 1), the following allotment specific terms and conditions apply that potentially affect Packard's milkvetch:

Bannister Basin

1) Use in the Bannister Basin Allotment #312 will be as follows: First year 2002 rest. Second year 2003 Bannister Basin Pasture 170 head from 04/01 to 06/01, Sheep Gulch Pasture 170 head from 04/01 to 06/01. Third year 2004 Bannister Basin Pasture 170 head from 04/01 to 06/01, Sheep Gulch Pasture 170 head from 04/01 to 06/01. Following years: rotation starts over again with the rest period.
2) Bitterbrush and mountain shrub utilization will not exceed 30% of current year's growth,
3) Grazing use will not exceed 50% utilization on all perennial grasses by the end of grazing period per pasture.

4) At least 30% of yearly production of annual grasses and forbs in the spring-use pastures will remain at the end of the grazing period to protect the watershed and discourage further invasion of noxious and other weedy species.

Little Willow

1) At least 30% of the yearly production of all grasses and forbs on the annual dominated plant communities will remain at the end of the grazing period to protect the watershed and to discourage further invasion of noxious weeds and other weedy species.
2) The Little Willow Allotment will be managed on a five pasture rotation system:
    a. Season of use and number of livestock are not restricted in the Little Willow and Bradford pastures to those shown above provided overuse and deterioration does not occur to the public lands.
    b. The Wooden Corral and BLM pastures will be used by 100 animal units from April 15 through June 1 for a maximum of 10 days.
    c. The Stone Quarry Pasture will be used by 100 animal units from April 15 through June 1 for a maximum of 10 days.
    d. Fall use is optional, however if fall AUMs are not used, they will not be substituted for Spring use.

Paddock Valley

No specific terms and conditions affect Packard's milkvetch.

Fencing

No new fencing would be constructed. Existing fencing would be maintained as needed.

2.1.2 Alternative B – Limited Motorized Access

Vegetation treatments would enhance pollinator habitat adjacent to Packard's milkvetch EOs and reduce exotic annuals over a wider area. Motorized use would be limited to 9.3 miles of trails (Table 1) and a 95-acre open area. Livestock use would be excluded from 470 acres and adaptively managed elsewhere within the allotments and pastures.

Vegetation Treatments

Habitat Restoration - Vegetation restoration treatments would occur on 1,166 acres of public land within 400 yards of Packard's milkvetch EOs. Biological and chemical herbicides would be applied, native seeds and plants would be distributed using OHV-mounted sprayers and seeders, backpack sprayers, and hand tools. Thatch and fuel would be controlled using gas-powered mowers and trimmers. Outside these 400 yard buffer areas, tractor mowers and minimum-till seed drills pulled by tractors or dozers may be used to reduce fuels and to seed native bunchgrasses and forbs. Vegetation restoration efforts would be focused within 400 yards (up to 1,166 acres) of known Packard's milkvetch EOs (Map 4). Within these areas, most restoration efforts would occur where exotic annuals are the dominant vegetation type (524 acres) or dominate shrub understories (up to 492 acres). Bunchgrass-dominated areas would have a lower priority for restoration. Pre- and post-emergent herbicides (e.g., Imazapic, glyphosate, 2,4-D, and/or bioherbicides) would be used to reduce exotic forb and annual grass cover. Herbicide applicators would consider the target weed species, vegetative cover, and susceptibility of herbicide movement either by water or wind, and would apply a minimal

amount of herbicide to achieve control of targeted weeds. Treatments would be repeated in subsequent years, as needed, until plant establishment would be attained.

Herbicides would not be applied within 10 feet of EOs or within two weeks of Packard's milkvetch blooming, to avoid plants and their pollinators. Bioherbicide and physical control methods (i.e. hand pulling and hoeing) would be used where appropriate within and adjacent to EOs. In areas with >60% slopes, herbicide treatments would occur sequentially along contours no wider than 30 feet to limit the amount of exposed soil at any one time. Erosion barriers would be placed downhill of treated areas to minimize runoff. Areas within 60 feet upslope or downslope would not be treated until recovery of desirable species reaches 75% of site potential to limit areas susceptible to erosion.

Imazapic (2-12 ounces/acre) would be used primarily in the fall as a pre-emergent control for exotic annual grasses. Preferentially (if approved for use on BLM-administered land), a bioherbicide would be used as specified by USDA Agricultural Research Service to control exotic annual grasses, instead of imazapic. The most likely bioherbicidal candidate is the naturally occurring soil bacteria, *Pseudomonas fluorescens* Strain D7, which is highly effective at killing cheatgrass, medusahead, and jointed goatgrass, but does not harm native species (this bioherbicide is projected to be available for use on BLM administered land by 2015 or 2016). Bioherbicides would be applied directly or as part of a seed coating.

Depending on the success of pre-emergent herbicide or bioherbicide, glyphosate would be applied sparingly in early spring to augment annual grass control. If needed, 2,4-D would be applied in early summer to control exotic forbs.

Target restoration plants would include native grasses, forbs and shrubs that would be seeded or planted where necessary to supplement natural recovery. Temporary fencing could be constructed around treated areas until vegetation objectives were met. Seedings and plantings would occur as soon as appropriate after bioherbicide/herbicide treatments would take effect.

Up to 101 miles of closed trails would be revegetated (restored). Closed trails would be signed and if necessary, blocked by temporary fences (Figure 1). Closed trails would be prepared for seeding/planting treatments by using one or a combination of equipment types to include a SWECO Trail Dozer (a small ~9,000 pound tracked vehicle designed for trails, which "rakes" the soil to a depth of 6-8") or an OHV equipped with rake, roller attachments, and broadcast seeders. Trail dozers and other equipment would be used primarily in late summer or early fall when the soil is dry.

OHV Management

OHV Area Designations – Areas would be designated as closed (5,620 acres), open for cross-country use (95 acres), and limited to designated trails (1,651 acres) for OHVs and the Cascade RMP would be amended accordingly (Map 5). Motorized access in the closed area would be allowed only for emergency vehicle use, BLM administrative uses, and other BLM authorized uses (e.g. weed spraying or grazing administration). The open area, adjacent to Big Willow Creek Road, would be used as a staging/riding area.

OHV Trail Designations – Designated trails (9.3 miles) would be available to motorized vehicles ≤50 inches in width. These trails would provide ridgeline and drainage riding loop opportunities on BLM-administered lands that would not direct riders onto or across private lands (Table 1, Map 5). State land inholdings would no longer be accessible by recreational OHV users. Designated trails would consist primarily of some of the 1988 trails and other user-identified trails that facilitate loop opportunities. Undesignated trails (up to 101 miles) would be marked "Closed to OHVs" and would not be available for motorized use except by permission of the authorized officer.

User Education – A public outreach/communication plan would be developed and implemented to educate the general public and specific user groups of the designations and rules of the area. The plan would outline both on-site and off-site education methods to be used. The existing kiosks would be updated to show trail designations and regulations and clearly show users where riders could and could not ride.

Trail Marking – Authorized trails would be signed and posted using a variety of means. Trails not posted as "open" would be closed to motorized use. Closed trails (up to 101 miles) would be treated using various means including physically blocking trails, ripping, placing rocks across trails, erecting short sections of fence, and reseeding to discourage use. In areas where designated trails are close to private land, additional marking would inform users of the private land boundary and to stay on BLM-administered lands.

Staging Area – A staging area would be developed adjacent to Big Willow Road on BLM-administered land to allow legal public access to designated trails. This area would be designated and developed as a recreation site. Initially the site would contain a parking area and information kiosk delineated by boulders, and, as funding is available, a restroom facility. Complete implementation of the open area delineation with fencing on the BLM/private land boundary and on BLM-administered lands on the north and west would depend on available funding. Until that can be accomplished, only designated trails would be available for use.

Compliance – Compliance with use of designated areas and trails would be monitored on a regular basis (Appendix 2). Repeated non-compliance could result in additional restrictions or closures (Appendix 2).

Figure 1. Private land in the Big Willow study area in February 2012. The rolling hills of the study area lack natural physical barriers to OHV travel; therefore, education, signing, law enforcement and frequent environmental monitoring would be necessary to ensure compliance.

Livestock Management

Livestock would be excluded from 470 acres (three EOs, 13 suboccurrences) in order to maintain or restore native vegetation and address livestock trampling damage (Map 3). Gates would be provided to allow removal of livestock that may become trapped in exclosures. Due to the steepness of terrain, soil qualities, distance from water, or low stocking rate, livestock make limited use of areas where exclosures are proposed. Therefore, it is not anticipated that mandatory terms and conditions would need to be modified from those described in Alternative A (Table 2) to account for unavailable forage. However, if monitoring indicates that livestock grazing is adversely affecting vegetation conditions (Appendix 2), then AUM reductions would be implemented (In Pasture 1 of the Paddock Valley Allotment, sheep would be herded around EOs and vegetation treatment areas that would not be in exclosures (up to 650 acres). The BLM would flag treatment areas and provide maps to aid sheepherders to identify avoidance areas. There would be no bedding, mineral supplement placement, or watering within 0.25 miles of Packard's milkvetch suboccurrences.

Table 3). Reductions would be based on current stocking rates and the amount of unavailable acres/AUMs. Reductions in AUMs within the open area could be reduced by an additional nine AUMs, to account for the expected loss of vegetation and forage within the area.

In Pasture 1 of the Paddock Valley Allotment, sheep would be herded around EOs and vegetation treatment areas that would not be in exclosures (up to 650 acres). The BLM would flag treatment areas and provide maps to aid sheepherders to identify avoidance areas. There would be no bedding, mineral supplement placement, or watering within 0.25 miles of Packard's milkvetch suboccurrences.

Table 3. Proposed modifications to permitted livestock grazing use for three allotments in the Big Willow area, Payette County, Idaho.

Allotment (Allotment Number)	Permittee	Class	Number	On Date	Off Date	% Public Land	Active AUMs	Suspended AUMs	Permitted AUMs
Bannister Basin (00312)	J.G. Schwarz	Cattle	340	4/1	6/1	58	327	40[1]	367
Little Willow (00295)	H. Hook Ranch	Cattle	178	4/15	6/1	32	83	15	98
			141	10/15	11/14		50	0	50
Paddock Valley (00370)[2]	Soulen Livestock	Sheep	2,000	3/28	4/15	30	75	0	75
			3,000	3/28	6/5		414	0	414
			2,000	5/2	6/20		197	0	197
		Cattle	230	4/1	4/30		68	0	68
			900	4/1	6/20		719	0	719
			365	4/1	10/10		695	0	695

[1] Reduction based on 338 acres of BLM-administered lands in the proposed Bannister Basin exclosure, 95 acres in the proposed open, and a current stocking rate of 10.8 acres/AUM.
[2] Only Pasture 1 of the Paddock Valley Allotment contains Packard's milkvetch. This pasture is grazed by sheep only and accounts for 11% of the allotment and the associated AUMs.

In addition to terms and conditions that would be common to each allotment (Appendix 3) and allotment specific terms and conditions described in Alternative A (Section 2.1.1), the following term and condition would apply to each permit:

1) If livestock grazing is determined to be the causal factor for not meeting objectives described in Appendix 2, then adaptive management up to and including: incremental and commensurate reductions in AUMs/stocking rates or periodic rest would be implemented.

Fencing

Five permanent exclosures (5.4 miles of fence) would be constructed to minimize disturbance of EOs (Map 3). Drift fences could be placed adjacent to five suboccurrences in the Paddock Valley Allotment (Pasture 1) during the grazing use period if monitoring determines that livestock herding is not helping maintain vegetation treatments and avoidance of Packard's milkvetch. Approximately 1.5 miles of fence would be constructed around the 95-acre OHV open area to delineate the boundary. Gaps would provide access from the open area to designated trails. All fencing would be constructed to BLM wildlife specifications (USDI 1989).

Adaptive Management – Vegetation treatments, OHV use, and livestock use would be monitored to ensure that objectives are being met (Appendix 2). Where objectives are not being met, the following actions would occur:

- If off-trail OHV use continues, OHV use occurs in closed areas, or unauthorized OHV use occurs on private lands, then more restrictive actions would be implemented. Initial actions would include closing trails (reducing the number of trails authorized for use) in the affected area and physically blocking OHV access. If management objectives

continue to not be met, then Alternative E for OHV area and trail designations would be implemented.
- Livestock use (e.g., numbers, actual use) would be modified if it is adversely affecting vegetation treatments or vegetation conditions outside exclosures.

2.1.3 Alternative C – Maximum Motorized Access

Vegetation treatments and livestock grazing would be managed a described in Alternative B. Motorized use would be limited to 65.2 miles of trails and a 127-acre open area.

Vegetation Treatments

Vegetation treatments would be as described in Alternative B; however, up to 53 miles of closed trails could be restored as described in Alternative B. Approximately 3.3 miles of trails would be designated within treatment areas.

OHV Management

OHV Area Designations – Areas would be designated as closed (1,275 acres), open for cross-country use (127 acres), and "limited to designated trails" (5,965 acres) for OHVs and the Cascade RMP would be amended accordingly (Map 6). The "open" area would be used as described in Alternative B.

OHV Trail Designations – Designated trails (57.5 miles) would be available to motorized vehicles ≤50 inches in width. These trails would provide ridgeline and drainage riding loop opportunities on BLM and State-administered lands that would direct riders away from private lands (BLM - 57.5 miles, State – 7.7 miles; Table 1, Map 6). Designated trails would be those identified by users during public meetings. The combination of an open area and extensive designated trails would provide a broad range of riding opportunities for families and riders of all abilities. Undesignated trails (53 miles) would be marked "Closed to OHVs" and would not be available for motorized use except by permission of the authorized officer.

User education, trail marking, and development of a staging area would be as described in Alternative B.

Livestock Management

Livestock management would be similar to that described in Alternative B; however up to 12 AUMs could be suspended in the Bannister Basin Allotment because of the larger open area.

Fencing

Exclosure fencing would be constructed as described in Alternative B and approximately 1.6 miles of fence would be constructed to delineate the open area.

2.1.4 Alternative D – Moderate Motorized Access

Vegetation treatments and livestock grazing would be managed a described in Alternative B. Motorized use would be limited to 23.3 miles of trails and a 95-acre open area.

Vegetation Treatments
Vegetation treatments would be as described in Alternative B; however, up to 88 miles of closed trails could be restored.

OHV Management
OHV Area Designations – Areas would be designated as closed (4,575 acres), open for cross-country use (95 acres), and "limited to designated trails" (2,697 acres) for OHVs and the Cascade RMP would be amended accordingly (Map 7). The open area would be used as described in Alternative B.

OHV Trail Designations – Designated trails (22.1 miles) would be available to motorized vehicles ≤50 inches in width. These trails would provide ridgeline and drainage riding loop opportunities on BLM and State-administered lands (BLM – 22.1 miles, State – 1.2 miles; Table 1). Undesignated trails (up to 88 miles) would be marked "Closed to OHVs" and would not be available for motorized use except by permission of the authorized officer.

User education, trail marking, and development of a staging area would be as described in Alternative B.

Livestock Management
Livestock management would be as described in Alternative B.

Fencing
Exclosure and open area delineation fencing would be constructed as described in Alternative B.

2.1.5 Alternative E – No Motorized Access
Vegetation treatments and livestock grazing would be managed a described in Alternative B. Motorized use would be limited to 0.4 miles of trails (Table 1). Up to 171 miles of undesignated trails would be signed, blocked, and rehabilitated as described in Alternative B.

Vegetation Treatments
Vegetation treatments would be as described in Alternative B; however, up to 171 miles of closed trails (Table 1) could be restored.

OHV Management
OHV Area Designations – Areas would be designated as closed (7,166 acres) or "limited to designated trails" (227 acres) for OHVs and the Cascade RMP would be amended accordingly (Map 8). State land inholdings would no longer be accessible by recreational OHV users. Motorized access would be allowed within this area only for emergency vehicle use, BLM administrative uses, and other BLM authorized uses.

OHV Trail Designations – One trail (0.4 miles) would be designated as available for OHV use (Map 8). Undesignated trails (up to 110 miles) would be marked "Closed to OHVs" and would not be available for motorized use except by permission of the authorized officer.

Livestock Management
Livestock management would be as described in Alternative B; however, AUM adjustments would only be based on exclosures and vegetation objectives.

Fencing
Exclosure fencing would be constructed as described in Alternative B.

3.0 Affected Environment and Environmental Consequences

Direct and indirect impacts of the proposed actions will be discussed for BLM-administered lands in the proposed treatment polygons (1,166 acres within 400 yards of EOs) and/or in the cumulative impacts analysis area (7,614 acres). Cumulative impacts for other activities will be discussed for all ownerships with in the cumulative impacts analysis area (see discussion below). As stated in Section 2.1.1, miles of trails fluctuated through time. Based on aerial photography (1988, 2006, 2009, and 2011), there were up to 172 miles of trails in 2009. After the implementation of the temporary closure in 2011, a total of 110.4 miles were visible on 2011 aerial photography. That figure will be used for analysis purposes.

Impact Descriptors
Effects can be temporary (short-term) or long lasting/permanent (long-term). These terms may vary somewhat depending on the resource; therefore, each will be quantified by resource where applicable. Generally speaking:

- **Short-term** – 0-3 years (effects are changes to the environment during and following ground-disturbing activities that revert to pre-disturbance conditions, or nearly so, immediately to within a few years following the disturbance).
- **Long-term** - >3 years (effects are those that would remain beyond short-term ground disturbing activities).

The magnitude of potential effects is described as being major, moderate, minor, negligible, or no effect and is interpreted as follows:

- **Major** effects have the potential to cause substantial change or stress to an environmental resource or resource use. Effects generally would be long-term and/or extend over a wide area.
- **Moderate** effects are apparent and/or would be detectable by casual observers, ranging from insubstantial to substantial. Potential changes to or effects on the resource or resource use would generally be localized and short-term.
- **Minor** effects could be slight but detectable and/or would result in small but measurable changes to an environmental resource or resource use.
- **Negligible** effects have the potential to cause an indiscernible and insignificant change or stress to an environmental resource or use.
- **No effect =** no discernible effect.

Scope of Cumulative Impacts Analysis
In general, impacts to all resources considered were analyzed for cumulative impacts under a temporal scope of five years (maximum extent of direct impacts described for vegetation treatments). Unless otherwise described, the geographic scope considered for each resource,

with the exception of Recreation (Section 3.4.3.1), is the watershed delineated by Stone Quarry Gulch and Big Willow, Little Willow, Dry, and Alkali creeks. The scope adequately addresses distances pollinators might travel and home ranges of animals and the actions that could affect them in those movements.

3.1 Watershed/Vegetation/Special Status Plants

3.1.1 Affected Environment – Watershed/Vegetation/Special Status Plants

Watershed

Elevations range from 2,600 to 3,300 feet. Annual precipitation ranges from 13 to 17 inches. The topography is characterized by gently (<20%) moderately (20-60%) to steeply (>60%) sloped ridges bisected by valleys with ephemeral streams. Soil types are primarily deep, well-drained loams, sandy loams, or rocky loams. Vegetative cover (primarily exotic annual grass cover, perennial bunchgrass, and some shrub cover), biological soil crust cover, and litter are adequate to stabilize soils and cycle water and nutrients. In 2012, there were approximately 110 miles (53 acres of bare ground, 81 acres of disturbance) of roads, two-tracks, and single-track trails and 244 acres of hill climb areas with light to heavy use that had reduced or no vegetative cover (Table 4). Designated and unauthorized trails occur throughout the area at a density of 9.5 miles of trail/square mile of area (mi./sq. mi.).

Table 4. Bare ground and disturbance areas for existing and proposed OHV area and trail designations on BLM-administered lands, alternatives A-E, Big Willow area, Payette County, Idaho.

Designation		Alternative				
		A	B	C	D	E
Designated trails and open hill-climb areas for OHVs	Designated Trails (miles)	42.1	9.3	57.5	22.1	0.4
	Bare ground (acres)[1]	20	5	28	11	0.2
	Disturbance (acres)[2]	31	7	42	16	.3
	open hill-climb (acres)	0	95[3]	127[4]	95[3]	0
Undesignated trails and hill-climb areas to be closed	Undesignated Trails (miles)	68.3	101.1	52.9	88.3	110
	Bare ground (acres)[1]	33	49	26	43	53
	Disturbance (acres)[2]	50	74	38	64	80
	Hill-climb (acres)	244	163	152	163	244

[1] Based on 4 foot average bare ground trail width.
[2] Based on 3 foot trailside disturbance on each side of the bare ground trail width.
[3] Includes 14 acres newly created disturbance.
[4] Includes 35 acres newly created disturbance.

Soil Erodibility – Soils are characterized as moderately to highly erodible (K-factor, Table 5, Map 9). Soil erodibility represents both susceptibility of soil to erosion and the rate of runoff. Moderate to steep slopes are susceptible to water erosion; however, average vegetative or biological soil crust cover may be generally adequate to stabilize soils. Areas with little or no

vegetative or biological soil crust cover (e.g., trails and areas dominated by exotic annual grasses during low precipitation years and after fires) are susceptible to wind and water erosion. Some areas, especially those with high densities of OHV trails, have experienced substantial erosion events during spring runoff, intense thunderstorms, or high wind events. High erodibility occurs on 68% of the area south and east of Sheep Gulch (28% of the area has medium and 4% has low erodibility). By contrast, high erodibility occurs on 20% of the area north and west of Sheep Gulch (80% of this area has medium erodibility). Approximately 160 acres of hill climb areas occur in moderate K-factor soils and 84 acres occur in high K-factor soils. Currently, 51.9 miles of trails (including 25 acres of trails and 38 acres of trailside disturbance) occur in moderate K-factor soils and 57.1 miles of trails (including 27 acres of trails and 41 acres of trailside disturbance) occur in high K-factor soils (Table 6).

Table 5. Soil erodibility (K-factor) for public lands proposed for vegetation treatments in Big Willow area and associated cumulative impacts analysis area (other public, State, and private lands within watershed delineated by Stone Quarry Gulch and Big Willow, Little Willow, Dry, and Alkali creeks), Payette County, Idaho.

K-factor	Treatment Area (BLM acres)	Cumulative Analysis Area			
		Public Lands	State	Private	Total
Low (< 0.16)	0	54	0	3	57
Moderate (0.16-0.4)	626	5,045	673	5,608	11,326
High (> 0.4)	539	2,515	229	5,849	8,593
Not Rated	0	0	0	179	179

Table 6. Soil erodibility (K-factor) for trails and associated disturbance areas by alternative, Big Willow area, Payette County, Idaho.

Alternative	Designation	Trails (miles)[1]			Bareground (BG) and Trailside Disturbance (TD) (acres)[1]				
		Moderate (0.16-0.4)	High (> 0.4)	Total	Moderate (0.16-0.4)		High (> 0.4)		Total
					BG	TD	BG	TD	
Current Conditions	Designated and Undesignated	51.9	57.1	109	25	38	27	41	131
A	Designated	21.7	20.4	42.1	11	16	10	15	52
	Undesignated (Closed)	31.4	36.9	68.3	15	23	18	27	83
B	Designated	7.4	1.9	9.3	4	5	1	1	11
	Undesignated (Closed)	45.7	55.4	101.1	22	33	27	40	122
C	Designated	29.6	28	57.6	14	22	14	20	70
	Undesignated (Closed)	23.5	29.3	52.8	11	17	14	21	63
D	Designated	18.1	4	22.1	9	13	2	3	27
	Undesignated (Closed)	35	53.2	88.2	17	25	26	39	107
E	Designated	0	0.4	0.4	0	0	0.2	0.3	0.5

Alternative	Designation	Trails (miles)[1]			Bareground (BG) and Trailside Disturbance (TD) (acres)[1]				
		Moderate (0.16-0.4)	High (> 0.4)	Total	Moderate (0.16-0.4)		High (> 0.4)		Total
					BG	TD	BG	TD	
	Undesignated (Closed)	51.9	56.7	108.6	25	38	27	41	130.5

[1] Some areas do not have a K-factor rating which accounts for the mileage and acreage discrepancies with figures reported elsewhere in the document.

Rangeland Health - Field assessments and determinations were completed in 2000 for the Bannister Basin and Little Willow allotments. They have not been completed for the Paddock Valley Allotment. Standard 1 (Watersheds) was being met in the Bannister Basin Allotment; however, because of the dominance of exotic annual grasses and soil types, potential erosion was considered a problem. Standard 1 was not being met in the Little Willow Allotment and livestock grazing was a significant factor. Pedestalling, erosion, and compaction in the Bradford Field Pasture (primarily in Alley Gulch) and trampling (from early use) were considered factors. Livestock grazing permits for the Bannister Basin and Little Willow allotments were modified in 2001 to address Standard 1 issues (Section 3.3.1).

