

4.18. VEGETATION

Vegetation resources across the VPA would be affected by the management decisions of several resources. Direct adverse effects would primarily occur in the form of surface disturbance associated with development activities, vegetation manipulation treatments, and forage utilization. Oil and gas exploration and development requires the construction of roads, pipelines, wells, well pads, and compressors. Construction of recreation facilities, such as campgrounds and trails, and off-road vehicle travel would also disturb vegetated areas. Forage use by livestock, wildlife, and wild horses affect plant productivity and plant community structure and composition, having both beneficial and adverse impacts. Vegetation manipulation treatments and range improvement projects result in both beneficial effects in the long-term and adverse effects in the short-term due to surface disturbance. These activities alter plant communities and could eventually change the community's successional trajectory. Indirect impacts to vegetation associated with surface disturbance activities would also occur through processes such as soil loss and compaction, and noxious weed invasions. Indirect effects would also be beneficial through special designations such as ACECs.

This section describes the programmatic-level analysis of the potential effects to vegetation resources of the VPA as a result of land management decisions. Short-term direct and indirect impacts include acreage of surface disturbance, when possible, while long-term direct and indirect effects depend on the potential for a site to be revegetated or improved following surface disturbance.

4.18.1. IMPACTS COMMON TO ALL

The Utah BLM Standards for Rangeland Health would apply under the Proposed RMP and all of the alternatives. Summarized in Chapter 2, these management objective guidelines would ensure good site productivity, properly functioning riparian and wetland areas, vegetation communities composed of desired species, including native, and special status species when applicable, and compliance with state and federal water quality standards. Site-specific monitoring and evaluation strategies would be implemented to measure the success of following the Standards for Rangeland Health. Approved activities that would result in short-term adverse impacts contrary to these objectives would require rehabilitation and reclamation.

In addition to the Utah BLM Standards for Rangeland Health, vegetation would benefit from specific management guidelines, constraints or stipulations on use (see Chapter 2). Considerations would include monitoring to ensure compliance with permit conditions of approval and successful site reclamation. Proper livestock grazing timing and intensity would maintain or improve rangeland health. Special considerations during periods of drought would be made regarding livestock, wildlife, wild horses, recreation, and OHV use.

All management prescriptions would consider climatic conditions relative to an activity's effect on long-term rangeland productivity. The effect of management activities combined with wildland fire, drought, and natural disasters would also be considered. Resource degradation

would be minimized through adaptive-management actions such as temporary livestock reductions or recreation limitations, as necessary.

Several resources incorporate management goals and objectives and resource-specific actions common to the Proposed RMP and all alternatives that would beneficially affect the vegetation resource by either reducing surface disturbance, rehabilitating or restoring areas following surface disturbance, or protecting areas from consumptive use, thereby minimizing impacts to vegetation. These resources consist of cultural, fire management, forage, lands and realty, livestock and grazing, riparian, soil and watershed, wilderness, ACEC and Wild and Scenic Rivers special designations, special status species, visuals, wildlife, and woodlands and forests. Actions common to all are summarized by resource in Chapter 2.

The Proposed RMP and all of the alternatives allow for utilization increases in the event that rangeland health was being sustained or significant progress was being made towards rangeland health improvements. This increase in grazing would potentially cause adverse impacts to vegetation if not carefully managed and monitored. Impacts related to forage utilization are further analyzed in Section 4.8, Livestock and Grazing.

Land withdrawals would benefit vegetation in both the short- and long-term by reducing the potential for surface disturbance by mineral extraction activities. The Proposed RMP and Alternatives A and B would pursue locatable mineral withdrawal in the Book Cliffs Natural Area (401 acres), Green River Scenic Corridor in Browns Park (8,208 acres), relict vegetation areas in Lears Canyon (1,375 acres), the White River (9,218 acres), and developed and potential recreation sites (5,000 acres), for a total of 24,202 acres. Alternatives C and E would pursue locatable mineral withdrawal in all of the aforementioned locations (except developed and potential recreation sites) in addition to the Lower Green River ACEC for a total of 36,265 acres. Alternative D (No Action) would pursue mineral withdrawals in the above areas, but with different acreages designated for withdrawal in some cases: in Browns Park (19,400 acres), Lears Canyon (3,600 acres), the Lower Green River ACEC (7,900 acres), and developed and potential recreation sites (5,000 acres). A total of approximately 35,900 acres of mineral withdrawals would be pursued under Alternative D (No Action).

Special Designations that are currently managed would be maintained under the Proposed RMP and all alternatives. These include ACEC designation in Browns Park, Lears Canyon, Nine Mile Canyon, Red Mountain - Dry Fork, Pariette Wetlands, and Red Creek. These areas are also discussed under alternative impacts along with other impacts of special designations (Wild and Scenic Rivers, WSAs) on vegetation.

The Proposed RMP and all of the alternatives would allow harvesting of forest and woodland products. Impacts common to the Proposed RMP and all of the alternatives would include the long-term beneficial impacts that would result from the reduction of excessive fuel loads within the treated areas, which would reduce the potential for catastrophic, stand-destroying wildland fire; allow public use of woodland products; make improvements to woodland habitat; and make improvements in woodland productivity by restoring woodland and forest health. Prescribed fire or other treatments that would reduce the number of diseased and/or insect-infested trees in the resource area would also have long-term beneficial impacts to woodland health.

The Proposed RMP and all of the alternatives would restore or rehabilitate up to 200,000 acres of sagebrush-steppe habitat over the life of the plan. These vegetation treatments would consider the Western Association of Fish and Wildlife Agencies (WAFWA) Guidelines for Management of Sage Grouse Populations and Habitats and State and Local Conservation Plans. These Sage-grouse habitat protection measures would directly benefit vegetation by curtailing surface disturbance and increasing the acreage of stable sagebrush-steppe habitat.

Any decisions involving spatial and seasonal buffers for raptor protection would generally benefit any surrounding vegetation. Long-term benefits to vegetation would occur, as nesting sites would be protected from surface disturbance associated with oil and gas leasing activities. Impacts due to paleontological and cultural decisions would not be different under the alternatives and the Proposed RMP and are discussed under management common to all in Chapter 2.

4.18.2. PROPOSED RMP AND ALTERNATIVE IMPACTS

Management decisions that would affect vegetation are discussed below for the Proposed RMP and each alternative.

4.18.2.1. IMPACTS OF FIRE MANAGEMENT DECISIONS ON VEGETATION RESOURCES

4.18.2.1.1. PROPOSED RMP AND ALTERNATIVES A, B, C AND E

All prescribed fire activities are preceded by a burn plan. The Proposed RMP and Alternatives A, B, C and E would allow for 156,425 acres of prescribed fire per decade in the VPA. Target vegetation communities include pinyon-juniper, oak, aspen, and conifer. Prescription fires would reduce plant material initially, resulting in an adverse, short-term impact on vegetation. There would be an increased risk of noxious weed and invasive species establishment on fire-exposed and disturbed ground surfaces. However, as vegetation recovers and plant communities return to a natural fire regime, long-term, beneficial effects on the vegetation resource would occur, except where invasive annuals such as cheatgrass have invaded and become established. Plant communities could return to a more native mix of species. In some situations, seeding may be required in conjunction with prescribed fire to help prevent the establishment of non-native, invasive, and noxious species. The reduction in hazardous fuels from the use of prescribed fire would also benefit vegetation in the long-term by reducing the risks of wildland fire. These beneficial impacts would be greater than those that would occur under Alternative D (No Action) because these action alternatives and the Proposed RMP would propose more acreage for prescribed fire treatments than Alternative D (No Action).