Vegetation

Based on 2002 Pacific Northwest National Laboratory (PNNL) data, four general upland vegetative cover types are present (Vegetation has been shaped by physical site characteristics such as aspect, soils, precipitation, and disturbances (primarily wildland fire, OHV activity, and livestock grazing). Since 1986, approximately 73% of the area has burned once and 17% has burned twice. The largest of these fires occurred in July and August. Additional areas have burned within the cumulative effects area (Table 8). Because sagebrush does not resprout after fire, most of it has been killed in recent decades. Shrub-dominated communities comprise 38% of cover and annual and perennial grasslands with sparse shrub cover characterize the remainder. A network of OHV trails and bare hill-climb areas has further fragmented and degraded native vegetation communities. Although these disturbances have occurred on all aspects, native vegetation is less resilient on the hotter, drier southerly aspects than the cooler, moister northerly aspects; therefore, southerly aspects are dominated by exotic grasses and northerly aspects are dominated by native vegetation. This has resulted in major habitat fragmentation.

Table 7, Map 10)). On BLM-administered lands, Exotic Annuals (3,747 acres) and Big Sagebrush/Big Sagebrush Mix (2,917 acres) are the most common cover types. Cheatgrass and medusahead are abundant in these communities. Varying amounts of native grasses and native and exotic forbs are present (Vegetation has been shaped by physical site characteristics such as aspect, soils, precipitation, and disturbances (primarily wildland fire, OHV activity, and livestock grazing). Since 1986, approximately 73% of the area has burned once and 17% has burned twice. The largest of these fires occurred in July and August. Additional areas have burned within the cumulative effects area (Table 8). Because sagebrush does not resprout after fire, most of it has been killed in recent decades. Shrub-dominated communities comprise 38% of cover and annual and perennial grasslands with sparse shrub cover characterize the remainder. A network of OHV trails and bare hill-climb areas has further fragmented and degraded native vegetation communities. Although these disturbances have occurred on all aspects, native vegetation is less resilient on the hotter, drier southerly aspects than the cooler, moister northerly aspects; therefore, southerly aspects are dominated by exotic grasses and northerly aspects are dominated by native vegetation. This has resulted in major habitat fragmentation.

Table 7).

Vegetation has been shaped by physical site characteristics such as aspect, soils, precipitation, and disturbances (primarily wildland fire, OHV activity, and livestock grazing). Since 1986, approximately 73% of the area has burned once and 17% has burned twice. The largest of these fires occurred in July and August. Additional areas have burned within the cumulative effects area (Table 8). Because sagebrush does not resprout after fire, most of it has been killed in recent decades. Shrub-dominated communities comprise 38% of cover and annual and perennial grasslands with sparse shrub cover characterize the remainder. A network of OHV trails and bare hill-climb areas has further fragmented and degraded native vegetation communities. Although these disturbances have occurred on all aspects, native vegetation is less resilient on the hotter, drier southerly aspects than the cooler, moister northerly aspects; therefore, southerly aspects are dominated by exotic grasses and northerly aspects are dominated by native vegetation. This has resulted in major habitat fragmentation.

Table 7. Total acres and proportion of vegetative cover types for public lands in Big Willow area and associated cumulative impacts analysis area (other public, State, and private lands within watershed delineated by Stone Quarry Gulch and Big Willow, Little Willow, Dry, and Alkali creeks), Payette County, Idaho.

PNNL Cover Type	Characteristic Vegetation[1]	Treatment Area (BLM acres)	Cumulative Analysis Area			
			Public Lands	State	Private	Total
Big Sagebrush/Big Sagebrush Mix Bitterbrush	Wyoming big sagebrush, Stiff sage, Antelope bitterbrush, Bunchgrass, Exotic Annuals (occ)	464	2,917	298	4,031	7,246
Bunchgrass	Sandberg bluegrass, Bottlebrush squirreltail, Basin wildrye, Exotic Annuals (occ)	141	872	147	904	1,923
Other[2]	Green rabbitbrush, Salt Desert Shrub, Greasewood, Exotic Annual (occ) Bunchgrass (occ)	30	101	13	401	515
Exotic Annuals	Cheatgrass, Medusahead Clasping pepperweed, Russian thistle, Bur buttercup, Bunchgrass (occ)	543	3,747	443	5,018	9,208
Riparian	Wet meadow, Water	0	1	8	92	101
Developed	Irrigated Crops, Residential	0	9	0	1,220	1,229
TOTAL		1,178	7,647	909	11,666	20,222

[1]Occ = occasionally present. Perennial and annual forbs (e.g., yarrow, sunflower, and mullein) are also occasionally present in most cover types.

[2]'Other' was created to combine PNNL Cover Types (Rabbitbrush, Salt Desert Shrub, and Greasewood) which compose less than 1% each of upland vegetation.

Table 8. Total acres burned by decade since 1980 for public lands in Big Willow area and associated cumulative impacts analysis area (other public, State, and private lands within watershed delineated by Stone Quarry Gulch and Big Willow, Little Willow, Dry, and Alkali creeks), Payette County, Idaho.

Decade	Treatment Area (BLM acres)	Cumulative Analysis Area			
		Public Lands	State	Private	Total
1980-89	988	5,518	728	5,212	11,458
1990-99	462	949	0	749	1,698
2000-12	0	614	0	416	1,030

Noxious Weeds [plants having the potential to cause injury to public health, crops, livestock, land or other property (Idaho Statute 22-2402)] - The Boise District BLM has an active weed control program that annually updates the locations of noxious weeds and treats known weed infestations, utilizing chemical, mechanical, and biological control techniques. Infestations of

noxious weeds are treated contingent upon the BLM annual weed budget, employee availability, and noxious weed priority. Rush skeletonweed and Scotch thistle are commonly found throughout the area and have been treated with herbicides. One incidence of yellow starthistle has been reported and treated in one of the hill-climb areas.

Rangeland Health - Field assessments and determinations were completed in 2000 for the Bannister Basin and Little Willow allotments. They have not been completed for the Paddock Valley Allotment. In the Bannister Basin Allotment, Standard 4 (Native Plant Communities) was not being met and livestock grazing was a significant factor. Increasing noxious (rush skeletonweed) and invasive weeds were considered factors. Standard 6 (Exotic Plant Communities, Other than Seedings) was being met. In the Little Willow Allotment, standards 4 (Alley Gulch in Bradford Field Pasture) and 6 (lower slopes of all pastures) were not being met and livestock grazing was a significant factor. Lack of shrubs, increased exotic annual grasses and forbs, and heavy bitterbrush utilization were considered factors for Standard 4. Lack of ground cover in interspaces and overland flow/sheet erosion were considered factors for Standard 6. Livestock grazing permits for the Bannister Basin and Little Willow allotments were modified in 2001 to address issues related to standards 4 and 6 (Section 3.3.1). Trend data collected in 2008 indicated static or upward trends for perennial grasses (bluebunch wheatgrass, Sandberg bluegrass, and squirreltail) in the Bannister Basin and Little Willow allotments. Exotic annual grasses (medusahead, Japanese brome) were also common at several sites in 2008. No trend sites occur in Pasture 1 of the Paddock Valley Allotment.

Special Status Plants

Packard's milkvetch is the only special status plant known to occur in the area. Packard's milkvetch is endemic to a small area in northeastern Payette County, Idaho. The entire population covers approximately 10 square miles from 14 to 19.5 miles east of Payette Idaho. The element occurrences[2] (EOs) occupy approximately 14 acres distributed across six EOs and 26 suboccurrences[3] (Table 9). Seventeen suboccurrences are on BLM-administered lands, five occur on private lands, and four occur on State lands. All known potential habitat was originally surveyed in 2008 and additional surveys were conducted in 2009-2011. To date, no additional plant occurrences have been observed. This plant is a long-lived perennial and if its presence was not documented in surveys conducted in 2009-2011 (characterized as years with average or above average precipitation), it is unlikely that it occurs in any of the areas identified as potential habitat (exact acreage unknown).

Table 9. Acres of Packard's milkvetch habitats, Payette County, Idaho.

Habitat Type	Public Lands	State	Private	Total
Element Occurrences	10.5	0.20	3.3	14
Pollinator Habitat (400 yard buffer from EOs)	1,166	487	331	1,984

[2] An EO is a specific geographic location where "a species or natural community is, or was, present" (NatureServe 2002:10). Populations of a species located greater than 0.62 miles (one kilometer) apart are identified as a separate EO.

[3] Distinct occurrences within an EO, generally <0.3 mile apart.

EOs are restricted to light-colored sparsely vegetated sedimentary outcrops with edaphic conditions (i.e., particular soil conditions [e.g., drainage, texture, or chemical properties] that differ from surrounding areas). Vegetation in EOs is characterized by a diversity of shrubs (four species), grasses (nine species), and forbs (33 species). Thirteen (28%) species are exotics, primarily annuals including cheatgrass and medusahead; however, combined exotic annual canopy cover is relatively low (≤10%). Packard's milkvetch is likely pollinated by insects; however, the exact species and mechanisms are not known. For conservation purposes, it is assumed that pollinator habitat extends up to 400 yards from EOs and ideally would consist of a diversity of native forbs, shrubs, and grasses. As with vegetation in the analysis area, the majority (46%) of pollinator habitat is dominated by the Exotic Annual type on BLM-administered lands. Shrub-dominated (42%) and Bunchgrass (12%) types characterize the remaining pollinator habitat. Exotic Annual types, especially those dominated by cheatgrass or medusahead, provide limited or no suitable pollinator habitat, particularly for pollinators adapted to native forbs.

The USFWS elevated the species to candidate status in 2010. In 2012, the BLM and USFWS began developing a candidate conservation agreement that would provide for implementation of a number of conservation measures including ones designed to help offset adverse impacts to the species from BLM-authorized activities.

Currently identified threats to the species include OHV use, wildfire, exotic annual grasses, and livestock trampling (Mancuso 2010; USFWS 2012). In a USFWS report (Mancuso 2009), the following observations were made based on monitoring of known and newly discovered (based on 2008 survey of potential habitat) suboccurrences:

<u>Previously known suboccurrences</u>

All revisited suboccurrences had at least one ground disturbance factor.

- Off-road hill climbing tracks were present within 10 (63%) suboccurrences and in very close proximity to two (13%) others.
- Past wildfires bordered all suboccurrences, while at least two (13%) had evidence of being directly burned.
- Cheatgrass was sparse in the majority, but exceeded 10% cover within six (38%) suboccurrences.
- Cattle tracks and feces were present along the margins of 10 (63%) and sheep tracks and or feces within or along the margins of 8 (50%) suboccurrences.

<u>Newly discovered suboccurrences</u>

- Wildfire, OHV use, and cattle were the main disturbance factors at the new Packard's milkvetch occurrences.
- Evidence of past large wildfires bordered all six of the new suboccurrences, while portions (33%) of two EOs were directly burned.
- Off-road motorcycle hill climbing tracks cut through three (50%) suboccurrences. Accelerated erosion was evident at the worst of the motorcycle runways.
- One or more livestock/wildlife trails traversed portions of each suboccurrence, with cattle or sheep tracks observed at five (83%) of them.

Currently, there are 18.3 miles of trails within 400 yards of EOs (4.6 miles currently designated and 13.7 miles undesignated). Surveys conducted in 2012, after implementation of the temporary OHV closure, revealed that OHV use had been reduced, especially in Bannister Basin, and many of the trails were starting to disappear as vegetation had started to fill in previously existing trails. However, new trails were observed in EOs outside the closed area. No new wildfires have occurred within existing populations since 2008. The relative abundance and species composition of invasives has not changed since surveys were initiated in 2008 and would not be expected to change as the grazing regime and long term effects of past wildfires have not changed; however, total introduced species canopy cover and total graminoid canopy cover increased between 2008 and 2011 (Mancuso 2012).

Rangeland Health - Field assessments and determinations were completed in 2000 for the Bannister Basin and Little Willow allotments. They have not been completed for the Paddock Valley Allotment. In the Bannister Basin Allotment, Standard 8 was not being met and livestock grazing was a significant factor. Invasive and noxious weeds and livestock trampling were considered factors. Livestock grazing permits for the Bannister Basin and Little Willow allotments were modified in 2001 to address Standard 8 issues (Section 3.3.1).

3.1.2 Environmental Consequences – Watershed/Vegetation/Special Status Plants

3.1.2.1 General Discussion of Impacts

Watershed

Impacts to watershed components include changes in ground cover (e.g., biological soil crusts, litter, and vegetation) and impacts to soil profiles. Watershed effects are important for the protection of Packard's milkvetch because they can affect EOs directly (i.e. burying or removing suitable habitat through a landslide – mass wasting) and affect them indirectly by changing the habitat for pollinators and affecting the ecosystem as a whole.

Changes in Vegetation Cover – Activities that adversely affect or reduce native vegetation cover, including vascular plants and biological soil crusts, would reduce infiltration and increase erosion. Bare soil would be susceptible to severe erosion. Areas colonized by exotic annual species would remain susceptible to erosion over the short and long term, especially during low precipitation years when plant productivity is reduced. Activities that establish or increase perennial grass, forb, and shrub cover would provide structural and functional components that would help reduce the potential for erosion events over the long-term.

Changes in Soil Profile – Impacts to soils associated with different activities vary by several factors including slope, soil type, timing, and plant community composition and distribution. Moderate to steep slopes (>20%), combined with highly erodible soils and sparse or shallow-rooted vegetation would be most prone to accelerated erosion (Figure 2), whereas gentle slopes ($\leq$ 20%) with moderate K-factors would be less prone to erosion. Soils, especially those with high clay content, would be most susceptible to soil compaction when soils are wet or saturated. The reduction or loss of soil interspaces results in a long-term loss of functionality and productivity. Soils would be least susceptible to compaction when the upper eight inches is dry or slightly moist. Soils that have been devoid of vegetation or dominated by shallow-rooted species for several years would take longer to recover from disturbance activities than soils with

deep-rooted perennial species. Infiltration rates are reduced and runoff is increased in areas dominated by exotic annuals. In OHV hill climb areas and trails, soil compaction from OHV activity increases soil bulk density and altered or eliminated vegetative cover lowers nutrient content, increases daily temperature fluctuations, and increases potential mass wasting compared to less disturbed sites (Webb et al. 1978). Where these conditions occur on or adjacent to Packard's milkvetch EOs, they represent a direct threat to maintenance of the edaphic sites.

Figure 2. Example of gully erosion in Big Willow area, Payette County, Idaho.

Vegetation

Impacts to vegetation include disturbances (e.g., direct physical impacts, indirect loss of pollinator habitat) and changes caused by treatments. Vegetation effects are considered here with respect to Packard's milkvetch EOs, pollinator habitat near EOs and general grasslands and shrublands. For vegetation outside of EOs, broad vegetative types potentially affected include perennial herbaceous, annual, and woody vegetation. Perennial herbaceous vegetation includes native and introduced perennial grasses and forbs. Annual vegetation includes native and introduced grasses and forbs. Woody vegetation consists of shrubs.

Disturbance – Disturbance is an action that results in a continuum of effects from light damage to complete removal of an ecological component (i.e. litter, vegetation, soil, etc.). Disturbance severity is determined by an element's resistance to damage and its rate of recovery (resiliency). For our purposes, we will characterize moderate and severe disturbances.

Severe disturbances are forces that exceed an element's resistance and resiliency limits and result in widespread death and/or removal of biomass or soil (bare ground). Factors that commonly cause severe disturbance are: 1) heavy livestock grazing during drought years and after fires; 2) livestock trampling in frequently used areas (i.e. within 0.25 miles around water, salt blocks and

fence-lines); 3) areas with <20% slope where cattle grazing is heaviest; 4) repetitive OHV use (OHV staging, hill climbing and repetitive use of trails); 5) moderate to high intensity fires in non-re-sprouting vegetation; and 6) some herbicide treatments. After severe disturbances cease, native vegetation may not return to bare areas in the short to long-term, due to changes to soil properties (e.g., erosion of top-soil, compaction), impediments to plant dispersal (e.g., distance to parent plants, physical barriers, low seed years) and competition from non-native plants (Stewart and Hull 1949, Webb et al.1978, Ganskopp and Vavra 1987, Melgoza and Nowak 1991). Severely disturbed sites frequently become type-converted to exotic annual grasslands (Mack 1981).

In contrast, moderate disturbances do not exceed an element's resistance and resiliency limits in the short term, but can lead to long-term transformations. Moderate disturbance may result in damage or the death of individual plants, but do not result in large patches of bare ground. Example of moderate disturbance include: diffuse livestock trampling and grazing, occasional crushing by OHVs along trailsides, low to moderate intensity fires in resprouting vegetation, and some herbicide treatments. Disturbances affect perennial herbaceous, annual, and woody vegetation in different ways, because of their differences in resistance and resiliency to disturbances. Moderate disturbances may result in the gradual, long-term transformation from native- to non-native-dominated vegetation and lead to severe disturbances from fire (Mack 1981, Whisenant 1990, Potito and Beatty 2005).

Moderate disturbance to perennial herbaceous plants could reduce productivity, but would be unlikely to result in mortality of most established plants except where seedlings and young plants are uprooted. Perennial herbaceous plants are generally more resistant and resilient to disturbance than shrubs or annuals due to more flexible tissues and extensive root systems. Perennial herbaceous plants that can resprout after disturbances are more resilient than plants that only grow from seed. Disturbance would generally produce less impact during dormancy than during growth because perennial plants are less susceptible (more resistant) to above-ground injury when dormant. Soil compaction is a form of disturbance that affects vegetation by reducing water and gas exchange and restricting root growth, and results in smaller slower-growing plants (Ouren et al. 2007).

Annuals are less resistant to disturbance than perennials, but many have high reproductive rates and rapid growth. Therefore, annuals, especially exotics, may be highly resilient to disturbance over multiple generations.

Crushing perennial herbaceous plants could reduce plant productivity but would be unlikely to result in mortality of established plants. Livestock trampling and OHV tires can uproot perennial plant seedlings and young plants, resulting in mortality to those plants. Perennial herbaceous plants are generally more resilient to trampling than shrubs or annual plants due to its more flexible tissues and more extensive root systems. A simulated study of hoof action on total shoot biomass and detached material in short grass sod vegetation types suggests moderate levels of trampling (i.e. four footfalls) removes approximately 5% of living biomass (Abdel-Magid et. al. 1987). Crushing of perennial vegetation would generally produce less of an impact during dormancy than during growth because perennial plants are less susceptible to above-

ground injury when dormant. Soil compaction from crushing also affects vegetation by reducing water and oxygen infiltration and restricting root growth (Ouren et al. 2007).

Forces that create moderate disturbance to perennial herbaceous vegetation may deform or kill shrubs. Brittle shrubs, such as sagebrush, are more sensitive to trampling than more flexible shrubs, such as rabbitbrush. Shrub seedlings are more sensitive to trampling and dislodgement than older plants (Owens and Norton 1990). The same disturbance agent (i.e. fire) may cause severe damage to shrubs that do not resprout (i.e. big sagebrush) and moderate damage to shrubs that readily resprout (i.e. rabbitbrush).

Biological soil crust (composed primarily of lichens and mosses) are most susceptible to disturbance in the summer and early fall (July-October) when soil moisture is minimal and crusts are unable to repair any damage because they are dormant. If damaged during the dormant season, biological soil crusts may be displaced by more rapidly growing exotic annual grasses during subsequent growing seasons. Biological soil crust cover is positively correlated with bunchgrass cover and adversely correlated with exotic annual grass cover (Ponzetti et al. 2007). Loss of biological soil crust reduces soil water holding capacity, nitrogen fixation, resistance to erosion, and resistance to exotic species invasions (Belnap et al. 2001).

Special Status Plants

In 2012, OHVs, livestock grazing, wildfire, and exotic annual grasses were identified as the primary threats to the Packard's milkvetch (USFWS 2012). Proposed vegetation treatments, including the use of herbicides, could be harmful to individual Packard's milkvetch plants in the short term. Long term benefits to individual suboccurrences would be moderate to major if herbicide use resulted in substantial decreases in invasive species and increases in the diversity and abundance of native perennial forbs that serve to attract Packard's milkvetch pollinators.

The soil outcrops containing Packard's milkvetch (and seemingly similar outcrops without Packard's milkvetch) are only lightly invaded by exotic annual grasses and mostly only by cheatgrass, but invasions may have accelerated in recent years after fires. Cheatgrass has been shown to decrease the establishment of Whited's milkvetch (*Astragalus sinuatus*) and it is suspected that similar competition may be occurring between cheatgrass and Packard's milkvetch. (USFWS 2012, Combs et al. 2011)

Physical disturbance (livestock, OHVs, etc.): Disturbances can inhibit the maintenance and spread of existing plant populations through the following mechanisms: 1) mechanical damage to plants 2) reduction in a diversity of pollen sources, 3) potential damage to long term seed availability; 4) spread and continued persistence of invasive annuals and noxious weeds through both physical transport and continuous soil disturbance, and 5) biological soil crust damage.

1) Direct mechanical damage from livestock trampling and grazing and OHVs, especially during spring, due to root damage (root tearing and soil compaction) and damage to the apical meristem (growing tip of a plant), is known to reduce the number and diversity of native plants (pollen sources).

2) A reduction in the number and diversity of pollen sources (native forbs) reduces the diversity of pollinators available. Packard's milkvetch is primarily an outcrossing species (although it can self-pollinate), requiring pollen from separate plants for successful fruit production. Pollen is transported solely through insects; therefore, pollinator conservation is essential to Packard's milkvetch conservation. Its entire suite of pollinators is not currently known. Consequently, pollinator management should focus on creating a diversity of native plants whose blooming times overlap to provide flowers for foraging through the seasons, nesting and egg-laying sites; sheltered, undisturbed places for hibernation and overwintering, and a landscape free of poisonous chemicals. A native sagebrush community with few disturbances will provide these conditions whereas non-native annual grasslands are less likely to support a wide variety of pollinators. Disturbances that reduce natural cavities (dead plant stalks, holes in stems, etc.) or disturb nests in the ground such as livestock use and wildlife will remove pollinator nesting habitats (Sugden1985). Many of these species have a narrow time frame (weeks- couple of months) in which they can be pollinated. The greater the number and diversity of pollinators, the more likely that a given plant will get pollinated in a given year.

3) Long-term seed availability is tied to the number and diversity of pollen sources, the number of viable seed produced in a given year, and the ultimate location of the seed within the soil profile. In the case of Packard's milkvetch and other species, livestock may push viable seed below a depth at which it can germinate.

4) Indirectly, damage from both livestock grazing and OHVs may lead to an increase in highly competitive invasive species associated with the heavily disturbed soil that often results from these activities, especially when conducted on a prolonged basis. Livestock trailing routes and OHV trails also serve as transmission corridors for the transport of invasive annual and noxious weed seeds primarily through physical transport. Invasive and noxious weeds inhibit the growth of native species and the recovery of native ecosystems.

5) Both direct and indirect effects of livestock grazing and OHV trails often lead to a loss of biological soil crust which reduces the water holding capacity and the amount of nitrogen fixation that can occur. This is especially important in desert ecosystems where both water and nitrogen tend to be at a premium. Loss of biological soil crusts also tends to promote colonization of invasive annuals and noxious weeds. Effects to soil crusts tend to be most pronounced during the driest times of the year when soil crust are unable to repair themselves.

Vectors – Livestock, vehicles, and hikers may transport weed seeds into Packard's milkvetch EOs and pollinator habitat. Cheatgrass has been known to spread in this manner (Young and Longland 1996). These vectors could indirectly elevate competition for limited resources between existing native and imported exotic species (Laycock and Conrad 1981). Openings in vegetative cover created by trampling could occur and provide opportunities for germination and spread of exotic annual plants, particularly where these species are adjacent to or components of the plant community.