4.18.2.1.2. ALTERNATIVE D (NO ACTION)

Alternative D (No Action) would allow up to 27,950 acres of prescribed burn treatments in the Book Cliffs RMP area and 22,950 acres of treatments, including prescribed burns, in the Diamond Mountain RMP area. As under the other alternatives and the Proposed RMP, direct impacts on vegetation would be adverse immediately following treatment, but long-term impacts

would be beneficial. However, the smaller amount of prescribed fire allowed under this alternative would produce less short-term adverse effects and less beneficial long-term effects than would the other alternatives or the Proposed RMP.

Impacts to vegetation would also occur with fire suppression activities (e.g., surface disturbance caused by heavy equipment, the digging of fire lines, etc.). Invasive species could spread to these disturbed areas, resulting in adverse impacts to vegetation community composition.

4.18.2.2. IMPACTS OF FORAGE DECISIONS ON VEGETATION RESOURCES

Forage utilization decisions would directly impact vegetation in both the short- and the long-term. Short-term direct adverse impacts include loss of vegetative cover and biomass, and trampling, while long-term adverse impacts would include reductions in plant productivity and regenerative ability, and increases in noxious weeds. The severity of adverse impacts also depends on grazing management (i.e., season of use) and climatic conditions (see Section 4.8 Livestock and Grazing). As explained in Chapter 2, the BLM Standards for Rangeland Health and Guidelines for Grazing Management would apply to forage utilization decisions.

4.18.2.2.1. PROPOSED RMP AND ALTERNATIVES A, B, C AND E

Though forage utilization would generally lead to short- and long-term adverse impacts to vegetation as described above, under the Proposed RMP and Alternatives A, B, C and E season of use changes, reduced livestock use, and improved livestock management strategies would all lead to improved vegetation conditions compared to Alternative D (No Action). Areas already meeting standards for rangeland health would be maintained; no other impacts would be present or no other improvements would be needed.

The Proposed RMP and each action alternative would allow for reductions in AUMs in the event that rangeland conditions are not being sustained or improved. This adaptive management strategy would generally benefit vegetation in the long-term compared to Alternative D (No Action) by allowing it to recover from grazing pressure. The Proposed RMP and Alternatives A, B, C and E would reduce utilization only after all other viable management options were considered, such as timing of use.

The Proposed RMP and Alternatives A, B, C and E would limit percent forage utilization on uplands—under the Proposed RMP and Alternatives A, C and E forage utilization would be limited to 50%, while under Alternative B forage utilization would be limited to 60%—and would, therefore, result in less adverse impacts to vegetation as compared to Alternative D (No Action), which would not limit percent forage utilization (Table 4.18.1).

Table 4.18.1. Forage Utilization and AUM Allocations for the Proposed RMP and each Alternative

Alternative / Proposed RMP	Forage Utilization Limit (%)	AUM Allocations		
		Livestock	Wildlife	Wild Horses
Proposed RMP	50	138,402	104,865	2,340
A	50	137,838	104,871	2,940
B	60	139,163	104,871	0
C	50	77,294	106,196	3,960
D	NA	146,161	96,607	3,360
E	50	77,294	106,196	3,960

¹AUM Allocations for wild horses under the Proposed RMP would be temporary, until wild horses have been gathered and removed.

4.18.2.2.2. ALTERNATIVE D (NO ACTION)

In addition to the AUM allocations shown in Table 4.18.1, Alternative D (No Action) also includes the following allocations. The Book Cliffs RMP allocates 1,123 AUMs for antelope in the Bonanza-Rainbow area. These AUMs are split among the Bonanza Wild Horse Herd area, which includes 239 AUMs inside the area and 502 outside the area. Some allotments have shown an upward trend in forage availability and changes made to other allotments would result in an upward trend under Alternative D (No Action).

As mentioned above, each action alternative and the Proposed RMP would allow for reductions in AUMs in the event that rangeland conditions are not being sustained or improved. This adaptive management strategy would generally benefit vegetation in the long-term by allowing it to recover from grazing pressure. Alternative D (No Action) does not specify a utilization reduction, which would potentially result in greater impacts to vegetation than the action alternatives and the Proposed RMP. Rangeland health complications such as noxious weed infestations could result from the inability to limit forage use. This would have indirect, adverse impacts on vegetation as noxious weeds would outcompete native vegetation for space and resources.

4.18.2.3. IMPACTS OF LANDS AND REALTY DECISIONS ON VEGETATION RESOURCES

4.18.2.3.1. PROPOSED RMP AND ALTERNATIVES A, B, AND C

Decisions regarding land acquisitions to improve access would potentially increase impacts to vegetation in some areas, while reducing potential impacts in other areas. The Proposed RMP and Alternatives A and C could result in impacts to vegetation along the White River near the mouth of Cowboy Canyon if access was acquired, resulting in more adverse impacts than under Alternative D (No Action). Adverse impacts from damage to vegetation and from the establishment of noxious weeds could occur through the subsequent increase in traffic through

this area. This activity would not occur under Alternative B and it is not specified under Alternative D (No Action).

Acquisition of lands in Bitter Creek and near the confluence of South and Sweetwater Canyons would occur under the Proposed RMP and Alternatives A and C, with potentially adverse impacts to vegetation in these areas. Under Alternative B administrative access only would be pursued in these areas. These activities are not specified under Alternative D (No Action), so the potential for adverse impacts from these management actions would be less than those under the Proposed RMP and Alternatives A, B, and C.

Decisions regarding locatable mineral withdrawal or other protective measures that would preclude mineral entry would have beneficial impacts on vegetation by reducing the acreage of surface disturbance that would result from mineral withdrawal activities. A total of 24,202 acres would be withdrawn from mineral entry or subject to other protective measures under the Proposed RMP and Alternatives A and B. This is approximately two-thirds (67%) as much as would be withdrawn or subject to other protective measures under Alternative D (No Action) (35,900 acres upon which mineral and agricultural entry would be precluded). The Proposed RMP and Alternatives A and B, therefore, would be less beneficial to vegetation because these alternatives and the Proposed RMP would protect less acreage from mineral withdrawal activities than Alternative D (No Action). Under Alternative C a total of 36,265 acres would be withdrawn from mineral entry or subject to other protective measures. This is about 365 more acres subject to these measures than under Alternative D (No Action). Alternative C, therefore, would be more beneficial to vegetation because this alternative would protect more acreage from mineral withdrawal activities than Alternative D (No Action).

4.18.2.3.2. ALTERNATIVE D (NO ACTION)

Under Alternative D (No Action) management decisions related to land access are unspecified. However, locatable mineral withdrawal or other protective measures that would preclude mineral and agricultural entry would occur on a total of approximately 35,900 acres. The preclusion of mineral and agricultural entry on this acreage would decrease the potential for adverse impacts to vegetation in these acres, as compared to the Proposed RMP and the action alternatives.

4.18.2.3.3. ALTERNATIVE E

The impacts of lands and realty decisions on vegetation would be similar to those discussed above for Alternative C because the decisions are similar, except that approximately 277,597 acres of non-WSA lands with wilderness characteristics within the VPA would be managed as ROW exclusion areas. The management decisions for these areas, in order to protect their wilderness values, would have long-term, beneficial impacts on vegetation resources because surface disturbance impacts would be restricted. Compared to Alternative D (No Action), this alternative would have more beneficial impacts on vegetation resources because more protection would be afforded vegetation, reducing the potential for invasive species establishment and maintaining vegetation communities.

4.18.2.4. IMPACTS OF LIVESTOCK AND GRAZING DECISIONS ON VEGETATION RESOURCES

Impacts to vegetation from livestock grazing depend partly on the seasonality and locality of the grazing activity. Seasons-of-use decisions incorporate these factors and differ across the Proposed RMP and each alternative under the broad grazing management strategies of: Phenology (Proposed RMP and Alternative A), Billed Use (Alternative B), Adjudicated (Alternatives C and E), and Permitted (Alternative D, No Action). In general, impacts to vegetation are reduced when grazing occurs in the fall and winter, because plants are dormant and are not using energy for growth or reproduction. In contrast, grazing during the spring would have adverse indirect impacts on native plants by inhibiting productivity and reproduction, and increasing the likelihood of noxious weed expansion or establishment. Other direct, adverse impacts from livestock grazing include trampling, soil compaction, and soil erosion.

4.18.2.4.1. PROPOSED RMP AND ALTERNATIVE A

The Proposed RMP and Alternative A would employ a phenology-based grazing system in all areas except Area 1 which would allow vegetation to recover by coupling forage use with dormancy and avoiding the growth periods of plants. Grazing would occur in Area 1 (Special Resources) only at the discretion of the VFO. Under the Proposed RMP grazing would be allowed in the Nine Mile Acquired Area provided that grazing is controlled, of short duration, does not detract from recreation and/or riparian values along the river, and is in accordance with the Green River Allotment Management Plan administered by the Price Field Office. With respect to the Nine Mile Acquired Area, to enhance riparian and watershed values Alternative A would not allow grazing. In the Nine Mile Acquired Area, therefore, Alternative A would have more beneficial impacts to vegetation than the Proposed RMP. In general, the Proposed RMP and Alternative A would result in fewer adverse impacts to vegetation due to livestock grazing than Alternative D (No Action) because the Proposed RMP and Alternative A would only allow grazing during the dormancy period of the forage plants, whereas Alternative D (No Action) would allow grazing during the growth period of forage plants.

4.18.2.4.2. ALTERNATIVE B

Alternative B would have the highest potential for adverse impacts to vegetation of all alternatives and the Proposed RMP. This alternative would be based on dates taken from permittee billing receipts and would reflect the actual allotment use times, not necessarily the permitted use periods or the best time, biologically, with respect to vegetation growth periods. Combined with a 60% forage allocation (see Section 4.18.2.2, Forage Decisions), this alternative would result in the greatest impacts to vegetation compared to all other alternatives and the Proposed RMP. Grazing use under Alternative B would often exceed the permitted timeframes, or overlap grazing start or end dates, increasing the risk of adverse impacts to vegetation.

Livestock grazing use in Area 1 and in the Nine Mile Acquired Area would be the same under Alternative B as under Alternative A.

4.18.2.4.3. ALTERNATIVES C AND E

Alternatives C and E would incorporate the negotiation between permitted use periods and vegetation phenology, narrowing the time period of actual use as it occurs under permitting, to the most sound vegetation phenological period. In general, forage use would be limited to the fall and winter, except in Areas 2 and 3, reducing the potentially adverse impacts that could occur during crucial growth periods. These alternatives would result in fewer adverse impacts to vegetation when compared to Alternative D (No Action) (Permitted Use) because Alternative D would allow more use during the growth period of forage plants than Alternatives C or E.

Under Alternatives C and E livestock grazing in Area 1 would be allowed at the discretion of the VFO (same as Alternatives A, B, and D), though these alternatives would not allow lands in the Nine Mile Acquired Area to be grazed. Alternative E would include additional protections for vegetation because conversions would not be allowed in non-WSA lands with wilderness characteristics if fencing or other structural improvements would be required or if conversions would result in significant resource conflicts. In general, Alternative E would be the most protective of vegetation resources with respect to livestock grazing decisions.

4.18.2.4.4. ALTERNATIVE D (NO ACTION)

Alternative D (No Action) reflects current livestock grazing activities, as assigned on grazing permits. Potential impacts of this alternative would be similar to those under Alternative B, but would differ (for most areas) by the length of time grazing may occur in each area. Management prescriptions for the Nine Mile Acquired Area are unspecified under Alternative D (No Action).

4.18.2.5. IMPACTS OF MINERALS DECISIONS ON VEGETATION RESOURCES

The potential direct impacts from oil, gas, and CBNG production; Gilsonite and phosphate (non-energy leasable minerals) mining; and mineral materials mining would occur as various forms of surface disturbance. Initial loss of vegetation would be followed by a greater potential for invasive and noxious weed establishment.

Of the six oil and gas development areas within the VPA (see Figure 24, RFD Areas), vegetation in the three most southern RFD areas is expected to be the most impacted by minerals decisions. It is anticipated that these three areas (East and West Tavaputs Plateau, and Monument Butte-Red Wash) would have the highest levels of oil and gas well development.

Surface disturbance associated with well construction would produce both short- and long-term adverse impacts to vegetation, potentially beyond the average well-life of 25 years. In the short term, surface disturbance would remove vegetation and increase the potential for noxious weed invasions. Other surface-disturbing activities associated with well development, such as road and pipeline construction, would produce additional impacts to vegetation. Following the initial short-term impacts, surface disturbance associated with oil and gas development would produce long-term impacts to vegetation. Successful reclamation is estimated to take at least 10 years, allowing time for site degradation and noxious weed infestations to continue. Revegetation is especially difficult within the desert shrub type, as soils are shallow and highly saline, and

moisture availability is relatively low. Noxious weed invasions, notably cheatgrass, are likely in the sagebrush/perennial grass types, as these areas are often grazed by domestic livestock. Pinyon-juniper areas that have been chained and/or burned in the past are also highly susceptible to noxious weed invasions, and further disturbance would only increase the possibility of weed infestation. Russian knapweed is already a problem in the Diamond Mountain and Blue Mountain areas. Surface disturbance near noxious weed populations in these areas would likely allow for the weeds to spread. Other areas of concern include the Uinta Basin, Clay Basin, and Browns Park, where large populations of Russian thistle, halogeton, and cheatgrass are known to occur.

Acres of each vegetation type by leasing category are shown for the Proposed RMP and each alternative in Table 4.18.2. Note that acreage figures may differ slightly due to discrepancies between vegetation data and leasing data used in the minerals potential report. Also, GAP vegetation type categories listed below do not include values for Urban and Agricultural areas. Acreage figures under the categories Standard Stipulations and Timing and Controlled Surface Use reflect the total BLM administered areas within the VPA open to surface-disturbing activities. These are not estimates of the total area disturbed within the VPA, but a comparison by alternative and the Proposed RMP of the amount of area open to potential development within BLM administered areas within the VPA.

Table 4.18.2. Acreage of Each Vegetation Cover Type by Minerals Leasing Category under the Proposed RMP and Each Alternative

Alternative / Proposed RMP	Vegetation Type	Standard Stipulations	Timing and Controlled Surface Use	No Surface Occupancy	No Leasing
Proposed RMP	Aspen	125	0	0	14
	Badland/rock outcrop	43,222	14,569	5,700	987
	Conifer	25,742	65,228	500	13,604
	Desert Shrub	354,250	92,090	18,617	5,774
	Mountain Shrub	11,805	52,882	752	8,166
	Pinyon Juniper	150,159	225,997	12,922	94,171
	Riparian	1,147	466	2,867	34
	Sagebrush	263,149	166,824	30,738	28,968
	Sand Bars	28	1	59	0
	TOTAL¹	849,627	618,057	72,155	151,718
A	Aspen	138	0	0	0
	Badland/rock outcrop	47,190	10,442	4,258	2,451
	Conifer	28,197	67,945	886	7,534
	Desert Shrub	385,809	52,421	15,931	1,199
	Mountain Shrub	19,936	51,475	920	937
	Pinyon Juniper	165,502	264,380	12,129	39,281
	Riparian	849	435	2,252	506
	Sagebrush	320,109	122,393	26,723	18,428

Table 4.18.2. Acreage of Each Vegetation Cover Type by Minerals Leasing Category under the Proposed RMP and Each Alternative