Herbicides – Plant poisons create managed disturbances targeted at specific plants or vegetation types. However, most can also affect non-target plants and animals. Organisms can be exposed to herbicides through direct spray, off-site drift, surface runoff, and wind erosion. The persistence (soil half-life) affects how long organisms could be exposed to herbicides and their potential to affect non-target species over an extended period. Glyphosate and 2-4-D have low persistence, whereas Imazapic is moderately persistent (USDI 2007, Table 10). Potential off-site drift would be minimal from ground applications during calm conditions (wind speeds <10 mph). Post-application movement would depend on persistence, soil type, and erosion factors (e.g., wind or rain). Non-persistent herbicides applied on stable soils (e.g., high loam or clay components) with perennial vegetative cover would represent a low risk for off-site movement; whereas, persistent herbicides applied to soils with high erosion potential (e.g., sandy soils) and no perennial vegetative cover would represent a moderate to high risk for off-site movement. The proposed herbicides have very low to low potential for off-site movement (USDI 2007, Table 10), or in the case of the bioherbicide, is not harmful if it moves off-site.

Table 10. Herbicide characteristics including persistence, toxicity, and movement potential for four herbicides proposed for use at Big Willow, Payette County, Idaho.

Herbicide	**Herbicide Characteristics and Target Vegetation**	**Soil Half-life (days)**	**Movement Potential**	**Non—target Plant Toxicity**	**Animal Toxicity**
2,4-D	Selective; foliar absorbed; post-emergent; annual/perennial broadleaf weeds. Key species treated include mustard species and Russian thistle.	10	Low	Moderate	Not Acutely Toxic to Slightly Toxic
Glyphosate	Non-selective; annual and perennial grasses and broadleaf weeds, sedges, shrubs, and trees. Key species treated include broadleaf weeds.	47	Very Low	Moderate	Slightly Toxic
Imazapic	Selective pre- or post-emergent herbicide; inhibits broadleaf weeds and some grasses. Key species treated include cheatgrass, medusahead, and mustards.	120-140	Low	High	Slightly Toxic
Pseudomonas fluorescens Strain D7	Naturally occurring soil bacteria that kills cheatgrass, medusahead, and jointed goatgrass, but does not harm native species.	Indefinite (live bacteria)	Unknown	None known	Unknown

Depending on when they are applied, herbicides could affect both target and non-target species. Low persistence herbicides applied during the active growth period of target species would have minor impacts on non-target species during the current growing season. Imazapic, when used as a pre-emergent, could affect germination of non-target species, primarily annuals, for up to two years. Species-specific bioherbicides would have minimal impacts on non-target species. Treated areas would have less vegetative cover and could be susceptible to the establishment of noxious weed species. If favorable growing conditions occur (e.g., adequate moisture and temperatures), vigor and density of non-target species could increase where competition is reduced or removed. The proposed herbicides are considered not acutely toxic to slightly toxic

for insects, birds, mammals, and fish (USDI 2007, Table 10) and applications would not overlap the Packard's milkvetch pollination period; therefore, toxicity to animals will not be considered further.

3.1.2.2 Alternative A - No Action/Resume Use of Designated Trails

Vegetation treatments, OHV management and livestock management would have minor positive to major adverse effects on the watershed, vegetation and special status plants. Noxious weed treatments would have both positive (reducing noxious weeds) and adverse (causing disturbance) effects on vegetation and the watershed. Packard's milkvetch would be damaged by direct and indirect damage from OHVs, livestock, competition from exotic annual grasses, loss of pollinator habitat and fire. OHV trails and livestock grazing would remain in and adjacent to Packard's milkvetch EOs and pollinator habitat, increasing flammable and competitive exotic annual grasses in these areas.

Vegetation Treatments

Noxious weed treatments would have negligible adverse short-term effects and moderate long-term benefits on the watershed, vegetation, and Packard's milkvetch. Voids in vegetation cover caused by noxious weed control would quickly fill with other vegetation, particularly exotic annuals on southerly aspects. Vascular plants and biological soil crusts would also be disturbed where herbicide application vehicles would travel cross-country to access noxious weeds. Controlling noxious weeds would help maintain Packard's milkvetch and pollinator habitat in current conditions. Adverse short-term consequences associated with herbicide use would be outweighed by the long term benefit of preventing the spread of noxious weeds. Packard's milkvetch EOs would remain at risk from invasives in adjacent habitats. Pollinator habitat would remain in degraded condition over the long term, characterized by increased exotic annuals and reduced native forbs and shrubs. Wildland fires would further degrade conditions resulting in communities dominated by exotic annuals. Static or declining vegetation conditions would have moderate to major adverse effects on the long-term viability of Packard's milkvetch EOs.

OHV Management

Watershed – Infiltration would increase and erosion would decrease moderately in the long-term as litter would accumulate, annual and perennial plants and biological soil crusts would recolonize 68 miles of closed, undesignated trails (83 acres; includes 33 acres of bare ground and 50 acres of trailside disturbance) and 244 acres of closed hill-climb sites (Table 4). Direct OHV disturbances would be eliminated from 198 acres of moderate K-factor soils and 129 acres of high K-factor soils. In the closed hill-climb sites, reestablished vegetation would cause minor (where exotic annuals become dominant) to moderate (where perennial grasses and forbs become dominant) improvements in watershed stabilization on 160 acres with moderate K-factor and 84 acres with high K-factor soils. However, 21.7 miles of designated trails located in highly erodible areas would become wider and deeper over the long term. This would result in moderately greater runoff and soil degradation in these areas. Twenty miles of designated trails with medium erodibility soils would have minor long-term erosion and runoff. Designated trails would be dispersed across the analysis area (Map 2) at a density of 3.7 mi./sq. mi. Although trail density would be reduced from current conditions, moderate indirect impacts (e.g., changes

in soil profile including erosion that starts on trails but affects adjacent areas, changes in vegetation) would occur over up to 7,366 acres.

Vegetation – Noxious weeds and exotic annuals would increase in the short to long-term in abandoned trails and hill climb areas (up to 327 acres), and would pose persistent long-term problems along designated trails (up to 31 acres of disturbance influence). Continued OHV disturbances and seed dispersal would result in a network of noxious weed invasions that could affect the majority of the analysis area (Map 2). Exotic annual communities would be most susceptible to noxious weed expansion from disturbed areas adjacent to trails; however, other communities would also be at risk.

Special Status Plants – OHVs would cause major direct and indirect damage to Packard's milkvetch and its pollinator habitat (disturbance, erosion, noxious weed dispersal, and exotic annual grass expansion), because 4.6 miles of trails would be within 400 yards of all EOs on BLM-administered lands and within 40 yards of three suboccurrences. Nutrient-rich dust from eroded areas containing livestock feces and urine and natural soil nutrients, generated by OHV use, would be deposited into EOs and result in long-term competition of Packard's milkvetch from nutrient-loving competitors, such as cheatgrass.

Livestock Management

Watershed – Disturbance from cattle and sheep would primarily occur in areas with <20% slope (40% of BLM-administered lands) and within 0.25 miles of water and along fence-lines (concentrated use areas), where livestock tend to congregate. Spring grazing in areas with the heaviest use would cause minor to moderate long-term degradation of perennial vegetation. Degradation would be greatest during drought years and after fires. The increase of annual grasses and decrease of deeper-rooted perennials would lead to moderate long-term degradation of the watershed. During overgrazing events, erosion would be pronounced in the areas with high K-factors (e.g., south and east of Sheep Gulch in the Bannister Basin Allotment).

Vegetation – Continued spring use would cause moderate increases in exotic annuals in largely type-converted vegetation. Because these allotments would be conservatively stocked (>10 acres/AUM), most of these changes would occur in areas that attract livestock (i.e., slopes <20% within 0.25 miles of water). Changes have already taken place on most of the southerly aspects, where soils are warmer and drier and, therefore, highly impacted by exotic annual grasses.

Special Status Plants – Livestock grazing would occur in the spring when soil and plants would be most susceptible to trampling damage. Because of limited distribution, low abundance, and steep slopes, livestock grazing would have negligible direct impacts to Packard's milkvetch. Indirect adverse long-term impacts would result from the deposition of feces and urine (deposited directly from the animals and transported as dust) into Packard's milkvetch EOs, fertilizing the soil and causing greater competition from cheatgrass and other species. Livestock created disturbances and introduction of invasive and noxious weed seeds would have moderate to major adverse impacts where exotic species become established and dominate EOs. Livestock grazing and trampling in the pollinator habitat adjacent to milkvetch EOs would result in a minor to moderate decrease in native perennial forb diversity and abundance over the long term. Substantial loss of pockets of native perennial forbs from livestock trailing and congregations

could have a major effect on the long term reproduction, genetic viability and persistence of Packard's milkvetch, due to loss of pollinator nesting and foraging habitat.

Fencing

Watershed – Livestock trailing along existing fences would have negligible to minor impacts on watershed processes where trampling removes vegetative cover and exposes soils to erosional processes. These impacts have been occurring since the fences were constructed and have not resulted in noticeable erosional events.

Vegetation – Congregations of cattle and sheep along existing fence-lines would cause negligible or no effects on vegetation, except during drought years and after fires. These changes have likely already occurred along most of the fence-lines.

Special Status Plants – Minor impacts to EOs and pollinator habitat would occur from soil compaction and the spread of invasive species associated with livestock trailing along fences.

3.1.2.3 Alternative B – Limited Motorized Access

Vegetation treatments, OHV management and livestock management would emphasize protection of the watershed, vegetation and special status plants. Restored deep-rooted vegetation would protect the watershed and serve as native pollinator habitat within 400 yards of Packard's milkvetch EOs, fuels around EOs would be managed, most of the OHV trails would be closed, and livestock would be diverted away from EOs. These changes would have major long-term benefits to watershed processes, native vegetation, and Packard's milkvetch populations. Packard's milkvetch EOs would be protected from OHV disturbance, livestock trampling, invasive plants and fire.

Vegetation Treatments

Watershed –Native grass, forb, and shrub cover would increase on 1,166 acres within 400 yards of EOs in the long term, increasing water infiltration and reducing erosion. Fuel management would be integrated into the restoration treatments both inside and outside of the 400 yard areas, providing additional watershed protection. Outside of the 400-yard areas and livestock exclosures, 90 acres of closed trails (trail and trailside disturbance) and 150 acres of hill-climb areas would also be restored to native vegetation, resulting in an additional 240 acres with greater infiltration and protection from erosion.

Herbicide treatments within 400 yards of EOs would reduce vegetation cover in the short term; however, design features (e.g. requiring 75% recovery of desirable species and seedings and plantings soon after herbicide applications) would limit the area affected by decreased vegetation cover at any one time. Herbicide treatments on the 539 acres with high K-factor soils would be most prone to erosion prior to reestablishment of vegetation (Table 5). The other 626 acres with medium K-factors would be susceptible to minor short-term impacts. In the long term, southerly aspects where little native vegetation remained would experience the greatest watershed benefits. Restoration of deep-rooted and stable native vegetation around EOs would result in a major long-term watershed enhancement on 524 acres previously occupied by exotic annual grasses and a moderate to major long-term improvement on 492 acres of shrubland. Long-term major

reductions in exotic annual grass cover around EOs would result in increases in biological soil crust cover.

Vegetation – Pollinator habitat (native forbs and shrubs) and native bunchgrasses would increase in the long term within 400 yards of EOs. Fuel would be reduced and native bunchgrasses would be restored to areas outside the 400-yard buffers and along revegetated trails and hill-climb areas. Fire damage would be reduced where treatments increase native perennial grasses and forbs that would recover post-fire. Although herbicide treatments would cause short-term disruptions to vegetation cover, they would provide long-term benefit to desirable vegetation. Fuel management (reducing fuel continuity and flashy annual grass fuel loads, especially on southerly aspects dominated by exotic annual grasses) would protect native plantings and seedings near EOs. Herbicide treatments that reduce noxious weeds and aid native plant restoration would reduce vegetation cover in the short-term, but would benefit desirable vegetation in the long-term. Plantings and seedings along closed trails and hill-climb areas would result in moderate to major long-term improvements to the native vegetation on up to 286 acres of highly degraded vegetation and bare ground. Revegetation of hill-climb areas would start a positive feedback loop: improved watershed processes (i.e., reducing soil bulk density, increasing nutrient content, reducing daily temperature fluctuations, and reducing mass wasting) that would lead to healthier native vegetation.

Special Status Plants – Vegetation treatments would result in minor (where exotic annual grasses would be reduced) to major (where native perennial forbs and shrubs become established) long-term improvements in pollinator habitat on up to 1,166 acres (17 suboccurrences). Short term adverse effects, especially with respect to herbicide use, would occur where native plant species are damaged by herbicides. Short-term adverse effects would also occur from nutrient-rich and herbicide-laden dust entering EOs from wind erosion of herbicide-treated sites. Native plants would not be damaged directly by the bioherbicide, *Pseudomonas fluorescens* Strain D7, but like areas treated with conventional herbicides, wind erosion would transport nutrients into Packard's milkvetch EOs. In addition, nutrients would enter EOs from the dust from drill seeding outside of the 400-yard buffers. All these sources of nutrient-rich dust would increase the competitive ability of cheatgrass and other species in EOs. The effects of herbicide spraying for noxious weeds would be the same as those identified in Alternative A. Fire hazards would be reduced for Packard's milkvetch and its pollinators' habitat in the long term, due to the reduction of exotic annual grasses and the return of native vegetation, and this long-term benefit to Packard's milkvetch would far outweigh the short-term adverse impacts of the treatments.

OHV Management

Watershed – Trail closures (101 miles) and area designations (5,620 acres closed to OHV use) would result in major long-term improvements of watershed processes, as litter would accumulate and biological soil crusts and perennial plants would recolonize 286 acres of highly degraded land (49 acres of bare ground in linear trails, 74 acres of trailside disturbance and 163 acres of denuded hill-climb sites; Table 4). Compared to Alternative A, 18.5 more miles of trails (55.4 miles total) would be closed in areas with high erodibility and 14.3 more miles (45.7 miles total) would be closed in areas with medium erodibility (Table 6). Repairing the severely-disturbed hill-climb areas would reduce soil bulk density, increase nutrient content, decrease daily temperature fluctuations, and reduce mass wasting.

Watershed conditions would remain degraded over the long term in the 95-acre open area (including 81 acres of previously disturbed hill climb areas and 14 acres of new disturbance) and 9.3 miles of designated trails (5 acres of bareground and 6 acres of trailside disturbance; Table 6). Approximately 72% of the open area has high K-factors (including all of the added disturbance area) and 28% has moderate K-factors. Designated trails would occur in a small portion of the analysis area (Map 5) at a density of 3.4 mi./sq. mi. Although trail density would be similar to Alternative B, moderate indirect impacts (e.g., erosion that starts on trails but affects adjacent areas) would occur over up to 1,746 acres.

Vegetation – The OHV staging and parking area would result in long-term vegetation improvements, by concentrating formerly dispersed parking and OHV loading and off-loading into a smaller, more carefully-managed area. In the designated open area, 14 acres of vegetation would experience major degradation and 81 acres would remain severely disturbed. Disturbance impacts would occur over the long term on 12 acres directly associated with designated trails. Vegetation adjacent to these areas would remain susceptible to expansion of invasive and noxious species; however, impacts would primarily occur in the 1,651-acre limited area (Map 5). Eliminating OHV use in 5,620 acres would result in a moderate long-term increase of desirable vegetation.

Special Status Plants – OHV disturbance would cease in Packard's milkvetch EOs and a 400-yard buffer around 16 suboccurrences, because motorized vehicle use would not occur in those areas. Elimination of motorized access to EOs would help reduce erosion and the spread of noxious weeds associated with OHV trails. Most OHV use would occur $\geq$1.7 miles from EOs which would have major long-term benefits by reducing the impacts of nutrient-rich dust into EOs, thus reducing the potential for cheatgrass and other competitors. Designated trails would have no direct and negligible indirect effects (invasives, noxious weeds) on Packard's milkvetch because of their distance from EOs. Minor impacts from dust and invasive and noxious weeds would occur at one suboccurrence that would be within 330-580 yards of 0.4 miles of a designated trail.

Livestock Management

Watershed – Watershed processes would improve within exclosures, where restoration would be most successful. Removal of livestock disturbance from 470 acres (five exclosures) would result in the accumulation of litter, native plant restoration, and greater colonization by biological soil crusts, which in turn would result in greater water infiltration and less erosion inside exclosures during spring runoff, thunderstorms, and high wind events. In areas available to livestock use, conditions would remain static (i.e., non-concentrated use areas) or could degrade (i.e., concentrated livestock use areas where K-factors are high and natural disturbance [drought and fire] would lead to lower resistance) over the long term. Slope steepness within 400 yards of EOs would be a partial deterrent to grazing, as 60% of the area has >20% slopes. Spring grazing in areas with the heaviest use could cause minor to moderate long-term degradation of perennial vegetation. However, vegetation monitoring and implementation of AUM reductions if necessary (Appendix 2) would help maintain existing perennial cover and ensure adequate watershed protection over the long term.

Vegetation – Fences would provide protection to plantings and seedings and would increase perennial vegetation cover, but areas that concentrate livestock could be heavily impacted in certain years. Restoration would be most successful within exclosures and behind drift-fences, where livestock disturbances would cease or become less severe. Restoring native vegetation would also result in greater colonization by biological soil crusts. Outside the exclosures, disturbance from livestock would primarily affect areas within 0.25 miles of water and along fence-lines. Monitoring and potential AUM adjustments would help ensure that perennial grass cover would be maintained over the long term.

Special Status Plants – Livestock grazing would be eliminated from 470 acres (five exclosures), resulting in both short and long term benefits to Packard's milkvetch and pollinator habitat. Native plant species would be allowed to set seed in the absence of livestock grazing and livestock would not serve as vectors for the transport of invasive weed seeds. Livestock trampling of soil, biological soil crusts, and native plants would be eliminated. Nutrient deposition into EOs would be reduced, as direct urine and feces deposition would be eliminated and dust sources would be farther away from EOs; thus competition from cheatgrass and other species would be reduced in the long-term. Concentrated livestock use, primarily livestock trailing along fences resulting in localized trampling (mechanical damage to plants), soil compaction, and the establishment and spread of invasive annuals in those areas. Trailing/trampling impacts would be offset in the short term if vegetation treatments were conducted within the entire 400-yard vegetation treatment buffer (EOs), which extends outside of the exclosures, and would include those areas subjected to potential trampling. The areas within the exclosures plus the remainder of the buffer would be closed to livestock grazing following treatments until resource objectives were met. Once resource objectives had been met, the fence perimeter outside of the exclosures would again be subjected to potential trailing impacts which could have minor to moderate adverse impacts if noxious weeds were to become established and spread into the exclosures. Livestock grazing, outside of exclosures, would still occur in the spring and effects would be the same as Alternative A.

Fencing

Watershed – Fences, which concentrate disturbance from livestock, would have negligible or no effect on infiltration and erosion most years, but could have minor to moderate short- to long-term impacts after droughts and fires. These adverse impacts would be outweighed by major long-term reductions in erosion and increases in infiltration within exclosures.

Vegetation – Vegetation would degrade along fences where livestock concentrate, but these losses would be minimal compared to the benefits of providing exclosures, namely providing long-term protection to recovering native vegetation. Minor to moderate vegetation losses would occur within 20 feet of fencing in pollinator habitat (3.5 miles, 8 acres) and other areas (1.9 miles, 5 acres). Negligible livestock damage would occur outside of the fence at the OHV staging area (1.5 miles, 4 acres).

Special Status Plants – Five exclosures would provide major long-term protection of 470 acres of Packard's milkvetch and pollinator habitat from OHV and livestock disturbances. These exclosures would be strategically placed to encompass EOs and portions of the native plant restoration areas that would be most vulnerable to disturbance. All suboccurrences identified by

Mancuso (2009) where livestock trampling and feces were documented would be excluded from livestock. Implementation of additional fencing in the Paddock Valley Allotment in the event management triggers are met (Appendix 2) would minimize or eliminate livestock impacts over the long term to all EOs on public lands. Existing allotment fences would remain and the impacts associated with these fences would be the same as Alternative A.

3.1.2.4 Alternative C – Maximum Motorized Access

Authorized trails and hill-climb areas would be more extensive than Alternative B (91 acres more vegetation disturbance or removal), which would lead to greater disruptions to watershed processes. Authorized OHV trails would bisect Packard's milkvetch EOs and surrounding pollinator habitat would result in major direct and indirect adverse impacts to the long-term viability of Packard's milkvetch.

Vegetation Treatments

Watershed – Impacts from vegetation treatments would be similar to those described in Alternative B; however, less trails and hill climb areas would be restored. Vegetation recovery on up to 216 acres (26 acres of bare ground, 38 acres of trailside disturbance acres, and 152 acres of closed hill-climb sites) would result in moderate increases in infiltration rates and reduced erosion (Table 4).

Vegetation – Impacts from vegetation treatments would be similar to those described in Alternative B, but 59 fewer acres associated with trails would be revegetated and 32 more acres in the open area, a total of 197 acres, would be severely degraded or devoid of vegetation.

Special Status Plants – Revegetation of pollinator habitat would be the same as Alternative B, except in the areas where designated trails would bisect treatment areas. The lack of trail revegetation treatments near EOs would result in major long-term damage to Packard's milkvetch, by increasing the noxious weeds, exotic annual grasses, fire potential, and erosion inside EOs and pollinator habitat.

OHV Management

Watershed – Trail closures (53 miles) and area designations (1,275 acres closed to OHV use) would result in minor to moderate improvements of watershed processes, where perennial plants and biological soil crusts would recolonize 216 acres of highly degraded land (26 acres of bare ground in linear trails, 38 acres of trailside disturbance and 152 acres of denuded hill-climb sites; Table 4). Compared to Alternative A, 7.6 fewer miles of trails (29.3 miles total) would be closed in areas with high erodibility and 7.9 fewer miles (23.5 miles total) would be closed in areas with medium erodibility (Table 6). Benefits from repairing the severely-disturbed hill-climb areas would be as described in Alternative B.

Watershed conditions would remain degraded over the long term in the 127-acre open area (including 81 acres of previously disturbed hill climb areas and 36 acres of new disturbance) and 57.5 miles of designated trails (28 acres of bareground and 42 acres of trailside disturbance; Table 6). Approximately 54% of the open area has high K-factors (including 14 acres of the added disturbance area) and 46% has moderate K-factors (including 21 acres of the added disturbance area). Designated trails would be dispersed across a majority of the analysis area

(Map 6) at a density of 6 mi./sq. mi. Although trail density would be slightly reduced from current conditions, moderate indirect impacts (e.g., erosion that starts on trails but affects adjacent areas) would occur over up to 6,092 acres.

Vegetation – OHV trails would bisect or be adjacent to several EOs and pollinator habitat buffers, increasing disturbance and weeds in restoration areas and increase the probability of human-caused ignitions in these areas. Repeated fires early in the restoration process could nullify the benefits of the vegetation treatments. Impacts in the open area would be similar to Alternative B, but vegetation would be severely degraded or eliminated on 127 acres. Vegetation adjacent to designated trails (57.5 miles, 42 acres of trailside disturbance) would remain susceptible to expansion of invasive and noxious species and up to 6,092 acres could be indirectly affected (Map 6). Eliminating OHV use in 1,274 acres (17% of the analysis area) would result in a moderate long-term increase of desirable vegetation in that area, but would have a minor effect at the analysis area level.

Special Status Plants – OHVs would cause moderate (where trail would be ≥200 yards from suboccurrence) to major (where trail would be <200 yards from suboccurrence) direct and indirect damage to five Packard's milkvetch suboccurrences and associated pollinator habitat (disturbance, erosion, noxious weed dispersal, and exotic annual grass expansion). Approximately 3.7 miles of trails would be within 400 yards of three EOs (six suboccurrences including one on State lands) and bordering one suboccurrence. Nutrient-rich dust, generated by OHV use, would be deposited into EOs and result in long-term competition of Packard's milkvetch from nutrient-loving competitors, such as cheatgrass. Trail closures would have major benefits to 12 suboccurrences and associated pollinator habitat as described in Alternative B.

Livestock Management
Impacts would be as described in Alternative B.

Fencing
Impacts would be similar to those described in Alternative B; however, livestock trampling damage would occur on an additional 0.1 mile of fence around the open area.

3.1.2.5 Alternative D – Moderate Motorized Access

Moderately increasing OHV trail miles, compared to Alternative B, would result in minor to moderately more long-term degradation in watershed and vegetation resources. The proximity of these trails to Packard's milkvetch EOs and pollinator habitat would result in a minor to moderately higher probability of fires and noxious weeds entering this habitat than Alternative B.