Alternative / Proposed RMP	Vegetation Type	Standard Stipulations	Timing and Controlled Surface Use	No Surface Occupancy	No Leasing
	Sand Bars	28	1	59	0
	TOTAL¹	967,758	569,492	63,158	70,336
B	Aspen	138	0	0	0
	Badland/rock outcrop	51,462	9,737	2,935	527
	Conifer	54,676	41,828	871	7,187
	Desert Shrub	395,431	49,773	11,099	908
	Mountain Shrub	45,022	26,486	920	841
	Pinyon-Juniper	199,586	244,997	8,063	28,656
	Riparian	2,254	485	1,309	0
	Sagebrush	340,275	117,138	16,174	14,378
	TOTAL¹	1,088,926	490,446	41,375	52,497
C	Aspen	138	0	0	0
	Badland/rock outcrop	38,337	11,739	2,826	11,760
	Conifer	31,680	27,877	408	44,602
	Desert Shrub	335,461	90,494	15,454	15,809
	Mountain Shrub	19,117	35,434	1,110	17,607
	Pinyon-Juniper	151,407	235,799	15,105	78,994
	Riparian	877	67	1,398	1,706
	Sagebrush	246,769	167,826	20,550	52,820
	TOTAL¹	823,812	569,236	56,895	223,316
D	Aspen	105	0	17	0
	Badland/rock outcrop	38,123	14,470	10,955	531
	Conifer	55,853	34,739	5,692	7,461
	Desert Shrub	279,485	142,510	33,445	964
	Mountain Shrub	24,025	46,010	3,164	826
	Pinyon-Juniper	231,749	180,799	39,012	29,033
	Riparian	693	196	3,578	0
	Sagebrush	265,607	164,587	38,976	14,503
	TOTAL¹	895,666	583,311	134,901	53,318
E	Aspen	124	0	0	14
	Badland/rock outcrop	36,930	11,256	2,138	14,339
	Conifer	31,088	22,458	408	50,614

Table 4.18.2. Acreage of Each Vegetation Cover Type by Minerals Leasing Category under the Proposed RMP and Each Alternative

Alternative / Proposed RMP	Vegetation Type	Standard Stipulations	Timing and Controlled Surface Use	No Surface Occupancy	No Leasing
	Desert Shrub	333,716	85,154	14,816	23,542
	Mountain Shrub	17,907	29,724	743	24,897
	Pinyon-Juniper	141,392	186,059	10,945	142,919
	Riparian	877	66	1,356	1,749
	Sagebrush	225,022	146,938	15,523	100,492
	Sand Bars	26	0	40	22
	TOTAL ACRES¹	787,082	481,655	45,969	358,588

¹The differences in total BLM vegetation acreages for each leasing category and total BLM acreages for oil and gas leasing are accounted for by those areas lacking vegetation (e.g., rocky areas, urban/developed areas).

4.18.2.5.1. PROPOSED RMP

As shown in Table 4.18.2, the potential for impacts to vegetation associated with the total area open to potential development would be greater under the Proposed RMP compared to Alternative D (No Action). Under the Proposed RMP, combined acreages totaling approximately 1,467,684 acres would be categorized as Standard Stipulations or Timing and Controlled Surface Use in the vegetation types listed in Table 4.18.2, a 1% decrease over Alternative D (No Action). Estimated surface disturbance by individual well development would total 18,860 acres; 5,045 acres of which would be reclaimed within one year of completion of operations (as per stipulations in the Minerals Potential Report). This represents a 4% increase in potential acres disturbed by oil and gas development compared to Alternative D (No Action).

Under the Proposed RMP approximately 223,873 acres of No Surface Occupancy and No Leasing BLM lands would not be impacted by oil and gas development, representing a 19% increase in the total acres that would not be impacted by oil and gas development compared to Alternative D (No Action).

Under the Proposed RMP impacts associated with prospecting, leasing, and development of phosphate would potentially occur on 76,208 acres open to leasing within the phosphate occurrence areas. Approximately 4% fewer acres are available for this activity under the Proposed RMP compared to Alternative D (No Action), which would potentially result in fewer adverse impacts to vegetation from this activity under the Proposed RMP. Gilsonite prospecting, leasing, and development would potentially occur on 172 miles (36,846 acres) of Gilsonite veins and on all BLM lands classified as open that contain additional veins. This area is 2% more than the area available under Alternative D (No Action), which would result in more adverse impacts to vegetation under the Proposed RMP.

Mineral material disposal could occur on 389,788 acres, less than a 1% increase compared to Alternative D (No Action). Therefore, adverse impacts to vegetation under Alternative A would be greater when compared to Alternative D (No Action), but only slightly.

4.18.2.5.2. ALTERNATIVE A

As shown in Table 4.18.2, the potential for impacts to vegetation associated with the total area open to potential development would be greater under Alternative A compared to Alternative D (No Action). Under Alternative A, combined acreages totaling approximately 1,537,250 acres would be categorized as Standard Stipulations or Timing and Controlled Surface Use in the vegetation types listed above, a 14% increase over Alternative D (No Action). Estimated surface disturbance by individual well development would total 18,971 acres; 5,071 acres of which would be reclaimed within one year of completion of operations (as per stipulations in the Minerals Potential Report). This represents a 4% increase in potential acres disturbed by oil and gas development compared to Alternative D (No Action).

Approximately 133,141 acres of No Surface Occupancy and No Leasing BLM lands would not be impacted by oil and gas development, representing a 30% decrease in the total acres that would not be impacted by oil and gas development compared to Alternative D (No Action).

Alternative A impacts associated with prospecting, leasing, and development of phosphate would potentially occur on 87,724 acres open to leasing within the phosphate occurrence areas. Approximately 4% fewer acres are available for this activity under Alternative A compared to Alternative D (No Action), which would potentially result in fewer adverse impacts to vegetation from this activity under Alternative A. Gilsonite prospecting, leasing, and development would potentially occur on 172 miles (36,846 acres) of Gilsonite veins and on all BLM lands classified as open that contain additional veins. This area is 2% more than the area available under Alternative D (No Action), which would result in more adverse impacts to vegetation under Alternative A.

Mineral material disposal could occur on 415,395 acres, a 7% increase compared to Alternative D (No Action). Therefore, adverse impacts to vegetation under Alternative A would be greater when compared to Alternative D (No Action).

4.18.2.5.3. ALTERNATIVE B

As shown in Table 4.18.2, Alternative B would designate approximately 1,579,372 acres as Standard Stipulations or Timing and Controlled Surface Use within the vegetation types listed above; a 7% increase over Alternative D (No Action). Surface disturbance associated with oil and gas activity on BLM administered land within the VPA would equal 19,033 acres, with 5,088 acres to be reclaimed within one year of completion of operations (as per stipulations in Minerals Potential Report). This represents a 5% increase in surface disturbance over Alternative D (No Action). Potential oil and gas related impacts to vegetation under Alternative B would be greater than what would occur under Alternative D (No Action).

Approximately 94,603 acres of No Surface Occupancy and No Leasing BLM lands would not be impacted by oil and gas development, representing a 50% decrease in total acres not available compared to Alternative D (No Action). Thus, the area available for development is greater under Alternative B compared to Alternative D (No Action), allowing for a greater potential for adverse impacts to vegetation.

Under Alternative B, 87,724 acres would be open for prospecting, leasing, and development of phosphate within the phosphate occurrence areas, representing a 4% increase over Alternative D (No Action). Gilsonite prospecting, leasing, and development would potentially occur on 172 miles (36,846 acres) of Gilsonite veins and on all BLM lands classified as open that contain additional veins, representing a 2% increase as compared to Alternative D (No Action). Impacts associated with phosphate and Gilsonite prospecting activities would be greater under Alternative B, as compared to Alternative D (No Action).

Mineral material disposal could occur on 432,953 acres under Alternative B, a 12% increase as compared to Alternative D (No Action). Potentially adverse impacts to vegetation associated with mineral material disposal would be greater under Alternative B when compared to Alternative D (No Action).

4.18.2.5.4. ALTERNATIVE C

As shown in Table 4.18.2, Alternative C would designate approximately 1,393,048 acres as Standard Stipulations or Timing and Controlled Surface Use, representing a 6% decrease as compared to Alternative D (No Action). Oil and gas development would impact 18,757 acres, 5,020 of which would be reclaimed within one year of completion of operations (as per stipulations in Minerals Potential Report). This represents a 3% increase under Alternative C in potential disturbances related to oil and gas production compared to Alternative D (No Action).

Approximately 286,916 acres of No Surface Occupancy and No Leasing BLM lands would not be impacted by oil and gas development, representing a 51% increase in total acres that would not be impacted by oil and gas development compared to Alternative D (No Action). Thus, the potential for impacts would be less under Alternative C when compared to Alternative D (No Action).

Under this alternative, 63,571 acres would be open for prospecting, leasing, and development of phosphate with standard and special stipulations within the phosphate occurrence areas. This represents a 25% decrease over Alternative D (No Action), resulting in a lower potential for adverse impacts to vegetation under Alternative C. Gilsonite prospecting, leasing, and development would potentially occur on 172 miles (36,846 acres) of Gilsonite veins and on all BLM lands classified as open that contain additional veins. This equates to a 2% increase in area available for Gilsonite activities across the BLM administered areas within the VPA as compared to Alternative D (No Action). Thus, greater adverse impacts to vegetation would be expected.

Mineral material disposal could occur on 388,699 acres, an increase of 0.3% in potentially adverse impacts to vegetation when compared to Alternative D (No Action).

4.18.2.5.5. ALTERNATIVE D (NO ACTION)

As shown in Table 4.18.2, Alternative D (No Action) would classify approximately 1,478,977 acres in the vegetation types listed above as Standard Stipulations and Timing and Controlled Surface Use. Oil and gas development would potentially impact 18,212 acres, 4,886 of which would be reclaimed within one year. Approximately 189,470 acres of No Surface Occupancy

and No Leasing BLM lands would not be impacted by oil and gas development under Alternative D (No Action).

Under Alternative D (No Action), 84,600 acres would be open for prospecting, leasing, and development of phosphate with standard and special stipulations within the phosphate occurrence areas. Gilsonite prospecting, leasing, and development would potentially occur on 168 miles (36,009 acres) of Gilsonite veins, and on all BLM lands classified as open that contain additional veins. Additional mitigation actions would be required in critical deer and elk winter range to reduce short and long-term impacts to habitat. Mineral material disposal could occur on 387,700 acres.

4.18.2.5.6. ALTERNATIVE E

As shown in Table 4.18.2, Alternative E would designate approximately 1,268,737 acres as Standard Stipulations or Timing and Controlled Surface Use within the vegetation types listed above, representing a 14% decrease as compared to Alternative D (No Action). Oil and gas development would impact 17,469 acres, 4,703 of which would be reclaimed within one year of completion of operations (as per stipulations in Minerals Potential Report). This represents a 4% decrease under Alternative E in potential disturbances related to oil and gas production compared to Alternative D (No Action).

Approximately 414,666 acres of No Surface Occupancy and No Leasing BLM lands would not be impacted by oil and gas development, representing a 119% increase in total acres that would not be impacted by oil and gas development compared to Alternative D (No Action). Thus, the potential for impacts would be less under Alternative E when compared to Alternative D (No Action).

Under this alternative, 52,063 acres would be open for prospecting, leasing, and development of phosphate with standard and special stipulations within the phosphate occurrence areas. This represents a 38% decrease compared to Alternative D (No Action), resulting in a lower potential for adverse impacts to vegetation under Alternative E. Gilsonite prospecting, leasing, and development would potentially occur on 163 miles (34,967 acres) of Gilsonite veins and on all BLM lands classified as open that contain additional veins. This equates to a 3% decrease in area available for Gilsonite activities within the VPA as compared to Alternative D (No Action). Thus, fewer adverse impacts to vegetation would be expected.

Mineral material disposal could occur on 344,682 acres, a decrease of 11% in potentially adverse impacts to vegetation when compared to Alternative D (No Action).

4.18.2.6. IMPACTS OF MINERALS DECISIONS BY RFD AREA

Surface disturbances (acres) by RFD area within the BLM administered areas of the VPA are shown in Table 4.18.4 below.

Table 4.18.4. Short- and Long-term Minerals Impacts under the Proposed RMP and Each Alternative by RFD Area within BLM-administered Land (acres)

RFD Area	Proposed RMP		Alternative A		Alternative B		Alternative C		Alternative D (No Action)		Alternative E	
	Short	Long	Short	Long	Short	Long	Short	Long	Short	Long	Short	Long
East Tavaputs Plateau	599	1,627	612	1,670	613	1,672	599	1,627	613	1,672	474	1,245
West Tavaputs Plateau	266	696	266	696	278	733	266	696	278	733	253	657
Monument Butte-Red Wash	4,003	11,067	4,013	11,099	4,016	11,107	4,003	11,067	4,016	11,107	3,797	10,437
Altamont-Bluebell	121	262	121	262	121	262	121	262	121	262	121	262
Tabiona-Ashley Valley	38	113	39	116	40	116	38	113	40	116	38	112
Manila-Clay Basin	20	50	21	56	21	56	20	50	21	56	20	51
Subtotal	5,045	13,815	5,072	13,899	5,089	13,946	5,045	13,815	5,089	13,946	4,703	12,765
TOTAL		18,860		18,971		19,035		18,758		18,212		17,469

Source: Vernal Draft EIS Calculations 10 August 2004.

4.18.2.6.1. PROPOSED RMP

Total short-term and long-term impacts from oil and gas surface disturbances to vegetation would be greater under the Proposed RMP than under Alternative D (No Action). Under the Proposed RMP surface disturbance from oil and gas development would be 4% greater than under Alternative D (No Action).

4.18.2.6.2. ALTERNATIVES A, B, AND C

Total short-term and long-term impacts from oil and gas surface disturbances to vegetation would be greater under Alternatives A, B, and C when compared to Alternative D (No Action) because surface disturbance would be greater (ranging from 3% to 5%) under these alternatives than under Alternative D (No Action).

4.18.2.6.3. ALTERNATIVE D (NO ACTION)

Total short-term and long-term impacts from oil and gas surface disturbances to vegetation would be about 18,212 acres under Alternative D (No Action).

4.18.2.6.4. ALTERNATIVE E

Under Alternative E the potentially adverse impacts to vegetation caused by oil and gas surface disturbances would be the least of all the alternatives (4% less than Alternative D, No Action) because the acres of impact would be the least.

4.18.2.7. IMPACTS OF NON-WSA LANDS WITH WILDERNESS CHARACTERISTICS DECISIONS ON VEGETATION RESOURCES

Where non-WSA lands with wilderness characteristics would be managed to maintain these characteristics vegetation resources would generally benefit by the elimination or curtailment of surface-disturbing activities such as energy and minerals development, woodland harvest, and OHV use. Where these lands would not be managed to maintain their wilderness values these prescriptions would not apply and vegetation resources would potentially be subject to increased adverse impacts in the form of surface disturbance from these activities.

4.18.2.7.1. PROPOSED RMP

Under the Proposed RMP approximately 106,178 acres of non-WSA lands with wilderness characteristics would be managed to maintain their wilderness values. Management prescriptions would include VRM II; closed to oil and gas leasing; closed to woodland product harvest; right-of-way avoidance; and OHV use limited to designated routes. Vegetation resources located on these lands would benefit from the protection provided under the listed prescriptions. Because of these protective prescriptions the Proposed RMP would be more beneficial to vegetation resources than Alternative D (No Action), because Alternative D (No Action) would not include the aforementioned protective measures.