Vegetation Treatments
Watershed – Impacts from vegetation treatments would be similar to those described in Alternative B; however, fewer trails (88.3 miles) would be restored. Vegetation recovery on up to 270 acres (43 acres of bare ground, 64 acres of trailside disturbance acres, and 163 acres of closed hill-climb sites) would result in moderate increases in infiltration rates and reduced erosion (Table 4).

Vegetation – Impacts from vegetation treatments would be the same as Alternative B; however, up to 107 acres (43 acres of bare ground and 64 acres of disturbance) would be affected by closed trails and 172 acres would be affected by closed hill climbing areas.

Special Status Plants – Vegetation treatments within 400 yards of Packard's milkvetch would be the same as Alternative B; therefore, direct impacts from revegetation and weed-control treatments would be the same.

OHV Management

Watershed – Trail closures (88.3 miles) and area designations (4,574 acres closed to OHV use) would result in major improvements of watershed processes, where perennial plants and biological soil crusts would recolonize 270 acres of highly degraded land (43 acres of bare ground in linear trails, 64 acres of trailside disturbance and 163 acres of denuded hill-climb sites; Table 4). Compared to Alternative A, 16.9 more miles of trails (53.2 miles total) would be closed in areas with high erodibility and 3.6 fewer miles (35 miles total) would be closed in areas with medium erodibility (Table 6). Benefits from repairing the severely-disturbed hill-climb areas would be as described in Alternative B.

Impacts from designating a 95-acre open area would be as described in Alternative B. Designated trails would be dispersed across a majority of the analysis area (Map 6) at a density of 5.1 mi./sq. mi. Although trail density would be reduced from current conditions, moderate indirect impacts (e.g., changes in soil profile including erosion that starts on trails but affects adjacent areas, changes in vegetation) would occur over up to 2,791 acres.

Vegetation – Impacts from the 95-acre open area would be as described in Alternative B. Disturbance impacts would occur over the long term on 27 acres directly associated with designated trails. Vegetation adjacent to these areas would remain susceptible to expansion of invasive and noxious species; however, impacts would primarily occur in the 2,697-acre limited area (Map 7). Eliminating OHV use in 4,574 acres would result in a moderate long-term increase of desirable vegetation.

Special Status Plants – Impacts from OHV trail designations would be the same as Alternative B for one trail within 400 yards of an EO. Designated trails in the western part of the analysis area would be $\geq$0.36 miles from an EO on State lands (compared with 1.7 miles in Alternative B); therefore, only indirect effects of OHVs (increased probability of ignitions, closer proximity to noxious weed sources) would be moderately greater than Alternative B in the long-term.

Livestock Management

Impacts would be as described in Alternative B.

Fencing

Impacts would be as described in Alternative B.

3.1.2.6 Alternative E – No Motorized Access

Closing and restoring all OHV trails and hill-climb areas and only having motorized access to a reservoir would result in the greatest long-term benefits to the watershed, vegetation, and Packard's milkvetch. The effects of fencing and livestock would be the same as Alternative B.

Vegetation Treatments

Watershed – The effects of vegetation treatments would be the same as Alternative B, except that 377 acres currently disturbed acres would be protected from erosion and runoff (133 acres of trails [52% highly erodible, 48% moderately erodible], 244 acres of hill-climb area [34% highly erodible, 66% moderately erodible]). This would result in major long-term benefits to the watershed.

Vegetation – Revegetation would occur on 91 more acres than prescribed in Alternative B. Also, 14 acres would not be newly disturbed, as it would be in Alternative B.

Special Status Plants – Vegetation treatments throughout the watershed would improve Packard's milkvetch pollinator habitat and decrease the probability of disturbances that could affect Packard's milkvetch in the long-term.

OHV Management

Watershed – Vegetation treatments would be the same as Alternative B, except with 11 acres less trail disturbance and 95 acres less hill-climb disturbance in mostly highly erodible areas. These reductions would result in major long-term increases in watershed protection from erosion and runoff.

Vegetation – There would be 92 miles of additional trail and hill-climb area revegetation and 14 acres that would not be newly disturbed, compared to Alternative B.

Special Status Plants – The elimination of OHVs BLM-administered lands would substantially reduce the spread of noxious weeds, eliminate soil erosion and reduce the probability of human-caused ignitions near EOs. This would lead to major long-term protection of the species.

Livestock Management

Impacts would be as described in Alternative B.

Fencing

Impacts would be as described in Alternative B for the exclosure fencing.

3.1.3 Cumulative Impacts – Watershed/Vegetation/Special Status Plants

3.1.3.1 Scope of Analysis

The geographic scope is the watershed delineated by Stone Quarry Gulch and Big Willow, Little Willow, Dry, and Alkali creeks. The scope adequately addresses distances pollinators might travel. The temporal scope is from present to 2028 when recovery from short-term vegetation treatment impacts would be expected.

3.1.3.2 Current Conditions and Present Effects of Past, Present, and Foreseeable Future Actions

The following past, present, and foreseeable actions affect watershed and vegetation conditions in the cumulative impacts analysis areas. Influential actions that have occurred in the past and will continue into the foreseeable future include residential and agricultural development, and livestock grazing. The effects of future wildland fires are also considered because these natural events are predictable to a certain degree based on the number and size of wildland fires that have occurred in the past decade. Future development of industrially-zoned land directly to the west of the Stone Quarry Gulch will be considered, as a nuclear power plant is planned for that area.

Fragmentation - Habitat degradation, alteration, and loss have fragmented habitat. Lack of connectivity between natural open spaces reduces or eliminates genetic flow between plant and wildlife (e.g., pollinators) populations. Wildland fires have been the primary cause of shrub-steppe habitat fragmentation. Native habitats are fragmented by aspect and soil characteristics (southerly aspects which mainly have neutral soil [6.7-7.3 pH] are mostly exotic grasslands, whereas northerly aspects, which are slightly to moderately alkaline [7.5-8.2 pH] are mostly native shrublands with pockets of native grasslands).

Livestock Trailing - Fall sheep trailing occurs along the Little Willow and Stone Quarry Gulch roads on the periphery of the Bannister Basin (1 mile including 0.2 miles on BLM-administered lands) and Little Willow (6.2 miles) allotments (USDI 2012). Two bands of sheep (1,800 animals each) are actively trailed (5.6 miles per day). Grazing occurs on both State and private lands. Trailing small herds (<2,000 animals) on improved roads during the fall will have no impacts on soils and vegetation because animals are actively moving on a previously disturbed surface.

Special Status Plants – Currently there are 26 known Packard's milkvetch EOs (17-BLM-administered lands, 5-State lands, 4 private lands) and all known potential habitat has been surveyed. Most of these sites are dominated by a sparse shrub canopy of big sagebrush with a sparse understory of native forbs and a mixture of native perennial grasses and non-native invasive annual grasses including Sandberg bluegrass, squirreltail, cheatgrass and medusahead. Approximately 21% of the species are non-native weeds. In 2008, some level of disturbance (OHVs, livestock, wildlife) was recorded in all of the sites. No new OHV disturbance was noted in 2012 in the temporary OHV closure area. The closure is in effect through July 2013. New OHV disturbance was observed in two suboccurrences east of Dry Creek Road in 2011. Access to the State lands is restricted by the temporary closure and most private parcels are posted with no trespassing signs.

Nutrient Deposition – Nutrient deposition (e.g., from livestock urine and feces, including particles carried as fugitive dust, vehicle and industrial emissions, etc.) has not been quantified for the cumulative effects area, but could affect the competitive balance between Packard's milkvetch and non-native species through direct and indirect sources. Soils that support Packard's milkvetch have not been analyzed either, but it is assumed that they are low in plant-available nutrients. In general, edaphic outcrops that support native species tend to be too harsh for exotic annual grasses and invasive species. Such sites are usually sunny, but have thin or

infertile soils with low water-holding capacity. Exotic annual grasses and forbs under these conditions tend to be weak competitors. Outside such soil patches; however, exotic species are better able to monopolize water and/or light than many native species. Experimental manipulations demonstrate that exotic species grow well in such soils, if fertilizer is added. Experiments also demonstrate that most native species collected from low-fertility sites grow as well or better in plots where nutrients, water, and light are abundant. However, when resources are abundant and these native species have to compete with the exotic annual grasses and forbs, the non-natives overtop and shade out the natives (Baskin and Baskin 1988, Huenneke et al. 1990, Daehler 2003). If this is the case for Packard's milkvetch, nutrient deposition could have long-term adverse impacts on Packard's milkvetch survival.

Recreation – The analysis area occurs on the northwestern edge of the Treasure Valley near several small communities (Emmett, Payette, Weiser, and Indian Valley) and supports a variety of motorized and non-motorized recreational uses including OHV riding, wildlife viewing, camping, fishing, and hunting. Recreation uses can alter or eliminate vegetation cover, generally in repeatedly used areas (e.g., roads and trails), and serve as seed transports (vectors) for noxious and invasive plants. Public lands in the area are designated as limiting OHV use to existing roads and trails. Recreational demands, especially on public lands, will increase as development and population increase.

Development - Residential and agricultural development has occurred adjacent to the project area and has affected special status plants and their habitat through habitat conversion, increased noxious and invasive weed invasions, increased threat of wildfire, changes to insect pollinator populations, and increased habitat fragmentation. Agriculture often requires the use of pesticides and herbicides which may affect insect pollinators of native plant species including Packard's milkvetch. Agricultural areas and agricultural equipment often serve as vectors for the introduction of noxious and invasive species.

A nuclear power plant is planned to be constructed on a 5,000 acre parcel along Stone Quarry Road and Big Willow Road, abutting the western boundary of the Big Willow area (Map 1). Payette County's general plan was amended in 2011 and the property was rezoned as industrial to make way for the nuclear power plant. The owner of the property, Alternate Energy Holdings, Inc., received approval from the Payette County Board of Supervisors in 2011. The company is currently testing the site and seeking approval by the U.S. Nuclear Regulatory Commission. Besides the direct impact of construction site dust upwind of the Big Willow OHV area (2.5 miles upwind of the nearest known Packard's milkvetch EO), construction of the power plant would result in increased usage of the Big Willow area, as it would bring 5,000 new construction jobs for five years and 1,000 permanent jobs to the site.

Wildland Fire – Although not planned, wildland fire is a likely event. Because of increased human presence and disturbance, wildland fire frequency will increase over the 5-year period. Most fires would be expected to be small because of the proximity to fire suppression resources; however, a large fire would also likely occur. Habitat would remain in a degraded state, dominated by exotic annuals. Wildfire destroys plants through actual physical damage as well as creating a heavily disturbed and highly fragmented environment that is conducive to the spread and maintenance of invasive annual plant communities that lack native forbs essential for

the maintenance of pollinator populations. Much of the native plant community adjacent to Packard's milkvetch habitat has been destroyed or degraded by fire and its effects on the species can be described as major. Wildfire is probably the single greatest threat to the continued persistence of Packard's milkvetch. This species occurs in small discrete soil outcrops that are, in many cases, currently isolated by extensive areas of invasive annuals with minimal to no native perennial forbs that can serve as pollen sources for insects.

Global Climate Change – Climate and fire models predict that southwestern Idaho will have warmer winters, prolonged droughts, longer fire seasons and larger, more frequent fires. This trend is expected to continue until biomass equilibrates with the warmer climate. Global climate change also occurred in the mid-1800s, at the end of the Little Ice Age, and this period also saw a major shift in vegetation and fire regimes. Cattle and domestic sheep were introduced during an extended wet period and stocking rates were too high during a severe, long-term drought that followed. This caused rapid degradation of biological soil crusts and the native bunchgrass understory in the 1920s (Miller et al. 1991). As a result of the degradation, in some areas, cheatgrass proliferated and fires became too frequent for sagebrush recruitment (Stewart and Hull 1949). Continued heavy livestock grazing, coupled with effective fire suppression in the 1950s-1970s, resulted in unnaturally dense sagebrush that shaded out the weakened native bunchgrass understory. When these areas burned, many were converted to annual grasslands. Today, much of the region is dominated by cheatgrass and medusahead which competitively exclude bunchgrass seedlings and burns too frequently to allow sagebrush recruitment. Continued disturbance from commercial livestock during the current global warming event is expected to cause slower native plant recovery, further disruption of biological soil crusts, a loss of soil fertility, greater wind erosion and decreased infiltration (Pierson et al 2011, Beschta et al. 2013).

3.1.3.3 Cumulative Impacts – Alternative A

Together, OHV trails, spring livestock grazing, and fires would continue to degrade native vegetation, particularly on southerly aspects, converting more of this already fragmented habitat to exotic annual grasslands. The construction of a nuclear power plant adjacent to the OHV area would attract greater recreational use and consequently greater adverse impacts to watershed and vegetation conditions. Global climate change could accelerate the degradation and result in type conversion to exotic annual grassland. Pollinators of Packard's milkvetch would decline due to cumulative effects of grazing, trampling, burning, displacement of food plants, habitat fragmentation, displacement by non-native insects, and pesticide use. Due to wide annual fluctuations in vegetative cover inherent to exotic annual grasslands, pronounced watershed degradation would occur after extreme weather and disturbance events, such as heavy rains immediately following severe drought and/or large fires.

Closing unauthorized trails and hill-climb areas would have a minor additive benefit to Packard's milkvetch by reducing localized erosion, but it is anticipated that mass wasting would occur in the vicinity of the closed but unrestored hill climb areas and authorized and closed trails, especially in soil types that are highly erodible. Mass wasting would be anticipated next to and in Packard's milkvetch EOs, where authorized trails and livestock grazing would occur in highly erodible soils.

Continued OHV use and livestock grazing would have a moderately adverse additive impact, inevitably leading to increased spread of noxious weeds into Packard's milkvetch EOs as these activities would occur within the immediate vicinity of these EOs. The majority of areas adjacent to existing EOs are currently dominated by invasive annuals with low levels of native perennial forbs that can serve as pollen sources for pollinators of Packard's milkvetch. Introduction of noxious weeds into these areas would introduce another stressor to already low levels of native perennial forbs. Noxious weeds could outcompete and eventually eliminate the native forbs, ultimately reducing the potential for genetic interchange between EOs within the range of the species. Noxious weeds could also potentially out-compete Packard's milkvetch if they were to become established within existing EOs.

Nutrient additions to Packard's milkvetch EOs would have major adverse long-term impacts on the species. Deposition could result in the displacement of Packard's milkvetch by exotic annual grasses and forbs. Nutrient sources could be from livestock urine and feces, farmland dust, burnt fossil fuel emissions (vehicles and power plants), and industrial effluent/dust.

3.1.3.4 Cumulative Impacts – Alternative B

Fencing-off and restoring native plant populations near Packard's milkvetch would protect against the displacement of this special status species by exotic annual grasses and forbs and have a moderate to major additive benefit to Packard's milkvetch. This would help stabilize the overall watershed processes by favoring long-lived deep-rooted species. Similarly, actively restored hill-climb areas and trails would help increase water infiltration and reduce runoff and erosion. Watershed stabilization would aid in the resiliency of native plants to more severe and frequent disturbance events that will result from global climate change. Furthermore, a more confined area accessible to motorized vehicles would protect against human-caused ignitions and weed seed dispersal near Packard's milkvetch, even though the area would have greater visitation due to the construction of a nuclear power plant nearby. Pollinator habitat would improve near Packard's milkvetch EOs; however, pollinator threats (i.e. grazing, trampling, burning, displacement of food plants, habitat fragmentation, displacement by honeybees and other non-native species, and pesticides) would persist within the cumulative effects area.

3.1.3.5 Cumulative Impacts – Alternative C

The cumulative effects would be between those of alternatives A and B. Vegetation treatments and livestock exclosures would provide some resistance to type-conversion, but trails through Packard's milkvetch EOs and pollinator habitat would a moderate adverse additive impact resulting in a greater risk of devastating fires, erosion, and plant invasions in these habitats.

3.1.3.6 Cumulative Impacts – Alternative D

There would be similar cumulative impacts as Alternative B, because it would protect and restore native vegetation near Packard's milkvetch populations and concentrate trails in a confined area.

3.1.3.7 Cumulative Impacts – Alternative E

Closing the area to OHVs and restoring native plant communities would provide the greatest resistance to type-conversion during global climate change events and provide the greatest protection for Packard's milkvetch and its pollinators. Large fires and livestock would continue

to degrade the vegetation, but this degradation would be slower without the added stress from OHVs.

3.2 Wildlife/Special Status Animals

3.2.1 Affected Environment – Wildlife/Special Status Animals

Habitat conditions are described for representative groups of animals (migratory birds, southern Idaho ground squirrel, and big game) and for activities that affect general habitat conditions (OHV use, fencing). The condition of wildlife habitat has been affected primarily by wildfires (Vegetation has been shaped by physical site characteristics such as aspect, soils, precipitation, and disturbances (primarily wildland fire, OHV activity, and livestock grazing). Since 1986, approximately 73% of the area has burned once and 17% has burned twice. The largest of these fires occurred in July and August. Additional areas have burned within the cumulative effects area (Table 8). Because sagebrush does not resprout after fire, most of it has been killed in recent decades. Shrub-dominated communities comprise 38% of cover and annual and perennial grasslands with sparse shrub cover characterize the remainder. A network of OHV trails and bare hill-climb areas has further fragmented and degraded native vegetation communities. Although these disturbances have occurred on all aspects, native vegetation is less resilient on the hotter, drier southerly aspects than the cooler, moister northerly aspects; therefore, southerly aspects are dominated by exotic grasses and northerly aspects are dominated by native vegetation. This has resulted in major habitat fragmentation.

Table 7), cross-country and designated OHV use, and historic and current livestock use. Collectively these factors have degraded wildlife habitat in the area, as the majority of public land supports exotic annual grassland and scattered pockets of shrub steppe habitat (Section 3.1.1, Map 10).

Specific Upland Habitat Conditions

Migratory Birds - The analysis area encompasses over 7,000 acres; therefore, bird habitat will be analyzed at a landscape scale, where birds are typically affected on a population level (Paige and Ritter 1999). As the area lacks contiguous sagebrush habitat and suitable cover of native perennial bunchgrasses and forbs, the area does not support stable populations of sagebrush-obligate species such as greater sage-grouse. These sagebrush obligates require a large mosaic of big sagebrush cover types, inter-mixed with native bunchgrasses and forbs. Other sagebrush obligates including Brewer's sparrow, sage sparrow and sage thrasher could occur in the area, although, these species are sensitive to fragmented sagebrush habitats.

Grassland associated species such as long-billed curlew, burrowing owls, short-eared owls western meadowlark, vesper sparrow, and horned lark utilize short grassland habitat for nesting, breeding, and brood-rearing. Northern harrier, red-tailed hawk, ferruginous hawk, golden eagle, American kestrel, and turkey vulture are common birds of prey that hunt for insects, small mammals, birds, and carrion throughout the area, year-round or during annual migrations.

Southern Idaho Ground Squirrel - A candidate species under the ESA, SIDGS inhabits drainage bottoms and adjacent gradual slopes in small scattered populations, below approximately 3,200 feet elevation. Historically, SIDGS primarily occupied sandier soils that supported big sagebrush/bunchgrass/forb communities with antelope bitterbrush (Yensen 1991). In the absence of a reliable and nutritious diet provided by native grasses and forbs, SIDGS are subject to the highly variable productivity and nutritional value of exotic annuals. When annual precipitation is relatively low, poor productivity of exotic annuals may not provide enough nutritional sustenance to enable squirrels to store enough fat to survive their long over-wintering period (torpor). The availability of forbs plays a crucial role in the torpor persistence of juvenile male ground squirrels (Barrett 2005). Torpor begins in late June or early July when vegetation begins to dehydrate and desiccate, and lasts until late January or early February when squirrels emerge from their burrows.

Currently, SIDGS habitat is dominated by exotic annuals and does not provide sagebrush cover and perennial herbaceous understories needed to support a stable squirrel population; medusahead is common throughout the area, especially on south aspects, and is indigestible for SIDGS due to its high silica content. The majority of known SIDGS colonies occur on adjacent private lands (IDFG 2013). There is a paucity of SIDGS monitoring data for the area, but it is likely that SIDGS utilize habitat on the northerly aspects of public land to some degree, as these areas tend to support more native vegetation.

Big Game - The area provides limited winter habitat for elk and mule deer as south slopes are typically dominated by annual grasses and do not support adequate shrub cover. Elk inhabiting the area are part of the Weiser River Zone delineated by the Idaho Department of Fish and Game (IDFG). Threats to elk winter range habitat include noxious weed invasion such as yellow

starthistle and whitetop (IDFG 2010a). Recently mapped elk winter range is located approximately 3 miles to the northwest and 6 miles to the northeast.

Mule deer inhabiting the area are part of the Weiser-McCall Population Management Unit (IDFG 2010b). Deer winter range has been adversely impacted by wildfire, as fire has reduced the abundance of important shrub species such as bitterbrush and sagebrush that deer depend on for food and thermal cover during the winter. The spread of noxious weeds also poses a threat to mule deer winter range. Draft Mule Deer Winter Range is located approximately 0.5 miles to the southwest, 2 miles to the northeast, and 1 mile to the southeast. Elk and mule deer may avoid the area during late summer, fall, and winter due to lack of shrub cover on southerly slopes, reduced abundance of perennial grasses and forbs, and OHV activity; it is likely that ungulates pass through the area while moving to areas that support higher quality habitat. Annual snow accumulation is limited; therefore, existing fencing has minor impact on ungulate movements.

Activities that Affect Habitat Conditions

OHV Use – The most popular use period, spring, coincides with avian nesting and brood-rearing activities and the active period for southern Idaho ground squirrels. Depending on weather conditions (e.g., snow, soil moisture), moderate levels of OHV use can coincide with the big game winter use period. Designated and unauthorized trails occur throughout the area at a density of 9.6 miles of trail/square mile of area (mi./sq. mi.).

Fencing - Approximately 14 miles of fencing exist in the area. The fencing is not built to BLM wildlife specifications; however, it occurs in relatively open areas, improving visibility to wildlife.

3.2.2 Environmental Consequences – Wildlife/Special Status Animals

3.2.2.1 General Discussion of Impacts

The general effects of human activities (e.g., recreation, development, and other uses) on wildlife and their habitats include changes in habitat quality and structure, nest/burrow destruction, fragmentation, and nesting and foraging disturbance. Impacts would occur over the short (< 1 year) or long (1-10 years) term.

Vegetation Treatments

Alternatives B-E involve herbicide application, seeding, and construction of fenced exclosures. Up to 1,166 acres of public land could be treated and seeded with desirable vegetation. The proposed herbicides are considered not acutely toxic to slightly toxic for insects, birds, mammals, and fish (USDI 2007, Table 10); therefore, there would be negligible effects from herbicide use. Construction and restoration activities using heavy equipment would have minor short-term impacts on nests and burrows as actions would take place outside of the breeding and brood-rearing periods for migratory birds and SIDGS. Over the long-term, vegetation treatments would benefit shrubsteppe /grassland habitats and associated species, as the density and abundance of perennial grasses, forbs, and shrubs increases over time.

OHV Use

Direct Impacts

Recreational activities, in particular OHV use, can impact wildlife species directly and indirectly. Noise, lights, and other disturbances associated with OHV activities have the potential for eliciting stress responses from a broad spectrum of wildlife taxa. Studies have shown that ungulates, birds, and reptiles all experience accelerated heart rates and metabolic function during disturbance events; in turn, animals may be displaced and experience reproductive failure and reduced survivorship (Halvick 2002). Incidental mortality through collisions with vehicles, nest destruction, and collapsing burrows, are potential consequences of OHV activity. Indirect impacts from OHV use are primarily changes in habitat quality or vegetative structure and habitat fragmentation (Section 3.1.2.1).

As the project area supports a variety of wildlife species, wildlife response to OHV use varies; therefore, a range of impacts and their magnitude will be analyzed based on species groups. The following groups will be analyzed: shrubsteppe/grassland migratory birds (e.g., Brewer's sparrow, sage thrasher, sage sparrow, short-eared owl, loggerhead shrike, long-billed curlew, western meadowlark, horned lark); burrowing animals (e.g., SIDGS), and big game (e.g., elk and mule deer).

Migratory Birds - OHV use coincides with the breeding season of migratory birds which rely on shrubsteppe communities for nesting and brood-rearing habitat. Recent studies suggest that habitat within 110 yards of OHV trails may provide reduced-quality habitat to shrub nesting songbirds, especially for species that suffer significant losses of annual fecundity due to abandonment or desertion of individual breeding attempts (Barton and Holmes 2007). Ground nesting birds such as long-billed curlew and short-eared owls could also be disturbed by OHV use when in close proximity, which could result in nest abandonment or destruction, and mortality of juvenile birds. Disturbance from excessive OHV and other recreational uses can be a substantial problem for nesting curlews, particularly during brood-rearing season (Jenni et al. 1981).

Southern Idaho Ground Squirrel - OHV use in SIDGS habitat could result in burrow destruction or torpor disturbance due to overriding vehicles and noise levels associated with motorized vehicles (Ouren et al. 2007). Squirrels in close proximity to active trails could also be killed due to OHV activity, especially juvenile squirrels. A primary threat to SIDGS is the continued degradation of habitat, which is mainly attributed to wildfires that convert sagebrush communities to annual grasslands, but OHV activities that reduce habitat quality and increase fragmentation also contribute.

Big Game - OHV use areas can overlap or fragment critical elk and deer winter habitat and elicit temporary adverse behavioral responses. Studies have documented ungulate responses to OHV use where mule deer exposed to OHV use for the first time left their home range and used cover more frequently, but quickly habituated to the traffic pattern and returned to pre-harassment use of home range and cover (Yarmoloy et al. 1988). Additional ungulate studies have demonstrated that elk movements and flight response were greatest and most likely to occur when OHV users were within 109 yards of elk (Wisdom et al. 2005). Lines of sight are greater in shrubsteppe/grassland habitats, so ungulates may respond at greater distances. Ungulate energy

budgets may be adversely affected by the loss of foraging opportunities while animals respond to OHV activity, both from increased movements, and displacement from foraging habitat.

Indirect Impacts
Indirect impacts from OHV use would be similar to all species, as OHV use can destroy vegetation which can result in a long-term loss of foraging, nesting, and escape cover. Activities that alter plant communities from native perennial species to exotic annuals would benefit species that use disturbed or early successional habitats (e.g., long-billed curlew, horned lark, burrowing owl), but would provide marginal foraging habitat for most other species. OHV use can also degrade habitat quality on ungulate winter range and SIDGS habitat, as OHVs facilitate the spread of exotic annual grasses and noxious weeds. Widespread OHV use also fragments ungulate winter range and SIDGS habitat, which can adversely affect ungulate energy budgets as animals search for desirable forage and cover, and may impact SIDGS dispersal rates.

For all alternatives, OHV impacts were analyzed by buffering OHV trails by 110 yards on each side, in order to quantify the acreage of degraded wildlife habitat as a result of OHV use. Alternative A serves a baseline for comparing the buffered impact area between alternatives.

Fencing
Approximately five to seven miles of new fencing could be constructed depending on the alternative. Fencing would be used as exclosures for vegetation treatment areas and therefore are not likely to impede seasonal ungulate movements through the area (Map 3). Depending on the surrounding topography and vegetation, a fence can blend into the background causing collisions and entanglement of birds resulting in mortality. Impacts from fencing would be minor over the short and long-term as all new fencing would be constructed to meet BLM wildlife specifications.

3.2.2.2 Alternative A - No Action/Resume Use of Designated Trails

Vegetation Treatments
Noxious weed treatments would have minor to moderate benefits by maintaining habitat conditions where treatments successfully limit noxious weed spread. Habitat quality would remain degraded where exotic annuals persist, remain dominant, or expand (Section 3.1.2.2).

OHV Use
Approximately 2,721 acres of wildlife habitat would continue to be adversely impacted, over the short and long term, by direct and indirect impacts associated with OHV use on designated trails. Long-term declines in foraging and cover habitat for all species would occur as exotic annuals and noxious weeds continue to spread throughout the area. Habitat fragmentation would persist over the long term. Trail density would be reduced to 3.7 mi./sq. mi., but trails, and associated disturbances, would occur throughout the analysis area (7,366 acres).

Fencing
Existing fencing (14 miles) would have minor mortality impacts annually to migratory birds and big game.

3.2.2.3 Alternative B – Limited Motorized Access

Vegetation Treatments

Vegetation treatments would help maintain or improve habitat quality and structure on up to 1,166 acres as exotic annuals are replaced by native perennial grasses, forbs, and shrubs over the long term. Impacts associated with herbicide application (Section 3.2.2.1) would be minor over the short-term and negligible over the long-term. Construction and restoration activities using heavy equipment would have minor, short-term impacts on nests and burrows, as management actions would occur in the fall and avoid the nesting and breeding season of migratory birds and the active period of SIDGS. Construction and restoration activities would have minor short-term impacts on big game as individuals may be temporarily displaced.

OHV

Approximately 496 acres of wildlife habitat would be impacted by direct and indirect impacts (Section 3.2.2.1) associated with OHV use on active trails. Impacts would be similar to those described in Alternative A, but would occur across a smaller area as the impact area would decrease by approximately 76%. Trail density would be reduced to 3.4 mi./sq. mi., and trails, and associated disturbances, would occur primarily in the western part of the analysis area (1,651 acres). High disturbance levels and reduction of vegetation cover would have major impacts in the 95-acre open area, but minor to moderate disturbance impacts outside the open area.

Adverse impacts associated with OHV use (Section 3.2.2.1) would not occur on 5,620 acres closed to motorized use (Map 5). Removal of OHV use would benefit migratory birds, SIDGS, and big game that utilize habitat in the area. Over the short and long-term, there would be a minor increase in the overall fitness of individual animals. Breeding and brood-rearing habitat for migratory birds would not be disturbed by OHV use resulting in lower rates of nest abandonment and desertion. There would likely be a minor to moderate improvement in ungulate energy budgets and animal condition as animals passing through the area would not be disturbed by OHVs. SIDGS burrow destruction and juvenile mortality would decrease, and squirrel dispersal rates may increase as they begin to colonize areas free from OHV impacts.

Over the long-term, there would be a moderate improvement in the quality of wildlife habitat, as OHV use is greatly reduced across the area resulting in less vegetation destruction and fragmentation, as well as a decrease in the spread of exotic annuals and noxious weeds.

Fencing

Fencing would increase by approximately 49% in the area. The 6.9 miles of new fencing would impede movement across 565 acres of non-contiguous habitat. Fence construction would have short-term minor impacts on burrowing species that may be disturbed by construction activity. Over the long-term, fences would have negligible to minor impacts on wildlife species as the fencing would be constructed in manner that would not impede ungulate movement across the landscape. Excluding 470 acres from OHV and livestock uses would have moderate long-term benefits by removing OHV disturbance and improving habitat conditions.

3.2.2.4 Alternative C – Maximum Motorized Access

Vegetation Treatments

Impacts associated with vegetation treatments would be the same as those described in Alternative B.

OHV
Approximately 2,850 acres of wildlife habitat would be impacted by disturbances associated with OHV use on active trails. Impacts would be similar to those described in Alternative A; however, the impact area would increase by approximately 5%. Changes to habitat quality and structure would occur at a greater magnitude in the 127 acre area proposed for cross-country OHV use. The area represents a small proportion (4%) of the area, and impacts would be moderate over the short-term due to heavy OHV use. Impacts would be negligible to minor over the long-term as wildlife would likely avoid the area as habitat conditions continue to decline. Adverse impacts on approximately 1,274 acres of wildlife habitat around Bannister Basin would not occur as the area would be closed to OHV use (Map 6). Benefits to wildlife in the area would be similar to those described in Alternative B, but would occur across a smaller area.

Fencing
Impacts associated with fencing would be the same as those described in Alternative B.

3.2.2.5 Alternative D – Moderate Motorized Access

Vegetation Treatments
Impacts associated with vegetation treatments would be the same as those described in Alternative B.

OHV
Approximately 1,110 acres of wildlife habitat would be impacted by disturbances associated with OHV use on active trails. Impacts would be similar to those described in Alternative A; however, the impact area would decrease by approximately 40%.

Adverse impacts associated with OHV use would be negligible on 4,574 acres of wildlife habitat as the area would be closed to OHV use (Map 7). Benefits to wildlife in the area would be similar to those described in Alternative B and would occur across a smaller area.

Fencing
Impacts associated with fencing would be the same as those described in Alternative B.

3.2.2.6 Alternative E – No Motorized Access

Vegetation Treatments
Impacts associated with vegetation treatments would be the same as those described in Alternative B.

OHV
Adverse impacts associated with OHV use would be negligible across the entire project area. Up to 7,139 acres of wildlife habitat would not be impacted as the area would be designated as closed to OHV use (Map 8). Benefits to wildlife in the area would be similar to those described in Alternative B and would occur across a larger area.

Fencing
Impacts associated with fencing would be the same as those described in Alternative B.

3.2.3 Cumulative Impacts – Wildlife/Special Status Animals

3.2.3.1 Scope of Analysis

The geographic scope is the watershed delineated by Stone Quarry Gulch and Big Willow, Little Willow, Dry, and Alkali creeks. The scope adequately addresses distances southern Idaho ground squirrels might travel. The temporal scope is from present to 2028 when recovery from short-term vegetation treatment impacts would be expected.

3.2.3.2 Current Conditions and Present Effects of Past, Present, and Foreseeable Future Actions

Actions and processes described in Section 3.1.3.2 (i.e., fragmentation, recreation, development, wildland fire, and climate change) would also affect wildlife and their habitats.

Fragmentation – Fragmentation alters habitat suitability for a variety of species. Over the long term, where wildland fires and other disturbances cause a shift from perennial grass and shrub-dominated to exotic annual dominated communities, disturbance associated species (e.g., western meadowlark, horned lark) will increase and species that prefer intact vegetation communities (e.g., Brewer's sparrow) will decrease.

Recreation – Current levels of recreation use (e.g., hunting, hiking) is causing minor to moderate levels of disturbance, primarily during the spring and fall. Substantial increases in use, particularly those associated with construction and operation of a nuclear power plant, will cause major increases in disturbance levels over the long term.

Development – Development causes a direct loss of wildlife habitat and activities associated with the developed areas can cause disturbance over the long term. Construction and operation of a nuclear power plant would cause a major loss of wildlife habitat (primarily exotic annuals) and moderate to major increases in disturbance (e.g., lights, vehicles, noise).

Wildland Fire – Loss of shrubs and increased dominance of exotic annuals in burned areas would reduce habitat structure and quality over the short term. Adverse effects would persist over the long term where native perennials don't re-establish.

Global Climate Change - Climate changes that favor exotic annuals over native perennials would cause long-term declines in habitat quality and structure.

3.2.3.3 Cumulative Impacts – Alternative A

Factors contributing to the degradation of wildlife habitat would continue to occur within the cumulative impacts area (Section 3.1.3.3). Breeding and brood-rearing habitat for avian species would continue to decline as wildfires facilitate the spread of exotic annual grasslands and noxious weeds. While wildfire may create desirable habitat for species such as horned lark, meadowlark, or long-billed curlew that utilize disturbed or short grassland habitats, the overall vegetative structure and diversity would continue to decline. Simplified vegetative structure and

diversity would continue to degrade breeding and brood-rearing habitat for sagebrush/grassland associated migratory birds, as well as SIDGS habitat and ungulate winter range. Future developments (industrial, residential, and agricultural) as described in Section 3.0 would continue to adversely impact wildlife habitat to greater extent than the current uses in this area.

In conjunction with the impacts of increased wildfire frequency and future development, continued widespread OHV use in the area would have moderate to major long-term impacts on wildlife habitat in the cumulative effects area.

3.2.3.4 Cumulative Impacts – Alternatives B-E

While OHV closures on public lands would have beneficial short and long-term impacts on wildlife and their habitats (sections 3.2.2.3, 3.2.2.4, 3.2.2.5, and 3.2.2.6), OHV use could persist on adjacent private lands, which would have short and long-term impacts on wildlife and their habitats within the cumulative effects area. These alternatives would present minor incremental impacts to wildlife habitat compared with the impacts of increased wildfire frequency, future private land development, and OHV use on private lands in the cumulative effects area.

3.3 Livestock Management

3.3.1 Affected Environment – Livestock Management

The analysis area is part of the Bannister Basin (7,200 combined acres), Little Willow (5,943 combined acres), and Paddock Valley (52,681 combined acres) allotments (Map 3). There are 2,683 AUMs permitted for cattle and/or sheep and stocking rate range from 10.8 to12.4 acres/AUM (Table 11). Grazing permits for the Bannister Basin and Little Willow allotments were modified in 2001 when it was determined the allotments were not meeting Standards. Utilization levels, pasture rotations, and stocking levels were incorporated or adjusted to address problems with consistent spring use (Section 2.1.1). Use during the spring, especially repeated heavy to severe utilization during the active growing period, and high stocking rates could adversely affect native perennial grasses and forbs; however, perennial grass frequencies remained static or increased between 1991 and 2008 in the Bannister Basin and Little Willow allotments (Section 3.1.1).

Table 11. Stocking rate on BLM-administered lands for the Bannister Basin, Little Willow, and Paddock Valley allotments, Big Willow area, Payette County, Idaho.

Allotment	BLM Acres	AUMs	AC/AUM
Bannister Basin (00312)	3,963	367	10.8
Little Willow (00295)	1,832	148	12.4
Paddock Valley (00370)	24,996	2,168	11.5

3.3.2 Environmental Consequences – Livestock Management

3.3.2.1 Alternative A - No Action/Resume Use of Designated Trails

There would be minor to moderate impacts to the current livestock grazing management. Motorized access causes some movement of livestock; however, the majority of the impacts to livestock are indirect such as damage to vegetation conditions, range improvements, and movement of livestock as result of such actions. No vegetation treatments would occur and as a result the range conditions would remain the same. Livestock AUMs would remain the same

regardless of range conditions until rangeland health assessments and the permit renewal process is completed.

3.3.2.2 Alternative B – Limited Motorized Access

Vegetation treatments outside livestock exclosures would have minor short-term impacts on livestock management where treated areas would not be available for use. The vegetation treatments would benefit livestock in the short and long term, as the overall plant communities would be expected to improve. Excluding livestock from 470 acres would have minor (Little Willow and Paddock Valley allotments) to moderate (Bannister Basin Allotment) impacts because the excluded areas are characterized by steep slopes, not generally used by livestock) or the excluded area is a minor part of the allotment. The increased limitations on motorized access (use would be limited to 1,746 acres) would decrease the movement of livestock due to disturbance from motorized use, decreasing stress and movement due to such activities. OHV restrictions and designations would benefit the permittee in that the current OHV issues which impact the livestock operation and movements would be reduced, improving permittee/public user relationships. Where monitoring indicates livestock use is adversely affecting vegetation, reductions could affect 10% (Little Willow Allotment) or 11% (Bannister Basin Allotment) of the currently permitted use.

3.3.2.3 Alternative C – Maximum Motorized Access

Impacts from vegetation treatments would be as described in Alternative B. Moderate (Little Willow) to major (Bannister Basin) OHV-related disturbance impacts would occur annually during the spring and fall use periods. Degradation of vegetation conditions caused by OHVs would adversely affect forage availability for livestock. If reductions in the Bannister Basin Allotment are required, then 12% of the permitted use could be affected because of the larger open area.

3.3.2.4 Alternative D – Moderate Motorized Access

Impacts would be similar to Alternative B; however, disturbances from OHV use would occur over a larger area (2,791 acres).

3.3.2.5 Alternative E – No Motorized Access

Impacts would be similar to Alternative B; however, no reductions would be made for an open area and removal of OHV use from 97% of the area would have moderate benefits to livestock management.

3.3.3 Cumulative Impacts – Livestock Management

3.3.3.1 Scope of Analysis

The scope of analysis would include the areas directly fenced off and avoided in the affected allotments, and pastures, as well as adjoining allotments and pastures associated with trailing activities.

3.3.3.2 Current Conditions and Present Effects of Past, Present, and Foreseeable Future Actions

Current cumulative impacts include ongoing and past livestock grazing use, and current and future trailing AUMs which are potentially available under separate permits, in addition to the current and potential reduction in AUMs through adaptive management.

3.3.3.3 Cumulative Impacts – Alternative A

Trailing and the associated AUM consumption would have negligible additional cumulative impacts because trailing would occur outside of the permitted use period and animals would be actively trailed on maintained roads (USDI 2012).

3.3.3.4 Cumulative Impacts – Alternatives B-E

Impacts from vegetation treatments, OHV designations, and AUM adjustments would have a minor additive cumulative effect. Currently, sheep use is incidental, as they are being actively trailed or grazed through the area. Current impacts are a result of repeated trailing through the same geographic area, alternatives B-E would all require avoidance of the treatment area(s) through herding and fencing, minimizing and or eliminating future impacts to vegetation. Should monitoring reflect that current livestock grazing or trailing is detrimental or responsible for rangeland health standards not being met, then adaptive management practices including reducing AUMs, or changes in pasture specific use would be implemented.

3.4 Recreation

3.4.1 Affected Environment – Recreation

The BLM parcels in the Big Willow area are managed as part of an extensive recreation management area (ERMA). Management emphasis in an ERMA focuses primarily on visitor health and safety, avoiding user conflict, resource protection, and land health. Typically this custodial management approach is not intensive and there are no or limited recreational facilities such as trailheads, potable water, interpretive signs, or vault toilets provided. Within an ERMA there may be small zones of concentrated recreation use that warrant the need for more intensive recreation management but not to the extent necessary to designate it a Special Recreation Management Area. There are currently no developed facilities in the Big Willow area. Three information kiosks were installed on private land at strategic locations following the temporary closure in May 2011.

The BLM manages this area for a “roaded natural” classification for recreational user experiences using the Recreation Opportunity Spectrum (ROS) classification system. The “roaded natural” setting is characterized by a more natural appearing environment with moderate evidence of human activity. Interaction between users is low to moderate. Resource modification and utilization practices are evident but harmonious with the natural environment. Conventional motor vehicle use is common on paved, graveled, and unsurfaced roads. There is about an equal chance of experiencing contact with other user groups and experiencing isolation from the sights and sounds of humans exists. Opportunities for a high degree of interaction with the natural environment are common. The challenge and risk associated with more primitive types of recreation are not very important but practicing and testing outdoor skills are important for recreational users.

Current Recreational Uses – Recreation in the Big Willow Creek area tends to be focused on a few selected activities and on a seasonal basis. Traditionally recreation use during spring and early summer consisted of dispersed camping, pleasure driving in a backcountry setting, nature study, wildlife viewing, and OHV use on BLM roads and trails. Big game and upland bird hunting, dispersed camping, and scenic driving probably constituted the greatest recreation use in the fall season.

The area is very popular for big game and upland game hunting. IDFG estimates hunter days in Unit 32 (Gem and Payette Counties only) in 2011 were: 12,913 days for mule deer; 5,250 days for elk; and 40,043 days for upland birds. Camping during the fall months tends to be associated with hunting.

Winter use activities depend on weather. If sufficient snow is available some snowmobiling occurs. During milder winters, the area may be used for OHV activities. Mid-summer use tends to be less popular because of the heat and opportunities for summer recreation in cooler areas of the field office.

By far the most significant recreational activity in the Big Willow area in the last ten years has been OHV use, which occurs throughout the year, but spring and fall are the most popular use periods. The 1988 Cascade RMP limited OHV use to the roads and trails that existed at that time (42 miles; Map 2). Over the past 10 years, OHV use dramatically increased, including unauthorized cross-country travel which led to the creation of an additional 130 miles of new, unauthorized trails and 244 acres of "hill climbs" where trail impacts are so close together that individual trails are not discernible. These impacts not only occurred on BLM and State lands but most significantly on private land. This issue led to a temporary closure of the area to all motorized use in 2011.

3.4.2 Environmental Consequences - Recreation

Impacts to recreation include changes in recreational opportunities available and changes in visitors' experiences. Activities that result in degraded environmental conditions could adversely affect certain visitor experiences.

3.4.2.1 Alternative A - No Action/Resume Use of Designated Trails

Limiting off-highway vehicle users to the 42 miles of 1988 trails would eliminate more than half of the existing unauthorized trails that had been established over the past 20 years. Currently, cross country travel and hill climbing is not allowed. Enforcing the law would have a long-term effect on OHV users seeking cross country and random hill climbing opportunities. Some of those users may move to other locations, such as Little Gem Cycle Park or Clay Peak, where these activities are allowed. Some level of unauthorized use of illegal trails, cross country travel, and use on private lands would likely continue. Additional monitoring, signing, trail rehabilitation, and increased law enforcement patrols would likely curtail some of this use but not all. OHV use would likely have a moderate, short term and major, long term effect on vegetation (including Packard's milkvetch) and soils.

Other recreational activities including hunting, horseback riding, hiking, and target shooting would continue to be available over the long term with negligible effect to recreational user experiences. These uses are likely to increase as the surrounding population increases. Trash and litter associated with target shooting would also likely to continue. Illegal OHV use would degrade environmental and "natural" conditions over the short and long term. These degraded conditions would have moderate adverse effects on non-motorized users both in the short (e.g., where OHV activities disrupt hunting or equestrian use) and long term (e.g., where degraded habitat conditions reduce the diversity of wildlife present and, consequently, the wildlife viewing or hunting experiences).

3.4.2.2 Alternative B – Limited Motorized Access

The designation of a 95-acre area open for cross country and hill climbing opportunities would have a moderate short and long term effect on OHV user experiences. The staging area and open riding area would provide inexperienced riders opportunities to learn and hone their riding skills; however, the fence delineating the open area would be along a ridgeline which would reduce the hill-climbing experience and could cause a potential safety issue with rider-fence collisions. More experienced riders would have opportunities to advance their skills in the varying terrain. Providing 9.3 miles of designated trails (within 1,746 acres) would provide a variety of single track trail riding opportunities (ridgelines and drainage bottoms) for users seeking these types of experiences. This much smaller number of designated trail miles as compared to the current condition would not provide opportunities for those seeking longer, half-day or all-day riding experiences. This moderate effect would occur over both the short and long term. The closure of 5,620 acres to motorized access would have a major impact to OHV enthusiasts over the long term. Opportunities for long day rides along ridgelines and various terrains would no longer be available. These users would likely be displaced to other public land riding areas available in the region which may include longer travel time to reach these destinations.

Some level of unauthorized use of trails, cross country travel, and use on private lands would likely continue initially. However, additional monitoring, signing, trail rehabilitation, and increased law enforcement patrols would likely curtail the majority of this use.

Elimination of OHV impacts to vegetation within the 5,620-acre closure would result in a major improvement in the overall "natural" condition and protection of special status plant species over the long term. Visitors seeking a natural experience would encounter better vegetative conditions, greater scenic quality, and would not encounter motorized vehicles. These conditions would lead to a higher quality recreational experience for those seeking non-motorized opportunities. Bird watchers, horseback riders, and hunters may experience a minor (for physically fit individuals) to moderate (for physically challenged individuals) long term adverse impact from no longer having motorized access and being required to walk to reach much of the interior areas of BLM-administered land. This impact would likely be offset by the more natural setting and the lack of perceived adverse impacts from motorized activities that users would experience.

Construction of facilities (e.g., parking area, kiosk, and vault toilet) in the staging area and fencing (around the open area and vegetation exclosures) would result in a moderate

improvement in visitor experiences over the long term because these facilities did not exist previously. New facilities would also have a moderate long term effect on public health and safety by providing restroom options not previously available. Vegetation treatments could have minor short-term effects where vegetative cover is reduced; however, long-term improvements in vegetation conditions would have moderate benefits to visitor experiences.

3.4.2.3 Alternative C – Maximum Motorized Access

The designation of a 127-acre open area would have the similar effects as described in Alternative B; however, these effects would be distributed over a slightly larger area and the fence delineation of the open area would occur in a drainage where it would be more visible and the potential for rider-fence collisions would be lower than in Alternative B. Closing 1,474 acres to motorized use would have a similar effect on vegetation and non-motorized users experiences as descried in Alternative B, but on much less acres (1,474 acres compared to 5,620 acres). Construction of facilities would have the same effect on user experiences and public health and safety as described in Alternative B.

Limiting motorized use to designated roads and trails on 5,965 acres and designating 57.5 miles of trails would have a major long term effect on OHV user experiences. Those OHV users seeking longer, half-day or all-day riding opportunities would see a minor, beneficial long term effect as compared to the current condition. Designated trails would provide a variety of ridgeline and drainage, loop opportunities over a large area. Additional monitoring, signing, user education, and law enforcement patrols would be necessary to ensure compliance with new rules. Even with these measures, due to terrain features and little delineation between public and private lands away from county roads, unauthorized trail use and trespass on private lands are likely to occur. This could lead to minor short term and moderate long term, adverse effects to vegetation (including special status plants) and soils.