4.18.2.7.2. ALTERNATIVES A, B, C, AND D (NO ACTION)

Under Alternatives A, B, C, and D (No Action), no non-WSA lands with wilderness characteristics would be managed to maintain their wilderness characteristics. The management prescriptions described for non-WSA lands with wilderness characteristics under the Proposed RMP and Alternative E would not apply and, as a result, vegetation resources in these areas would potentially be subject to adverse impacts from surface-disturbing activities such as energy and mineral development, OHV use, and woodland harvest.

4.18.2.7.3. ALTERNATIVE E

Alternative E would provide the most benefit to vegetation resources by restricting surface disturbance within approximately 277,596 acres of non-WSA lands with wilderness characteristics. The impacts on vegetation resources would be similar to the discussion under Alternative E, Woodlands above.

4.18.2.8. IMPACTS OF RANGELAND IMPROVEMENTS DECISIONS ON VEGETATION RESOURCES

Habitat enhancement projects include vegetation treatments, fencing, and water developments. Treatments may include mechanical, chemical, biological, and prescribed fire. While these activities produce short-term adverse impacts to vegetation associated with initial treatment or construction surface disturbance, long-term benefits to vegetation would also occur. Restoring natural vegetation communities, eliminating weeds, and fencing areas to control animal movement would enhance the vegetation resource and help achieve the desired mix of seral stages (see Chapter 2). However, additional guzzlers and pipelines would not enhance vegetation in the long-term. Table 4.18.5 provides information on rangeland improvements for the Proposed RMP and each of the alternatives.

Table 4.18.5. Comparison of Rangeland Improvements for the Proposed RMP and Each Alternative

Alternative / Proposed RMP	Treatment acres (+/- impacted compared to Alternative D, No Action)	Fencing miles (acres disturbed)	Guzzlers/reservoirs (acres disturbed)	Pipeline miles
Proposed RMP	34,640 (- 5,750)	68.5 (34)	812	37.5
A	34,640 (- 5,750)	68.5 (34)	812	37.5
B	50,900 (+10,510)	368.5 (184)	1,165	51
C	45,860 (+5,470)	129.0 (65)	811	29.5
D	40,390	65.0 (33)	775	35
E	45,860 (+5,470)	129.0 (65)	811	29.5

4.18.2.8.1. PROPOSED RMP AND ALTERNATIVE A

The Proposed RMP and Alternative A would result in fewer short-term impacts associated with vegetation treatments compared to Alternative D (No Action), but the long-term benefits would also be less. Potentially adverse impacts associated with fencing and pipeline projects would be similar to Alternative D (No Action), but new guzzlers and reservoirs would result in greater long-term adverse impacts to vegetation compared to Alternative D (No Action).

4.18.2.8.2. ALTERNATIVE B

All rangeland improvements under Alternative B would result in greater short-term impacts to vegetation, but vegetation treatments and fencing would have beneficial impacts on vegetation in the long-term when compared to Alternative D (No Action).

4.18.2.8.3. ALTERNATIVES C AND E

Management decisions for vegetation treatments, fencing, and guzzlers/reservoirs would be the same for Alternatives C and E, and would result in greater short-term impacts to vegetation compared to Alternative D (No Action). On the other hand, short-term impacts associated with

new pipelines would be slightly less under Alternatives C and E than under Alternative D (No Action).

4.18.2.8.4. ALTERNATIVE D (NO ACTION)

Rangeland improvements that include vegetation treatments and fencing would have short-term adverse impacts on vegetation caused by construction, but would have long-term beneficial impacts on vegetation by improving the distribution of grazing animals; restoring natural vegetation communities, and eliminating weeds. Guzzlers and reservoir development would tend to have long-term adverse impacts on vegetation by concentrating livestock and attracting wildlife and wild horses in those areas, with subsequent disturbance and degradation of vegetation communities.

4.18.2.9. IMPACTS OF RECREATION DECISIONS ON VEGETATION RESOURCES

The alternative recreation management decisions focus primarily on whether to designate areas as SRMAs. In providing for focused management of recreation activities, in general SRMAs would benefit the vegetation resource by reducing or limiting surface-disturbance related to recreation. However, long-term adverse impacts would still occur with increases in access and visitors. As more people recreate in an area, trampling of the vegetation would occur and the chance for invasive, noxious weed introduction would increase.

4.18.2.9.1. PROPOSED RMP

Under the Proposed RMP, Pelican Lake (1,014 acres), Red Mountain – Dry Fork (24,259 acres), Blue Mountain (42,729 acres), Browns Park (18,490 acres), Fantasy Canyon (69 acres), Nine Mile Canyon (44,168 acres), and a portion of the White River (2,831 acres) would be managed as SRMAs (133,560 total acres). Management actions within each SRMA would vary but in general recreational activities would be allowed and managed in designated areas. By focusing management activities on specified areas and/or uses managed recreational use as in SRMAs would reduce impacts to vegetation compared to dispersed recreational use with limited management. Under the Proposed RMP the total acreage of land (133,592 acres) managed as SRMAs would be about 113% greater than that under Alternative D (No Action) (62,655 total acres managed as SRMAs). This would reduce the potential for impacts to vegetation when compared to Alternative D (No Action).

The Proposed RMP would develop up to 400 miles of non-motorized trails, disturbing/removing approximately 150 acres of vegetation (assuming an average 3-foot trail width along 400 miles). Short-term impacts would consist of vegetation loss and noxious weed invasion of disturbed areas. This activity would disturb approximately 130 more acres than Alternative D (No Action), adversely impacting a greater amount of vegetation. This alternative would also develop, improve, and/or sign up to 800 miles of motorized trails. Assuming an average motorized trail width of 6 feet, approximately 580 acres would potentially be disturbed or removed by this action, with impacts to vegetation similar to those described for non-motorized trails. No similar action would occur under Alternative D (No Action) thus impacts from the improvement,

development, and/or signage of motorized routes would be greater under the Proposed RMP than under Alternative D (No Action).

The Proposed RMP would eliminate OHV use off designated routes for big game retrieval. This activity is unspecified in Alternative D (No Action); therefore, the Proposed RMP would result in less OHV-related adverse impacts to vegetation.

The Proposed RMP would assess the placement of additional cabins for permitted/administrative use at or near the existing Chipeta, Trujillo, Moonshine, Rat Hole, and Wolf Den cabins and at Westwater Point, Dick Canyon, and other locations. Short-term impacts to vegetation would occur as new cabins were constructed. Long-term impacts would include increased potential for noxious weed invasions in disturbed areas and the loss of vegetation equal to the size of the cabin footprint. Adverse impacts to vegetation would be greater than what would occur under Alternative D (No Action) because no similar management action is proposed under Alternative D (No Action).

4.18.2.9.2. ALTERNATIVE A

Under Alternative A, Pelican Lake (1,020 acres), Red Mountain – Dry Fork (24,285 acres), Blue Mountain (42,758 acres), Browns Park (52,720 acres), Nine Mile Canyon (81,168 acres), and a portion of the White River (24,183 acres) would be managed as SRMAs (499,588 total acres). Management actions within each SRMA would vary but in general recreational activities would be allowed and managed in designated areas. By focusing management activities on specified areas and/or uses managed recreational use as in SRMAs would reduce impacts to vegetation compared to dispersed recreational use with limited management. Under Alternative A the total acreage of land (499,588 acres) managed as SRMAs would be about seven times greater than that under Alternative D (No Action). This would reduce the potential for impacts to vegetation when compared to Alternative D (No Action).