3.4.2.4 Alternative D – Moderate Motorized Access

The designation of a 95-acre open area would have the same effects as described in Alternative B. Closing 4,574 acres to motorized use would have a similar effect on vegetation and non-motorized users experiences as descried in Alternative B, but on about 1,000 fewer acres (4,574 acres compared to 5,620 acres). Construction of facilities would have the same effect on user experiences and public health and safety as described in Alternative B.

Limiting motorized use to designated roads and trails on 2,697 acres and designating 22.1 miles of trails would have a moderate long term effect on OHV user experiences. Those OHV users seeking longer, all-day riding opportunities would see a minor, adverse long term effect as compared to the current condition. Designated trails would provide a variety of ridgeline and drainage, loop opportunities over about one-third of BLM administered lands. Although these opportunities are available, they are in much less amount when compared to Alternative C but a greater amount than Alternative B. Additional monitoring, signing, user education, and law enforcement patrols would be necessary to ensure compliance with new rules. Even with these measures, due to terrain features and little delineation between public and private lands away from county roads, unauthorized trail use and trespass on private lands are likely to occur primarily on the eastern side of the designated trails. This could lead to minor short term and

moderate long term, adverse effects to vegetation (including special status plants) and soils on both public and private lands.

3.4.2.5 Alternative E – No Motorized Access

Closing 7,139 acres to motorized access would have a major impact to OHV enthusiasts over the long term. A large area that has been used for motorized activities would no longer be available to users. Those seeking OHV experiences would have to travel to other sites in the area (Little Gem Cycle Park or Clay Peak) or in the larger southwest Idaho region (Owyhee Front) to have similar experiences which could include longer travel time to reach these destinations.

Non-motorized recreational opportunities would continue to be available in this area. Elimination of OHV impacts to vegetation would result in a major improvement in the overall "natural" condition of the Big Willow area over the long term. Visitors seeking a natural experience would encounter better vegetative conditions, greater scenic quality, and would not encounter motorized vehicles on public lands. These conditions would lead to a higher quality recreational experience for those seeking non-motorized opportunities. Bird watchers, horseback riders, and hunters may experience a minor (for physically fit individuals) to moderate (for physically challenged individuals) long term adverse impact from no longer having motorized access and being required to walk to interior areas of BLM administered lands. This impact would likely be offset by the more natural setting and the lack of perceived adverse impacts from motorized activities.

Construction of facilities would be limited to kiosks informing the general public of rules for the Big Willow area (i.e., allowed uses verses unauthorized uses). Vegetation treatments could have minor short-term affects where vegetative cover is reduced; however, long-term improvements in vegetation conditions would have moderate benefits to visitor experiences.

3.4.3 Cumulative Impacts - Recreation

3.4.3.1 Scope of Analysis

The scope of the cumulative impacts for recreation is the desert foothills and mountain areas used for recreation within about ten miles of the Big Willow area encompassing 202,508 acres. The ownership pattern in the area is 42% BLM-administered lands (85,926 acres), 51% private lands (104,088 acres), and 6% State lands (12,493 acres). Legal public access, and the associated recreational use, to much of the BLM-administered land is somewhat restricted by adjacent private lands.

3.4.3.2 Current Conditions and Present Effects of Past, Present, and Foreseeable Future Actions

The BLM parcels in the Big Willow area are almost a small island of public land surrounded by private land. Adjacent larger blocks of BLM (upper Big Willow Creek, Little Willow, and Four Mile areas) are located to the north and northeast of Big Willow and connected by a 0.25-mile wide by 0.5-mile long parcel of BLM-administered land. These public lands are highly valued by local residents for open space values and recreational opportunities. Much of the surrounding private land is undeveloped and indistinguishable from BLM-administered land. There has been a large amount of vegetative destruction and wildlife habitat degradation directly resulting from

OHV use on private lands immediately adjacent to the BLM parcels at Big Willow. There is also some illegal shooting of protected bird species. The potential for conflicts between land management objectives and the recreating public and for increasing safety issues is likely to increase if these uses are not adequately managed. Vegetative communities on public lands are dominated by exotic annuals and fair or poor condition shrub-dominated types.

Approximately 42% (85,926 acres) of the analysis area is public lands all of which is designated as limited to OHV use. There are no developed BLM facilities in the analysis area. About 4 miles west of Big Willow is the site of the annual "Big Nasty Hill Climb" which is a two-day, competitive hill climb motorcycle event held on private land. The 2012 event had 700 competitors and several thousand spectators. Adjacent to the Big Willow area on the southeast at French Corner is Butte Lodge Hunting Preserve. This is a private membership, hunting preserve and lodge offering opportunities to hunt pheasant, quail, chukar, ducks, geese, turkey, deer, and elk.

3.4.3.3 Cumulative Impacts – Alternatives A-D

Degraded environmental and natural conditions on the BLM parcels would have a minor additive adverse impact on visitor experiences, especially for those individuals seeking activities associated with more natural or non-motorized environments such as hunting, horseback riding, bird watching, and hiking. The casual user may not recognize different plant species but would likely notice vegetation disappearing in areas or having more weed species present.

Although the Big Willow BLM-administered lands makes up only 9% of public lands in the analysis area, recreational use of those BLM-administered lands for motorized activities is disproportionately greater because most of the terrain (grass covered, rolling foothills) is conducive to cross country motorized use, especially motorcycle use. Following the temporary closure of Clay Peak Motorcycle Park, use in the Big Willow area increased dramatically. Clay Peak is now open so this area provides an area available for cross country travel and hill climbing opportunities. Currently about 60% of BLM-administered lands to the northeast of Big Willow are designated as open which means cross country travel is allowed. The remaining BLM-administered lands (40%) require motorized vehicles to stay on existing or designated trails. The Four Rivers Draft Resource Management Plan is evaluating alternatives that would shift to the majority of BLM-administered land having OHV designations of limited to existing or designated trails. The amount of designated trails in the Big Willow area (ranging from 9 miles in Alternative B to 58 miles in Alternative C) would be a relatively small amount compared to the total number of miles of roads and trails in the analysis area (500+ miles). Foreseeable changes in off-highway vehicle management in the analysis area would have a long-term, moderate adverse effect on motorized users' experiences because it will decrease both the area and types of motorized uses that may occur.

Not providing visitor facilities (staging area, information kiosk, restroom facilities) on the BLM parcels in Alternative A would have a negligible additive adverse effect on visitor experiences because there are no facilities currently available. However, this could continue to have moderate adverse impacts to adjacent private lands as motorized users are uninformed of the ownership pattern in the area and applicable regulations. Providing these facilities in

alternatives B-D would be a minor long term benefit for the immediate area but negligible over the analysis area.

3.4.3.4 Cumulative Impacts – Alternative E

Improved vegetation conditions and elimination of OHVs would be a minor additive cumulative benefit for non-motorized visitor experiences over the long term. The majority of the analysis area would continue to have degraded vegetative conditions and be accessible to motorized uses. Removing motorized use from the Big Willow area is less than 9% of public land. This would not be a major long term change to the visitor experience of those looking to escape motorized activities. Additional visitor facilities (information kiosks) would have a moderate additive benefit over the long term because this would help users understand allowable uses in the area.

Elimination of all motorized access on 7,139 acres would have long term moderate adverse effects on motorized users' experiences in the analysis area. Off-highway vehicle use could occur on the remaining public lands that would provide for similar opportunities however similar riding terrain is mostly available on surrounding private lands.

4.0 Consultation and Coordination

4.1 List of Preparers

- Larry Ridenhour – Outdoor Recreation Planner
- Tom McGinnis – Ecologist
- Mark Steiger – Botanist
- Martin Espil – Rangeland Management Specialist
- Joe Weldon – Wildlife Biologist
- Terry Humphrey – Four Rivers Field Manager
- Matt McCoy – Four Rivers Assistant Field Manager

4.2 List of Agencies, Organizations, and Individuals Consulted

U. S. Fish and Wildlife Service
Idaho Department of Lands
Surrounding private landowners
Emmett Rough Riders

Native American Consultation

BLM is required to consult with Native American tribes to "help assure (1) that federally recognized tribal governments and Native American individuals, whose traditional uses of public land might be affected by a proposed action, will have sufficient opportunity to contribute to the decision, and (2) that the decision maker will give tribal concerns proper consideration" (U.S. Department of the Interior, *BLM Manual Handbook H-8120-1*). Tribal coordination and consultation responsibilities are implemented under laws and executive orders that are specific to cultural resources which are referred to as "cultural resource authorities," and under regulations that are not specific which are termed "general authorities." Cultural resource authorities include: the *National Historic Preservation Act of 1966*, as amended (NHPA); the *Archaeological Resources Protection Act of 1979*; and the *Native American Graves Protection*

and Repatriation Act of 1990, as amended. General authorities include: the *American Indian Religious Freedom Act of 1979*; the NEPA; the FLPMA; and *Executive Order 13007-Indian Sacred Sites*. The proposed action is in compliance with the aforementioned authorities.

Southwest Idaho is the homeland of two culturally and linguistically related tribes: the Northern Shoshone and the Northern Paiute. In the latter half of the 19th century, a reservation was established at Duck Valley on the Nevada/Idaho border west of the Bruneau River. Today, the Shoshone-Paiute Tribes residing on the Duck Valley Reservation actively practice their culture and retain aboriginal rights and/or interests in this area. The Shoshone-Paiute Tribes assert aboriginal rights to their traditional homelands as their treaties with the United States, the Boise Valley Treaty of 1864 and the Bruneau Valley Treaty of 1866, which would have extinguished aboriginal title to the lands now federally administered, were never ratified.

Other tribes that have ties to southwest Idaho include the Bannock Tribe and the Nez Perce Tribe. Southeast Idaho is the homeland of the Northern Shoshone Tribe and the Bannock Tribe. In 1867 a reservation was established at Fort Hall in southeastern Idaho. The Fort Bridger Treaty of 1868 applies to BLM's relationship with the Shoshone-Bannock Tribes. The northern part of the BLM's Boise District was also inhabited by the Nez Perce Tribe. The Nez Perce signed treaties in 1855, 1863 and 1868. BLM considers off-reservation treaty-reserved fishing, hunting, gathering, and similar rights of access and resource use on the public lands for all tribes that may be affected by a proposed action.

The Shoshone-Paiute Tribes were consulted through the Wings and Roots Program, Native American Campfire on April 16, 2012. Representatives expressed support for the proposed actions and did not identify any concerns.

4.3 Public Participation

Written comments submitted in response to the scoping document were provided by the following:

Blue Ribbon Coalition
Idaho Department of Fish and Game
Idaho Department of Lands
Idaho Department of Parks and Recreation
U.S. Fish and Wildlife Service
Von Wellington
Chad Savoure
Dave Ivers
Carl Bloomquist
Matt Oxnam
Rich Krenkel
Benton Phelps
Dave McCall
Ralph Deckard
Lynn Hodges
Ronald Loman
Dan Holland
Candace P.
Matt Teichert

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6.0 Appendices

6.1 Appendix 1. Terms and conditions for the Bannister Basin, Little Willow, and Paddock Valley permits, Payette County, Idaho.

Bannister Basin (#1100011)

1) In accordance with Public Law 111-290, and extension of Public Law 111-242 Continuing Appropriations Act, 2011, this permit or lease is issued under the authority of Section 416, Public Law 111-88 and contains the same mandatory terms and conditions as the expired canceled, suspended, or modified, in whole or in part to meet the requirements of applicable laws and regulations.
2) Livestock grazing must be conducted in accordance with the terms and conditions described in the Field Manager's decision dated 02/28/01.
3) Notify the Four Rivers Field Office, immediately by telephone with written confirmation, immediately upon the discovery of human remains funerary objects, sacred objects, or objects or cultural patrimony on federal land, any ongoing activities connected with the discovery must be stop and make a reasonable effort to protect the discovered remains or objects must be made.
4) Turn-out is subject to range readiness criteria.
5) Salt and/or supplement shall not be place within in 1/4 mile of springs, streams, meadows, aspen stands, water developments or roads.
6) Range improvements must be maintained in accordance with the cooperative agreements or range improvement permits, in which you are a signatory or assignee. Allotment boundary fences must be functioning prior to allowing livestock onto the allotment. Construction, reconstruction, maintenance or other ground disturbing activities including range improvement project maintenance that could affect previously undisturbed ground or involve heavy machinery require advance written approval from the authorized officer.
7) Season of use and number of livestock are not restricted on the French Corner Allotment #25 provided overuse and deterioration does not occur to the public lands.

Little Willow (#1101188)

1) In accordance with Public Law 111-290, and extension of Public Law 111-242 Continuing Appropriations Act, 2011, this permit or lease is issued under the authority of Section 416, Public Law 111-88 and contains the same mandatory terms and conditions as the expired or transferred permit or lease. This permit or lease may be canceled, suspended, or modified, in whole or in part to meet the requirements of applicable laws and regulations.
2) Livestock grazing must be conducted in accordance with the terms and conditions described in the Field Manager's decision dated 02-28-01
3) Notify the Four Rivers Field Office, immediately by telephone with follow-up written confirmation, upon the discovery of human remains funerary objects, sacred objects, or objects of cultural patrimony on federal lands. Any ongoing activities connected with the discovery remains or objects must be made.
4) Turn-out is subject to range readiness criteria.
5) Salt and/or supplement shall not be placed within one-quarter (1/4) mile of springs, streams, meadows, aspen stands, water developments or roads.

6) Range improvements must be maintained in accordance with the cooperative agreements or range improvements permits in which you are a signatory or assignee. Allotment boundary fences must be functioning prior to allowing livestock onto the allotment. Construction, reconstruction, maintenance or other ground disturbing activities (including range improvement project maintenance) that could affect previously undisturbed ground or involve heavy machinery require advanced written approval from the authorized officer.

Paddock Valley (#1101236)

1) The allotments shown on this permit shall meet the requirements as described in 43 CFR subpart 4180 –Fundamentals of Rangeland Health and the Standards and Guidelines for Grazing Administration. Any changes in management will be based upon the resource evaluations and analysis as scheduled and completed by the area manager.
2) Grazing on public land riparian areas will be managed to attain and maintain proper functioning condition. This management will include leaving adequate perennial herbaceous and woody vegetation by the end of the growing season to protect riparian areas from erosion, maintain streambank integrity, provide for sediment catchment and allow for diversity in vegetation structure and age class.
3) Turn-out is subject to Boise District range readiness criteria.
4) Your certified actual use report is due within 15 days of completing your authorized annual grazing use.
5) Salt and/or supplement shall not be place within one quarter 1/4 mile of springs, streams, meadows, aspen stands, playas or water developments.
6) Changes to the scheduled use requires prior approval.
7) Trailing activities must be coordinated with the BLM prior to initiation. A trailing permit or similar authorization may be required prior to crossing public lands.
8) Livestock exclosures located within your grazing allotments are closed to all domestic grazing use.
9) Range improvements must be maintained in accordance with the cooperative agreements and range improvements permits in which you are a signator or assignee. All maintenance of range improvements within a wilderness study area requires prior consultation with the authorized officer.
10) All appropriate documentation regarding base property leases, lands offered for exchange-of-use, and livestock control agreements must be approved prior to turn-out. Leases of land and/or livestock must be notarized prior to submission and be in compliance with Boise District policy.
11) Failure to pay the grazing bill within 15 days of the due date specified shall result in a late fee assessment of $25.00 or 10% of the grazing bill, whichever is greater, not to exceed $250.00. Payment made later than 15 days after the due date, shall include the appropriate late fee assessment. Failure to make payment within 30 days may be a violation of 43 CFR 4140.1(b)(1) and shall result in action by the authorized officer under 43 CFR 4150.1 and 4160.1-2.

6.2 Appendix 2. Big Willow Adaptive Management Monitoring Plan

The monitoring plan is a framework for documenting and tracking treatment effects. Results inform managers as to the effectiveness of treatments and whether or not objectives are being met. It accomplishes this by: a) identifying resource objectives, b) identifying key indicators for each objective, c) establishing monitoring methods of key indicators and d) scheduling data collection and review. An annual review report will be submitted to the Field Manager in December 2013, 2014, and 2015.

Vegetation Monitoring

The objective of vegetation monitoring is to provide timely condition reports on Packard's milkvetch and its pollinator habitat (EOs plus a 400-yard buffer) in order to inform managers regarding any changes that could affect the long-term viability of the subspecies.

Packards Milkvetch EOs/suboccurrences

Monitoring objective

Provide rangewide and site-specific, long-term conservation assessment information based on monitoring: 1) Packard's milkvetch abundance and basic demographic attributes; 2) plant community composition; and 3) ground disturbance resulting from OHVs, livestock, wildlife, and fences, at permanently marked plots.

A monitoring baseline for the Packard's milkvetch suboccurrences was established by Mancuso in 2009 under contract by the USFWS. The USFWS plans to continue this monitoring. Additional monitoring of vegetation treatment areas and fences will be conducted by BLM as funding allows.

Monitoring protocol

All Packard's milkvetch EOs consist of two or more suboccurrences, representing distinct outcrops occupied by Packard's milkvetch in relatively close proximity to each other. Monitoring data collection takes place at the suboccurrence scale. Monitoring is based on the establishment of permanently marked plots and the following six sampling protocols: 1) Packard's milkvetch abundance; 2) Packard's milkvetch demography; 3) Packard's milkvetch trampling, herbivory, and disease; 4) ground disturbance; 5) plant community; and 6) photo points (Mancuso 2009).

Livestock Grazing

Monitoring objective

Ensure that utilization of native plants in the Bannister Basin (Bannister Basin Pasture), Little Willow (Bradford Field Pasture), and Paddock Valley (Pasture 1) allotments, is not beyond the thresholds established for the allotments. Ensure that livestock trampling of EOs does not occur and that utilization does not exceed 40% within the 400-yard buffer of EOs.

Monitoring protocol

In the Paddock Valley Allotment's Pasture 1, BLM staff would inspect the area within 400 yards of EOs/suboccurrences to verify that the areas had been avoided by sheep. Utilization would be

conducted using the landscape appearance and/or key species methods.

Indicators: Evidence of trampling in EOs and utilization levels.

Adaptive Management Triggers: In the Paddock Valley Allotment (Pasture 1), triggers would occur at two levels of disturbance (trampling and feces) and utilization in and adjacent to EOs/suboccurrences.

- Low occupancy (≤1% trampling and feces cover in EOs/suboccurrences) and/or light utilization (21-40%) within 400 yards of EOs/suboccurrences.
- High occupancy (>1% trampling and feces cover in EOs/suboccurrences) and/or moderate or greater utilization (>40%) within 400 yards of EOs/suboccurrences.

Associated Changes in Management: For changes in trend, the stocking rate (AUMs) would be adjusted to increase native perennial bunchgrass frequency to pre-treatment levels.

For the Paddock Valley Allotment (Pasture 1):

- First non-compliance
    - Low occupancy/light utilization - Field visits to the sites with the permittee and herders (if possible) to assess issues and effectiveness.
    - High occupancy/moderate or greater utilization - Temporary (electric or sheep netting fence) fencing of EOs/suboccurrences prior to the next use period.
- Second non-compliance
    - Low occupancy/light utilization - Temporary (electric or sheep netting fence) fencing of EOs/suboccurrences prior to the next use period.
    - High occupancy/moderate or greater utilization - Permanent exclosures and commensurate reductions in grazing AUMs.
- Third non-compliance
    - Low occupancy/light utilization - Permanent exclosures and commensurate reductions in grazing AUMs.

Schedule: Utilization/trampling monitoring would occur annually, within five days of livestock leaving the pasture(s), so that use is confined to livestock and not compounded by incidental wildlife use. Utilization would be performed as necessary within the 400-yard buffer of EOs/suboccurrences, preferably at the same time as the trampling/occupancy compliance trips; however, utilization is normally performed at the end of the growing season to estimate use of current year's growth.

Vegetation Condition

Monitoring objective

Ensure that native plant frequencies in the Bannister Basin and Little Willow (Bradford Field Pasture) allotments are maintained or in an upward trend.

Monitoring protocol

Methods: Photo points and nested frequency plots (USDI 1984) would be located in the Bannister Basin and Little Willow (Bradford Field Pasture) allotments outside of exclosures.

The ecologist and range specialist would assess trend.

Indicators: Frequency of native plant species in monitoring plots.

Adaptive Management Triggers: Trend monitoring indicates that native perennial bunchgrass frequency is significantly lower than previous reading (two-tailed paired *t*-test, $P < 0.1$).

Associated Changes in Management: For changes in trend, the stocking rate (AUMs) would be adjusted to increase native perennial bunchgrass frequency to pre-treatment levels.

Schedule: Trend plots would be sampled in 2013 and every five years, as long as exclosures are in place.

Native Perennial Grass Treatments

Monitoring objective
Ensure that native perennial grasses are restored to treatment areas within 400 yards of EOs.

Monitoring protocol
Methods: Photo points would be sampled within each Packard's milkvetch EO and inspected by the ecologist and botanist.

Indicators: Frequency of perennial grasses in monitoring plots.

Adaptive Management Trigger: Photographs indicate that native perennial bunchgrass cover is not increasing.

Associated Changes in Management: Treatments would be adjusted as per the recommendations of the ecologist, botanist, with input from the operations staff.

Schedule: Photo points would be sampled annually in the spring or early summer (before treatments are installed and for five years after the treatments are in place).

Pollinator Habitat Treatments (native flowering forbs and woody plants)

Monitoring objective
Maintain high native flowering plant diversity and cover and protect insect nesting burrow habitat from livestock trampling within 400 yards of EOs.

Monitoring protocol
Methods: Photo points would be sampled within each Packard's milkvetch EO and inspected by the ecologist and botanist.

Indicators: Frequency of native forbs and shrubs in monitoring plots.

Adaptive Management Trigger: Photographs indicate that native flowering plant diversity and

cover is not increasing from treatments and then stabilizing or increasing in subsequent years.

Associated Changes in Management: Treatments adjusted as per the recommendations of the ecologist and botanist.

Schedule: Photo points would be sampled annually in the spring or early summer (before treatments are installed and for five years after the treatments are in place).

Noxious Weed Treatments

Monitoring objective
Prevent the establishment and spread of noxious weeds within Packard's milkvetch suboccurrences and a 400-yard buffer around each.

Monitoring protocol
Methods: The areas within the 400-yard buffers would be inspected for noxious weeds and populations would be mapped with a GPS.

Indicators: Presence of noxious weeds.

Adaptive Management Trigger: Noxious weeds are discovered.

Associated Changes in Management: Noxious weeds would be treated.

Schedule: Inspections would occur annually in the spring or early summer (before treatments are installed and for five years after the treatments are in place).

Fuels Management

Monitoring objective
Ensure that fuel loads and arrangements are maintained to protect Packard's milkvetch and habitat for its pollinators from frequent fire

Methods: Photo points would be located within each Packard's milkvetch EO and inspected by BLM fuels staff.

Indicators: Fuel levels.

Adaptive Management Trigger: Photographs indicate that fuel treatments are not sufficient to protect Packard's milkvetch and habitat for its pollinators from fire.

Associated Changes in Management: Treatments would be adjusted as per the recommendations of the fuels staff, ecologist, and botanist.

Schedule: Photo points would be sampled annually in the spring or early summer (before treatments are installed and for five years after the treatments are in place).

Recreation Monitoring

The purpose of recreation monitoring is to ensure that land use plan goals and objectives for the recreation program are being met while protecting sensitive cultural and natural resources. The three purposes for monitoring are to:

- Track the implementation of actions adopted in this document.
- Determine if recreation management actions are effective.
- Identify where to continue, and where to modify management actions.

Monitoring would utilize two scales:

Long term Monitoring: Are resource conditions and user experiences in the Big Willow area improving, staying the same, or declining over time?

Short-term Monitoring: How well have specific management actions been implemented on the ground? Are they effective (e.g. does the signing program adequately serve the public's need for information, and are the signs effective in keeping people on designated trails? Are trails adequately maintained to accommodate the levels of use they are receiving?).

Off Highway Vehicle Use

Monitoring objective
Assess the effectiveness of signs, barriers, and closures in meeting their intended objectives.

Monitoring protocol
Methods: Establish photo points at key locations (e.g. trail closure points, staging area) to document current and future conditions. Patrol the area looking for non-compliance (off-trail use or closed area use) to OHV area and trail designations. Patrols would be conducted by various BLM staff (law enforcement rangers, recreation planner, range management specialist, etc.) as a primary purpose or as a secondary purpose during other work.

Indicators: Evidence of new trails, use on closed trails, cross-country use, motorized use in closed areas.

Adaptive Management Triggers: OHV triggers would be divided into three categories.
Within an EO – single incident of OHV use
Within the "Closed" area – evidence of unauthorized motorized use or a new, well used trail
Within the "Limited" area – evidence of OHV use off designated trails

Associated Changes in Management:
Within an EO – close entire Big Willow area to motorized use.
Within the "Closed" area – publicize violations to user groups and the general public and monitor the area for the next six months. If use ceases, there would be no additional action needed. If within the next six months, evidence shows continued unauthorized motorized use, then the entire Big Willow area would be closed to all motorized uses.
Within the "Limited" area – publicize the violations to user groups and the general public.

Monitor area for next six months. If use ceases, there would be no additional action needed. If within the next six months, evidence shows continued motorized use off designated trails, then patrols and monitoring would be stepped up to a higher frequency to try to identify violators and educate users. If the off-trail use continues, then the entire Big Willow area would be closed to all motorized uses.

Schedule: Initially – weekly for two months, then minimum of twice monthly for six months. After eight months, a minimum of quarterly site visits, using a combination of BLM and volunteer labor. Photo points would be taken annually.

Trail Conditions

Monitoring Objective
To assess condition of designated trails and rehabilitated trails to determine maintenance needs or repairs

Monitoring protocol
Methods: Establish photo points at key location to show current trail conditions. On the ground examination of trails will also be used to detect washouts, drainage problems, or increased erosion.

Indicators: Trail conditions (e.g. trail widening, rutting, erosion).

Adaptive Management Triggers: Evidence of trails getting wider, deep ruts, severe trail cupping .

Associated Changes in Management: Rebuild trail to sustainable condition. If a trail is found not to be sustainable (i.e. poorly located), then the trail or trail segments would be rerouted to a better, more sustainable location.

Frequency: For the first year, conducted as part of OHV monitoring, then yearly, using a combination of BLM and volunteer labor.

General Recreation Use

Monitoring objective
To obtain baseline information on the type, frequency, and seasonality of general recreation use taking place in the Big Willow area to establish recreation use levels, determine recreation use trends, and identify user conflicts and/or safety issues.

Monitoring protocol
Methods: Traffic counters and direct observation would be used during spring, fall, and winter weekends at staging area and on trails.

Indicators: Date and time of visit, type of recreational activity, and number of visitors using the area for recreational purposes.

Adaptive Management Triggers: Increase in the number of documented user conflicts or safety issues.

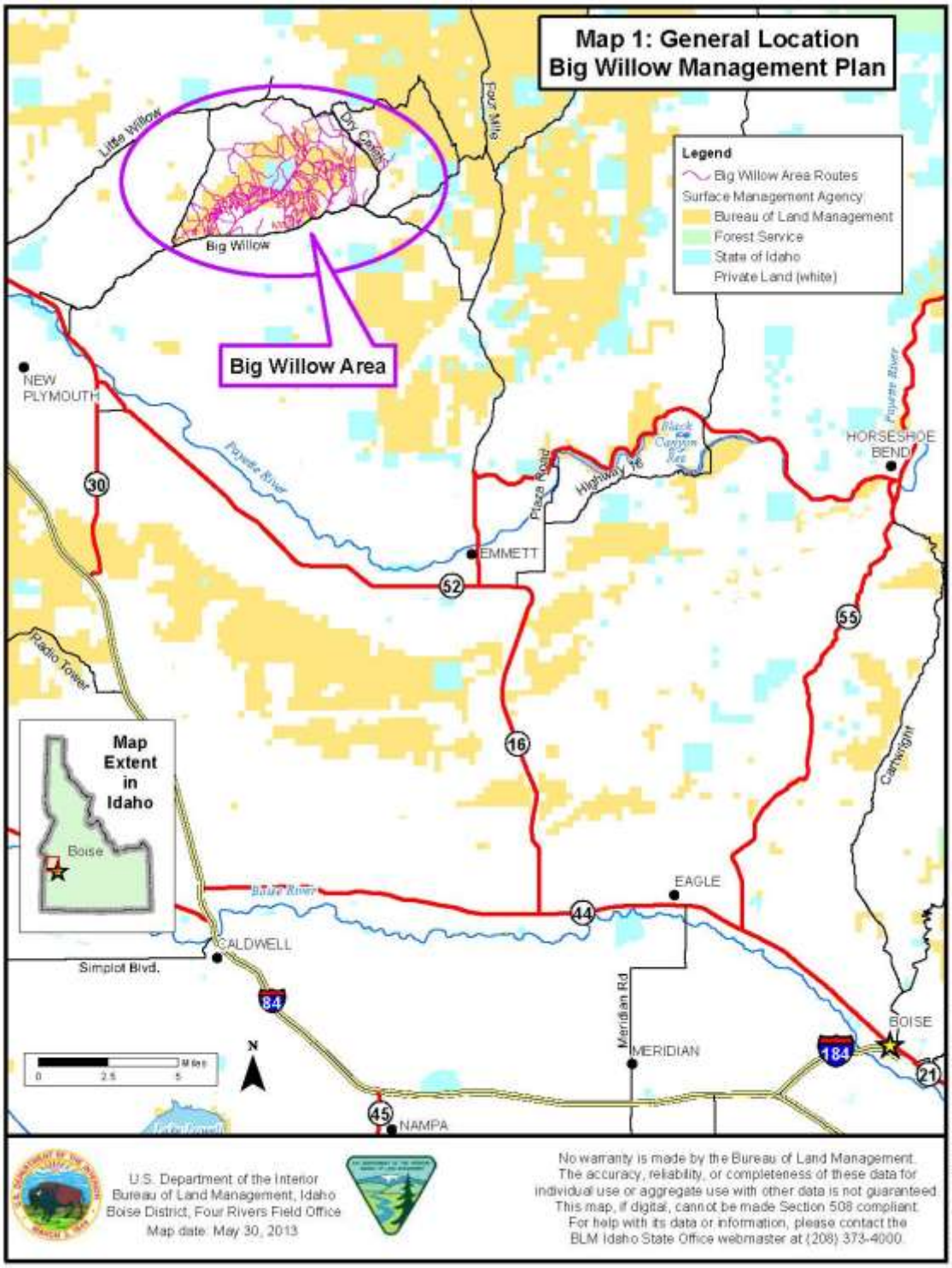
Associated Change in Management: Increase educational efforts, working closely with recreation user groups, and promote other options for recreational opportunities in the general vicinity.

Frequency: Three weekends each season (winter, spring, fall).

6.3 Appendix 3. Terms and conditions common to the Bannister Basin, Little Willow, and Paddock Valley permits, Payette County, Idaho.

1. Livestock grazing must be conducted in accordance with the Terms and Conditions described in the Final Decision dated _____.
2. Livestock turn-out is subject to District Range Readiness Criteria
3. Changes to the scheduled use require prior approval by the authorized officer.
4. You are required to submit a signed and dated Actual Grazing Use Report Form (BLM Form 4130-5) for each allotment you graze. The completed form(s) must be submitted to this office within 15 days from the last day of your authorized grazing use period.
5. Supplemental feeding is limited to salt, mineral, and/or protein, in block, granular, or liquid form. If used, supplements must be placed at least one quarter (1/4) mile away from any riparian area, springs, streams, meadow, aspen stand, playa, special status plant populations, or water development.
6. A crossing permit may be required prior to trailing livestock across public lands. Crossing activities must be coordinated with the BLM prior to initiation. Permittee would also notify any/all affected permittees in advance of crossing.
7. Livestock exclosures located within your grazing allotment(s) are closed to all domestic grazing use.
8. Range improvements must be maintained in accordance with the cooperative agreement and range improvement permits in which you are a signatory or assignee. All maintenance activities which may result in ground disturbance require prior approval from the authorized officer.
9. Bird ladders that meet BLM standards must be installed and functioning on water troughs located on public lands. Permittee would inform BLM if bird ladders are needed on permanent troughs, and BLM would supply bird ladders. The permittee would be responsible for providing bird ladders for temporary troughs. It is the permittee's responsibility to maintain and install all bird ladders.
10. Pursuant to 43 CFR 10.4(b), you must notify the BLM authorized officer, by telephone with written confirmation, immediately upon the discovery of human remains, funerary objects, sacred objects, or objects of cultural patrimony on federal lands. Pursuant to 43 CFR 10.4(c), you must immediately stop any ongoing activities connected with such discovery and make a reasonable effort to protect the discovered remains or objects.
11. Permittees or lessees shall provide reasonable administrative access across private and leased lands to the BLM for the orderly management and protection of the public lands.