Alternative A would develop up to 400 miles of non-motorized trails, disturbing/removing approximately 150 acres of vegetation (assuming an average 3-foot trail width along 400 miles). Short-term impacts would consist of vegetation loss and noxious weed invasion of disturbed areas. This activity would disturb approximately 130 more acres than Alternative D (No Action), adversely impacting a greater amount of vegetation. This alternative would also develop, improve, and/or sign up to 800 miles of motorized trails. Assuming an average motorized trail width of 6 feet, approximately 580 acres would potentially be disturbed or removed by this action, with impacts to vegetation similar to those described for non-motorized trails. No similar action would occur under Alternative D (No Action) thus impacts from the improvement, development, and/or signage of motorized routes would be greater under Alternative A than under Alternative D (No Action).

Alternative A would eliminate OHV use off designated routes for big game retrieval. This activity is unspecified in Alternative D (No Action); therefore, Alternative A would result in less OHV-related adverse impacts to vegetation.

Alternative A would assess the placement of additional cabins for permitted/administrative use at or near the existing Chipeta, Trujillo, Moonshine, Rat Hole, and Wolf Den cabins and at Westwater Point, Dick Canyon, and other locations. Short-term impacts to vegetation would occur as new cabins were constructed. Long-term impacts would include increased potential for noxious weed invasions in disturbed areas and the loss of vegetation equal to the size of the cabin footprint. Adverse impacts to vegetation would be greater than what would occur under Alternative D (No Action) because no similar management action is proposed under Alternative D (No Action).

4.18.2.9.3. ALTERNATIVE B

Under Alternative B, Pelican Lake (1,020 acres), Red Mountain – Dry Fork (24,285 acres), Browns Park (17,000 acres), and Nine Mile Canyon (44,181 acres) would be managed as SRMAs (86,454 total acres). The specific locations and acreage of lands managed as SRMAs under Alternative B would be the same as under Alternative D (No Action).

Alternative B would improve, develop, and/or sign up to 800 miles of motorized trails, potentially impacting approximately 580 acres. These management actions are the same as the Proposed RMP and Alternative A and would result in the same impacts as described under those alternatives.

Alternative B would allow OHV use for big game retrieval for a 24-hour period following the punching of a tag. Impacts would likely be short-term related to big game retrievals occurring during the established hunting season. However, long-term impacts could occur if the paths become frequently used, resulting in new recreational travel corridors. This activity is unspecified in Alternative D (No Action); therefore, Alternative B would result in less OHV-related adverse impacts to vegetation.

With respect to the placement of additional cabins for permitted/administrative use on certain lands Alternative B would be the same as the Proposed RMP and Alternative A. The impacts of Alternative B, therefore, would be the same as the Proposed RMP and Alternative A compared to Alternative D (No Action).

4.18.2.9.4. ALTERNATIVE C

Under Alternative C, Pelican Lake (1,020 acres), Red Mountain – Dry Fork (24,285 acres), Blue Mountain (42,758 acres), the Book Cliffs (273,486 acres), Browns Park (52,720 acres), Fantasy Canyon (69 acres), Nine Mile Canyon (81,168 acres), and a portion of the White River (47,130 acres) would be managed as SRMAs (522,604 total acres). Because Alternative C would manage almost six times more land as SRMAs compared to Alternative D (No Action), it would reduce the potential for adverse impacts to vegetation compared to Alternative D (No Action).

Miles of hiking, horseback riding, and mechanized (non-motorized) trails and limitations for OHV use off of designated routes for big game retrieval would be the same under Alternative C as under Alternative A resulting in the same impacts compared to Alternative D (No Action). On

the other hand, up to 800 miles of motorized routes would not be improved and/or developed under this alternative.

Alternative C would not allow new cabin construction in the Book Cliffs. Alternative D (No Action) does not specify this activity; therefore, the impacts to vegetation would be the same as under Alternative D (No Action).

4.18.2.9.5. ALTERNATIVE D (NO ACTION)

Under Alternative D (No Action), Pelican Lake (1,020 acres), Red Mountain – Dry Fork (24,285 acres), Browns Park (17,000 acres), and Nine Mile Canyon (44,181 acres) would be managed as SRMAs (86,454 total acres). Impacts would be the same as described in Alternative B.

This alternative would develop 55 miles of non-motorized hiking and/or horseback riding trails, resulting in adverse impacts to approximately 20 acres of vegetation from removal/surface disturbances (assuming an average 3-foot trail width). Further, approximately 2 miles of mountain bicycle trails would be established using existing rural roads and trails along with developing a non-motorized trail along Sears Canyon.

Alternative D (No Action) would not specify new cabin construction in the Book Cliffs or elsewhere; therefore, the impacts are not analyzed.

4.18.2.9.6. ALTERNATIVE E

Alternative E would be similar to Alternative C, except that protecting non-WSA lands with wilderness characteristics within the proposed SRMAs under this alternative would require managing some areas (approximately 157,018 acres) under VRM I class objectives, closing these areas to cross-country OHV use, and managing for primitive, non-mechanized recreational opportunities in order to protect their wilderness values. This would have long-term, beneficial impacts on vegetation by reducing the likelihood of recreation-related surface disturbances in the non-WSA wilderness characteristics areas. Compared to Alternative D (No Action), this alternative would have more beneficial impacts on vegetation because more protection would be afforded the resource.

Prescriptions related to trail maintenance and development under Alternative E would also be similar to Alternative C, except that trail uses would be limited to primitive, non-mechanized forms of recreation to protect wilderness values and up to 800 miles of motorized routes would be signed, improved, and/or developed (as under the Proposed RMP and Alternatives A and B). Impacts related to trail signage, maintenance, and/or development would be similar between Alternatives E and A compared to Alternative D (No Action), though Alternative E would result in more beneficial impacts to vegetation because mechanized forms of recreation would not be allowed in non-WSAs with wilderness characteristics under this alternative. Under Alternative E, impacts related to the signage, maintenance, and/or development of 800 miles of motorized routes would be the same as the Proposed RMP and Alternatives A and B as compared to Alternative D (No Action).

4.18.2.10. IMPACTS OF SOILS AND WATERSHEDS DECISIONS ON VEGETATION RESOURCES

4.18.2.10.1. PROPOSED RMP AND ALTERNATIVES A, B, C, D (NO ACTION), AND E

Decisions to reduce soil erosion would benefit vegetation by ensuring that adequate soil substrate exists for continued plant growth. The Proposed RMP and Alternatives A and B would require erosion control strategies and design for slopes greater than 20 percent. Alternatives C and E would not allow any surface-disturbing activities on slopes greater than 40 percent. Thus, the adverse impacts to vegetation under these alternatives would be less than Alternative D (No Action), which only precludes mineral development on slopes greater than 4%.

4.18.2.11. IMPACTS OF SPECIAL DESIGNATIONS ON VEGETATION RESOURCES

Areas of Critical Environmental Concern (ACEC) are intended to protect and prevent irreparable damage to important historic, cultural, or scenic values; fish and wildlife resources; other natural systems or processes; or to protect life and safety from natural hazards. While management prescriptions may vary between ACECs an ACEC designation for a particular area generally results in enhanced protection from surface disturbance for that area. ACECs, therefore, have beneficial impacts for vegetation resources by eliminating or reducing surface disturbance in the area proposed for ACEC designation. In general, the greater the acreage designated as ACEC the greater the beneficial impacts for vegetation. Other special designations are Wild and Scenic Rivers and WSAs. The impacts of Wild and Scenic Rivers decisions are discussed in the following section. WSAs generally have beneficial impacts to vegetation resources by reducing surface disturbance within their boundaries. The impacts of WSAs are not discussed for the Proposed RMP and alternatives because their acreage would not vary.