7.0 Maps


Map 1: General Location
Big Willow Management Plan
Legend
Big Willow Area Routes
Surface Management Agency
Bureau of Land Management
Forest Service
State of Idaho
Private Land (white)
Big Willow Area
Little Willow
Dry Gulch
Four Mile
Big Willow
NEW PLYMOUTH
Payette River
HORSESHOE BEND
Payette River
Plaza Road
Highway 16
EMMETT
30
52
55
16
Radio Tower
Map Extent in Idaho
Boise
Boise River
EAGLE
44
CALDWELL
Simplot Blvd.
84
Meridian Rd
MERIDIAN
BOISE
184
21
45
NAMPA
N
0
2.5
5
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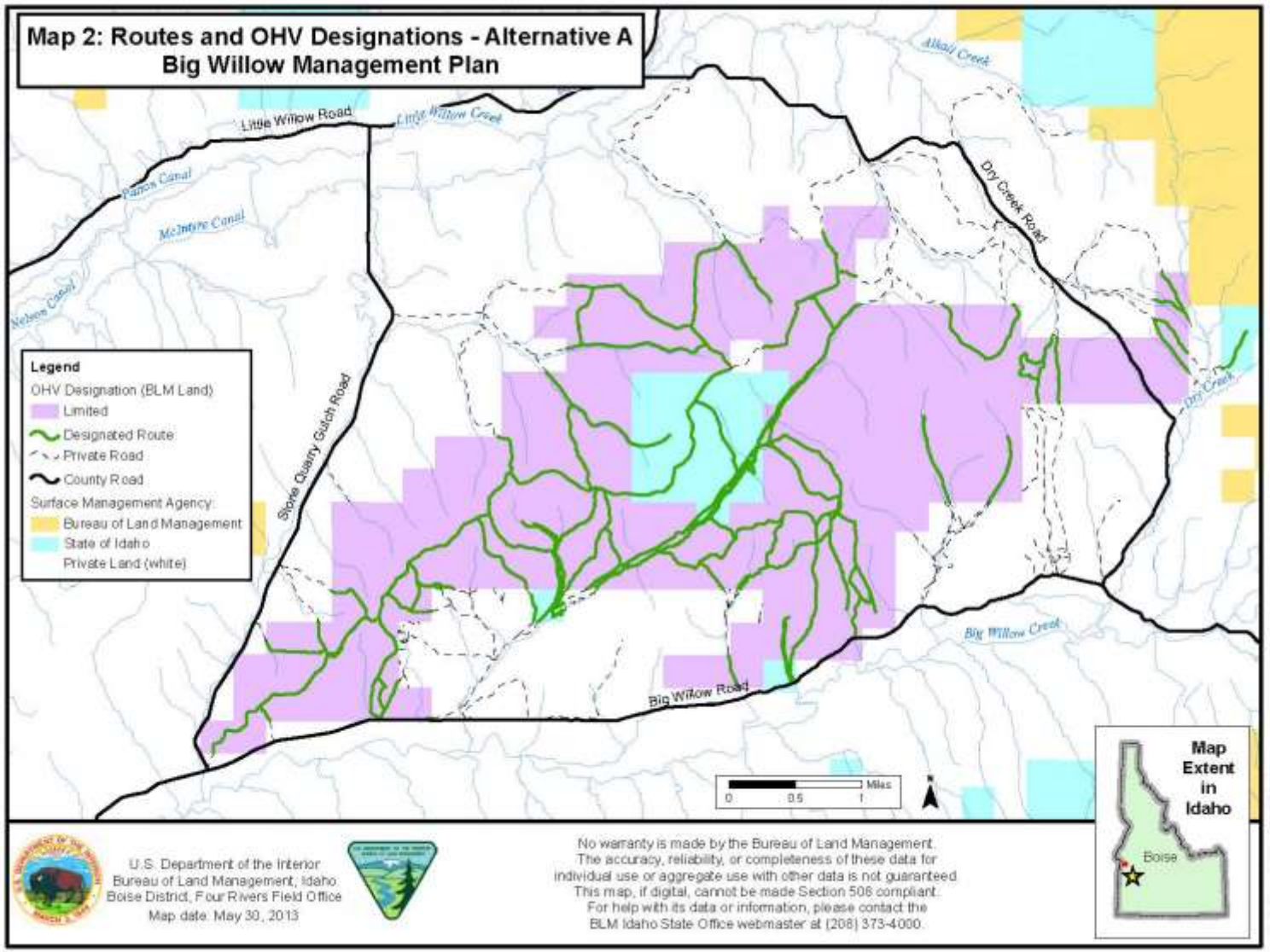
Map 2: Routes and OHV Designations - Alternative A
Big Willow Management Plan
Little Willow Road
Little Willow Creek
Alkali Creek
Dry Creek Road
Dry Creek
Panca Canal
McIntire Canal
Nelson Canal
Stone Quarry Gulch Road
Big Willow Creek
Big Willow Road
Legend
OHV Designation (BLM Land)
Limited
Designated Route
Private Road
County Road
Surface Management Agency
Bureau of Land Management
State of Idaho
Private Land (white)
Miles
0
0.5
1
Map Extent in Idaho
Boise
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Bureau of Land Management, Idaho
Boise District, Four Rivers Field Office
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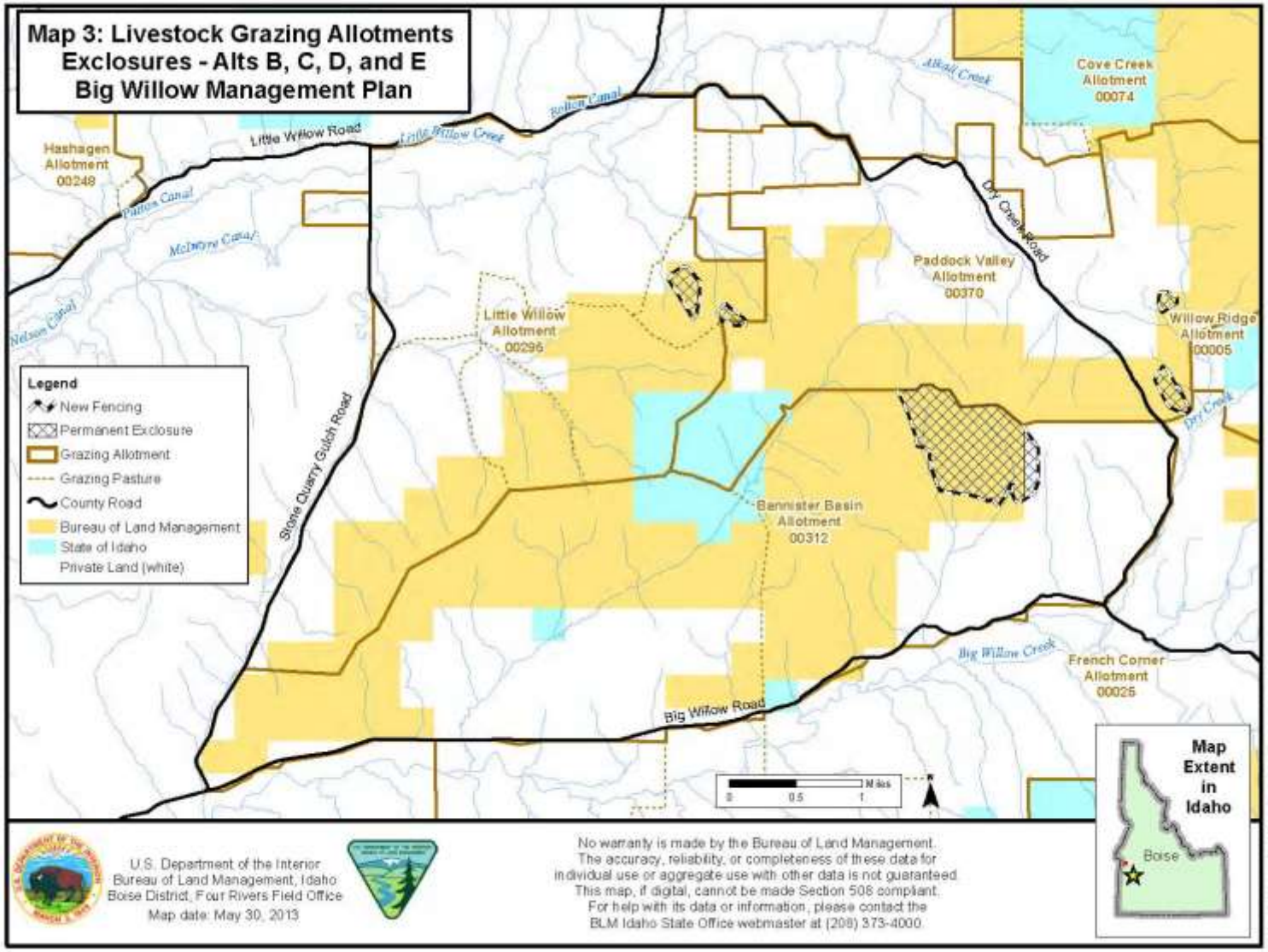
Map 3: Livestock Grazing Allotments
Exclosures - Alts B, C, D, and E
Big Willow Management Plan
Hashagen Allotment 00248
Little Willow Road
Little Willow Creek
Patton Canal
McIntyre Canal
Nelson Canal
Rellim Canal
Alkali Creek
Cove Creek Allotment 00074
Dry Creek Road
Paddock Valley Allotment 00370
Willow Ridge Allotment 00005
Dry Creek
Little Willow Allotment 00296
Stone Quarry Gulch Road
Bannister Basin Allotment 00312
Big Willow Creek
French Corner Allotment 00025
Big Willow Road
Legend
New Fencing
Permanent Exclosure
Grazing Allotment
Grazing Pasture
County Road
Bureau of Land Management
State of Idaho
Private Land (white)
Miles
0
0.5
1
N
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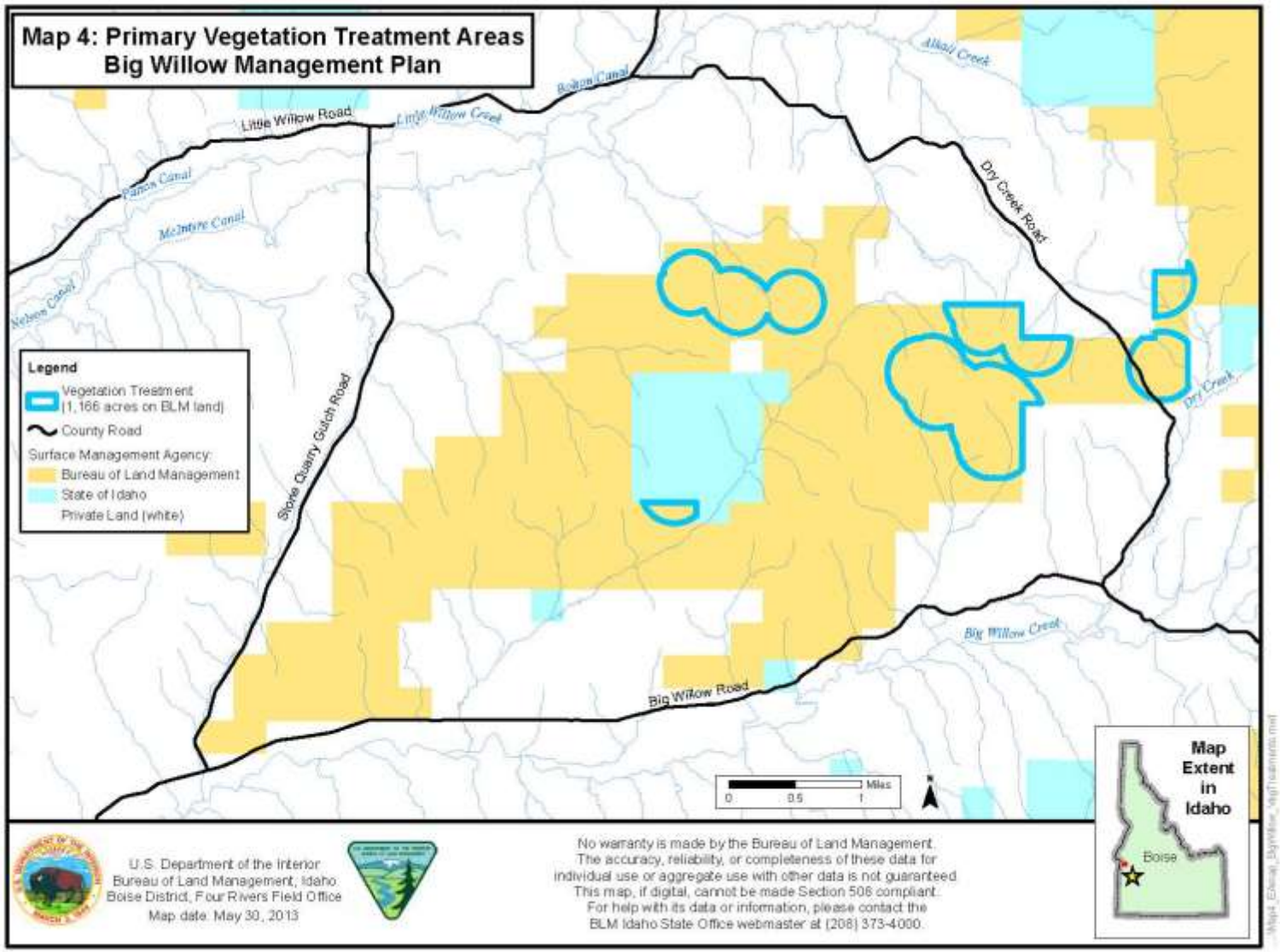
Map 4: Primary Vegetation Treatment Areas
Big Willow Management Plan
Little Willow Road
Little Willow Creek
Boise Canal
Alkali Creek
Dry Creek Road
Dry Creek
Ponca Canal
McIntire Canal
Nelson Canal
Stone Quarry Gulch Road
Big Willow Creek
Big Willow Road
Legend
Vegetation Treatment (1,166 acres on BLM land)
County Road
Surface Management Agency:
Bureau of Land Management
State of Idaho
Private Land (white)
Miles
0
0.5
1
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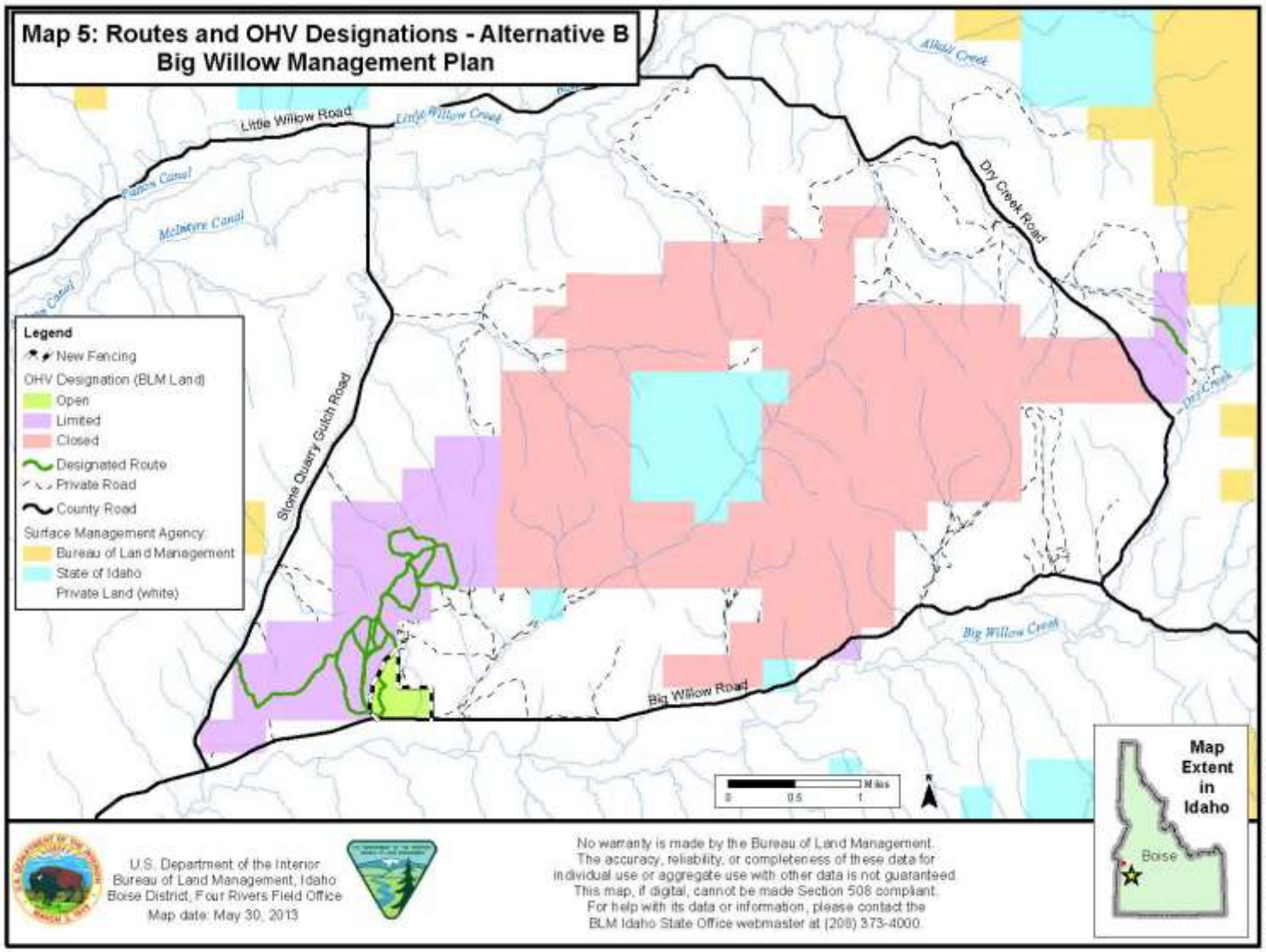
Map 5: Routes and OHV Designations - Alternative B
Big Willow Management Plan
Little Willow Road
Little Willow Creek
Alkali Creek
Dry Creek Road
Palmer Canal
McMurre Canal
Stone Quarry Gulch Road
Dry Creek
Big Willow Creek
Big Willow Road
Legend
New Fencing
OHV Designation (BLM Land)
Open
Limited
Closed
Designated Route
Private Road
County Road
Surface Management Agency
Bureau of Land Management
State of Idaho
Private Land (white)
Miles
0
0.5
1
N
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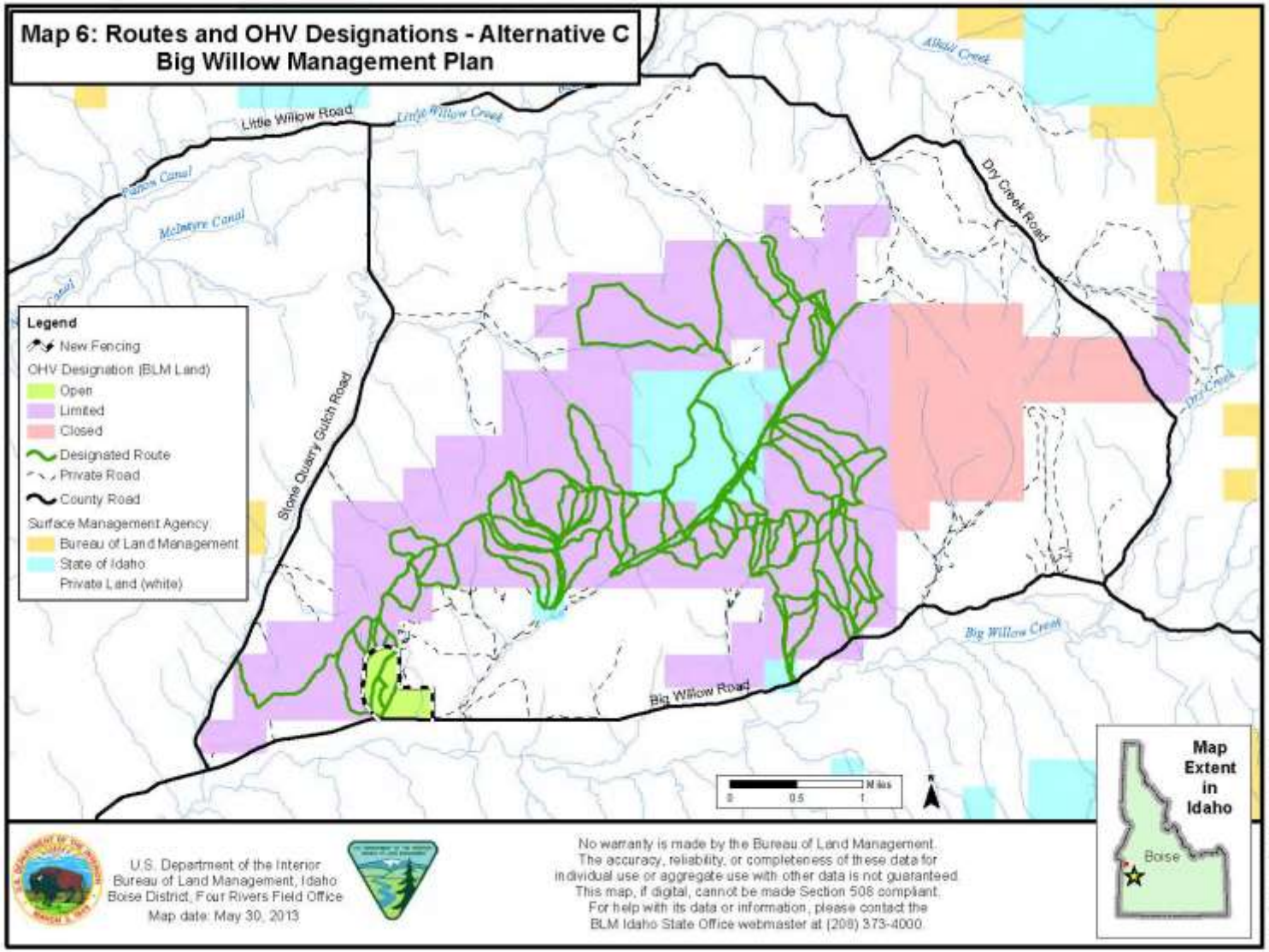
Map 6: Routes and OHV Designations - Alternative C
Big Willow Management Plan
Little Willow Road
Little Willow Creek
Alkali Creek
Dry Creek Road
Dry Creek
Stone Quarry Gulch Road
Big Willow Road
Big Willow Creek
Legend
New Fencing
OHV Designation (BLM Land)
Open
Limited
Closed
Designated Route
Private Road
County Road
Surface Management Agency
Bureau of Land Management
State of Idaho
Private Land (white)
Miles
0
0.5
1
N
Map Extent in Idaho
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Bureau of Land Management, Idaho
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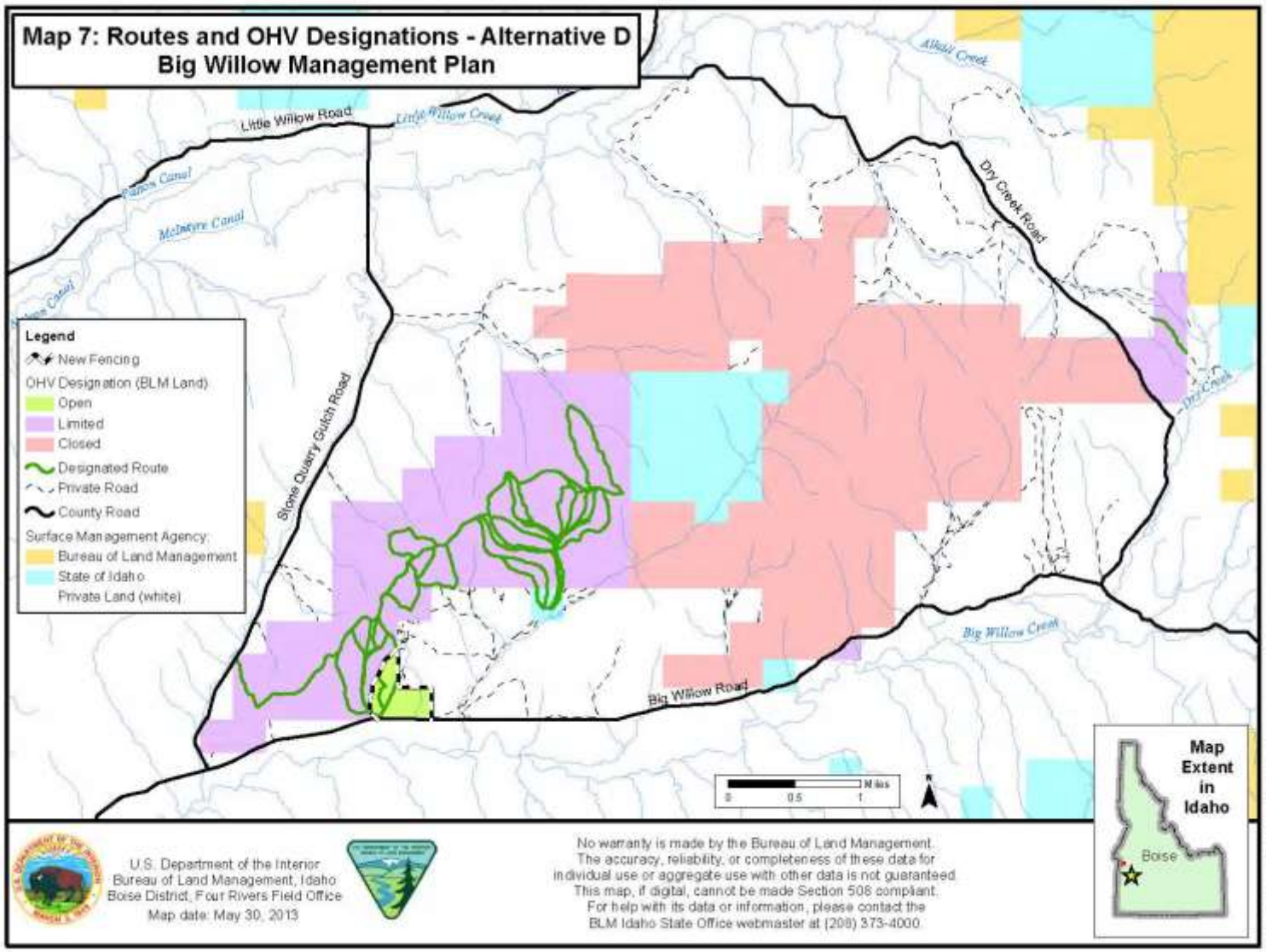
Map 7: Routes and OHV Designations - Alternative D
Big Willow Management Plan
Little Willow Road
Little Willow Creek
Alkali Creek
Dry Creek Road
Palmer Canal
McMoore Canal
Stone Quarry Gulch Road
Dry Creek
Big Willow Creek
Big Willow Road
Legend
New Fencing
OHV Designation (BLM Land)
Open
Limited
Closed
Designated Route
Private Road
County Road
Surface Management Agency:
Bureau of Land Management
State of Idaho
Private Land (white)
Miles
0
0.5
1
N
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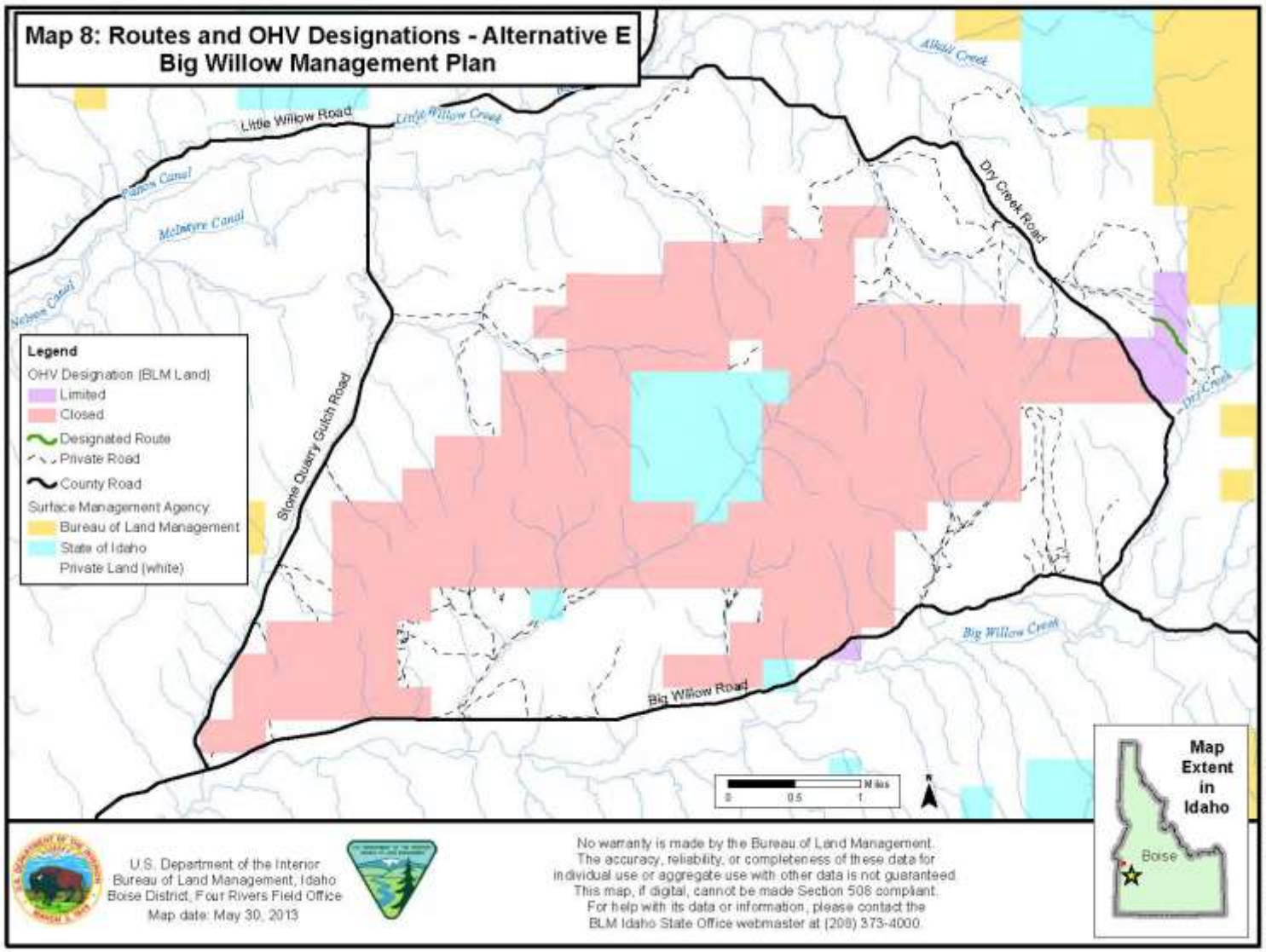
Map 8: Routes and OHV Designations - Alternative E
Big Willow Management Plan
Little Willow Road
Little Willow Creek
Alkali Creek
Dry Creek Road
Dry Creek
Palisis Canal
McMore Canal
Nelson Canal
Stone Quarry Gulch Road
Big Willow Creek
Big Willow Road
Legend
OHV Designation (BLM Land)
Limited
Closed
Designated Route
Private Road
County Road
Surface Management Agency
Bureau of Land Management
State of Idaho
Private Land (white)
Miles
0
0.5
1
N
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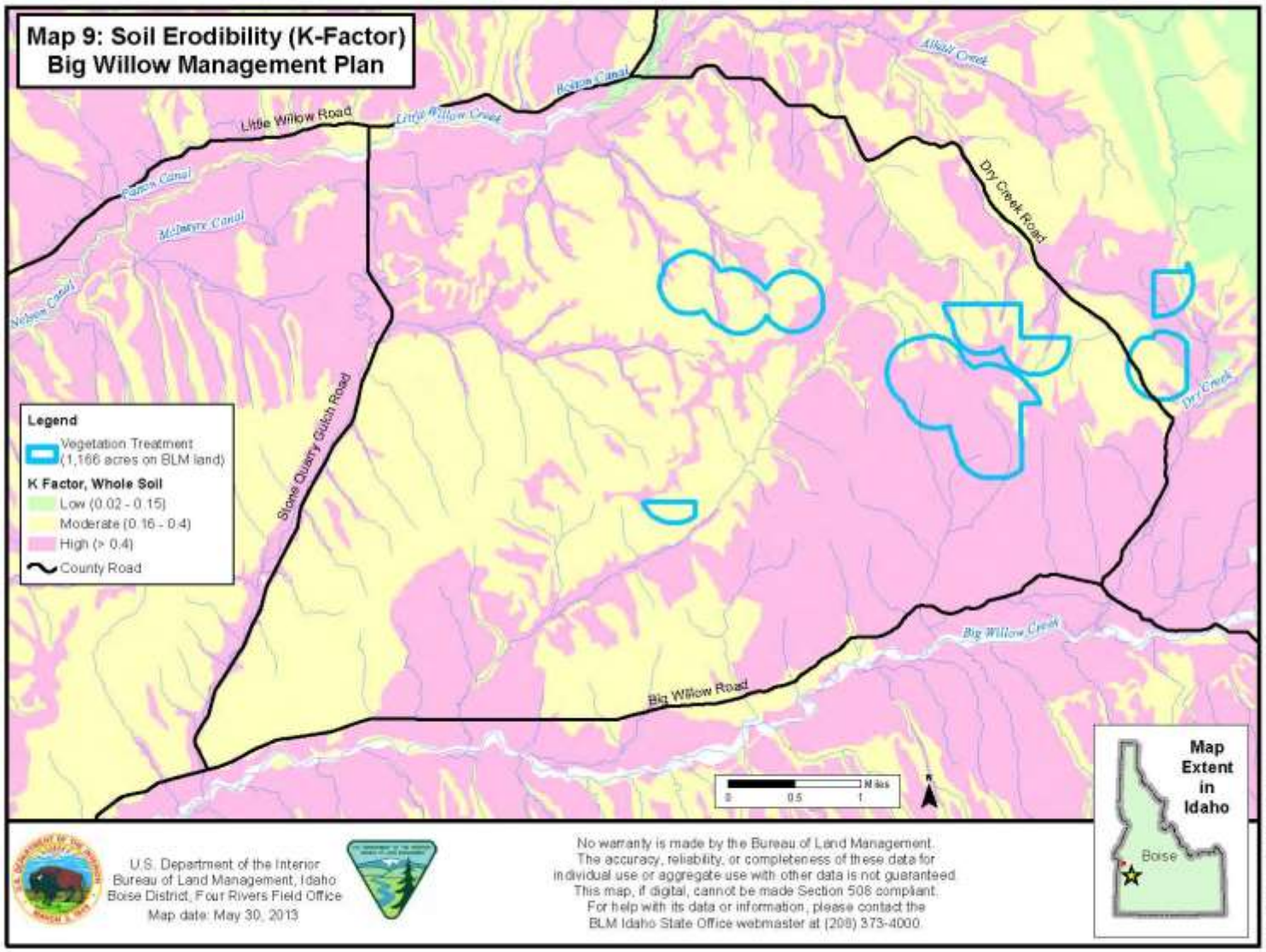
Map 9: Soil Erodibility (K-Factor)
Big Willow Management Plan
Little Willow Road
Little Willow Creek
Boise Canal
Alkali Creek
Dry Creek Road
Ramon Canal
McIntyre Canal
Nelson Canal
Stone Quarry Gulch Road
Dry Creek
Big Willow Creek
Big Willow Road
Legend
Vegetation Treatment (1,166 acres on BLM land)
K Factor, Whole Soil
Low (0.02 - 0.15)
Moderate (0.16 - 0.4)
High (> 0.4)
County Road
Miles
0
0.5
1
N
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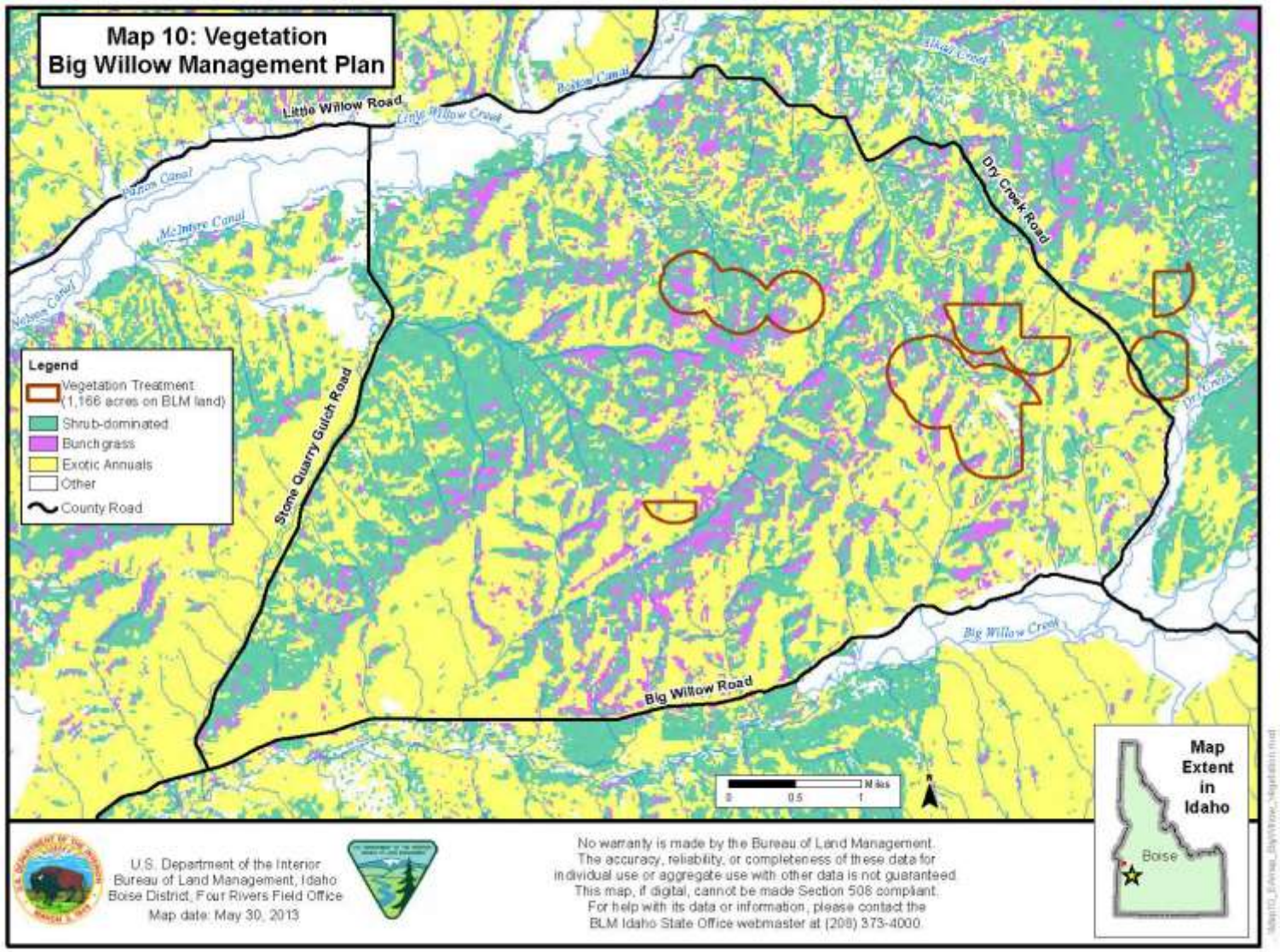
Map 10: Vegetation
Big Willow Management Plan
Little Willow Road
Little Willow Creek
Boise Canal
Patton Canal
McIntyre Canal
Nelson Canal
Stone Quarry Gulch Road
Dry Creek Road
Big Willow Creek
Big Willow Road
Legend
Vegetation Treatment (1,166 acres on BLM land)
Shrub-dominated
Bunchgrass
Exotic Annuals
Other
County Road
Miles
0
0.5
1
N
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