4.18.2.11.1. PROPOSED RMP

Under the Proposed RMP, Browns Park (18,490 acres), Lower Green River Corridor (8,470 acres), Nine Mile Canyon (44,168 acres), the Red Mountain – Dry Fork Complex (24,285 acres), Pariette Wetlands (10,437 acres), Red Creek Watershed (24,475 acres), and Lears Canyon (1,375 acres) would be designated as ACECs (131,700 total acres). The benefits of ACEC designation, as described above, to vegetation resources would be decreased under the Proposed RMP compared to Alternative D (No Action). The Proposed RMP would designate 20% less area as ACECs than Alternative D (No Action) (165,944 acres).

4.18.2.11.2. ALTERNATIVES A

Under Alternative A, Bitter Creek (68,834 acres), Browns Park (52,721 acres), Coyote Basin (87,743 acres), Lower Green River Corridor and Lower Green River Expansion (10,170 acres), Nine Mile Canyon (48,000 acres), the Red Mountain – Dry Fork Complex (24,285 acres), the White River (17,810 acres), Pariette Wetlands (10,437 acres), Red Creek Watershed (24,475 acres), and Lears Canyon (1,375 acres) would be designated as ACECs (345,850 total acres). The benefits of ACEC designation, as described above, to vegetation resources would be increased under Alternative A compared to Alternative D (No Action). Alternative A would designate 108% more area as ACECs than Alternative D (No Action) (165,944 acres).

4.18.2.11.3. ALTERNATIVE B

Under Alternative B, Browns Park (18,474 acres), Coyote Basin (47,659 acres), the Lower Green River (8,470 acres), Nine Mile Canyon (44,181 acres), the Red Mountain – Dry Fork Complex (24,285 acres), Lears Canyon (1,375 acres), Red Creek Watershed (24,475 acres), and the Pariette Wetlands (10,437 acres) would be designated as ACECs (179,356 total acres). The total acreage of ACECs under Alternative B would be about 8% greater than under Alternative D (No Action) resulting in more beneficial impacts to vegetation than Alternative D (No Action).

4.18.2.11.4. ALTERNATIVE C

Under Alternative C, Bitter Creek (147,425 acres), Browns Park (18,474 acres), Coyote Basin (124,161 acres), Four Mile Wash (50,280 acres), Lower Green River (10,170 acres), Main Canyon (100,915 acres), Middle Green River (6,768 acres), Nine Mile Canyon (81,168 acres), the Red Mountain – Dry Fork Complex (24,285 acres), the White River (47,130 acres), Lears Canyon (1,375 acres), Red Creek Watershed (24,475 acres), and the Pariette Wetlands (10,437 acres) would be designated as ACECs (647,063 total acres). The total acreage of ACECs under Alternative C would be about four times greater than under Alternative D (No Action) resulting in more beneficial impacts to vegetation than Alternative D (No Action).

4.18.2.11.5. ALTERNATIVE D (NO ACTION)

Under Alternative D (No Action), Browns Park (52,721 acres), Lower Green River (8,407 acres), Nine Mile Canyon (44,181 acres), the Red Mountain – Dry Fork Complex (24,285 acres), Lears Canyon (1,375 acres), Red Creek Watershed (24,475 acres), and the Pariette Wetlands (10,437 acres) would be designated as ACECs (165,944 total acres).

4.18.2.11.6. ALTERNATIVE E

The impacts of special designation decisions on vegetation would be the same as discussed above for Alternative C because the management actions are the same, except that Alternative E would manage the non-WSA areas with wilderness characteristics for the protection of their wilderness values. Under this alternative, approximately 197,171 acres within the proposed ACECs would be managed under VRM I objectives, closed to mineral leasing and mineral materials disposal, excluded from ROW consideration, closed to commercial and private woodcutting, and closed to cross-country OHV travel. These management decisions would have long-term, beneficial impacts on vegetation by either reducing or prohibiting surface disturbances within the non-WSA wilderness characteristics areas; indirectly reducing the likelihood for noxious or invasive species establishment; reducing potential soil disturbances that could affect plant communities; and maintaining the vegetation productivity within the protected areas. This alternative would have more beneficial impacts on vegetation resources than all other alternatives because it would manage the resource with more protective prescriptions.

4.18.2.12. IMPACTS OF WILD AND SCENIC RIVERS DECISIONS ON VEGETATION RESOURCES

When areas are identified as suitable for Wild and Scenic River designation they are generally afforded greater protection from surface disturbance to preserve their wild, scenic, and/or recreational values. Greater protection from surface disturbance results in long-term beneficial impacts to vegetation resources by reducing or eliminating activities that would result in direct vegetation loss, trampling, and other impacts that would be adverse to vegetation. During the planning process portions of Argyle Creek, Bitter Creek, Evacuation Creek, the Upper, Lower and Middle Green River, Nine Mile Creek, and the White River were considered for Wild and Scenic River designation under the Proposed RMP and different alternatives.

4.18.2.12.1. PROPOSED RMP AND ALTERNATIVES A AND B

Under the Proposed RMP and Alternatives A and B the Upper Green River segment and Lower Green River segment would continue to be recommended as suitable for Wild and Scenic River designation. However, under the Proposed RMP and Alternatives A and B, none of the Argyle Creek, Bitter Creek, Evacuation Creek, Middle Green River, and Nine Mile Creek river segments considered for Wild and Scenic River designation were identified as suitable under any category (Wild, Scenic, or Recreational). The segments of the White River considered for recommendation to the Wild and Scenic River system would not be identified as suitable for designation under the Proposed RMP and Alternative B but would be considered suitable under Alternative A. Though Alternative D (No Action) would also not identify any segments of the aforementioned rivers as suitable for Wild and Scenic River designation it would manage portions of Bitter Creek, Evacuation Creek, and the White River to protect the free flowing nature, outstandingly remarkable values, and tentative classification of the river. As a result, Alternative D (No Action) would have more beneficial impacts for vegetation than the Proposed RMP and Alternatives A and B.

4.18.2.12.2. ALTERNATIVES C AND E

Under Alternatives C and E all segments of the aforementioned rivers would be considered suitable for Wild and Scenic River designation. This would result in reduced surface disturbance and adverse impacts to vegetation along approximately 164 miles of river in the VPA. Long-term beneficial impacts to riparian vegetation would be greater under Alternatives C and E compared to Alternative D (No Action) due to the greater river mileage considered suitable for Wild and Scenic River designation. These alternatives would continue to recommend the Upper and Lower Green River segments along with the White River, Nine Mile Creek, the Middle Green River, Evacuation Creek, Bitter Creek, and Argyle Creek as suitable for designation into the Wild and Scenic River System. These management actions would have greater beneficial impacts on riparian vegetation than any of the other alternatives.

4.18.2.12.3. ALTERNATIVES D (NO ACTION)

This alternative would continue to recommend the Upper Green River segment and Lower Green River segment as suitable for Wild and Scenic River designation, but would not identify any other river segments within the VPA as suitable. However, segments of Bitter Creek, Evacuation

Creek, and the White River would be considered eligible for Wild and Scenic River designation and would be managed to protect the free flowing nature, outstandingly remarkable values, and tentative classification of the rivers.

4.18.2.13. IMPACTS OF TRAVEL DECISIONS ON VEGETATION RESOURCES

Road closures would tend to benefit vegetation by restricting access, reducing the chance of impacts to vegetation, such as trampling and noxious weed invasions. Prohibiting motorized access into an area would also prevent the development of undesignated access/spur roads and trails.

4.18.2.13.1. PROPOSED RMP AND ALTERNATIVES A, B, C

The Proposed RMP and Alternatives A and C would remove existing trails and roads and return habitat to its original condition when they no longer serve their permitted purpose or public interest, allowing for vegetation growth and reducing the potential for indirect adverse effects associated with allowed access. Long-term benefits to vegetation would include increases in diverse vegetation communities and a reduction in disturbed areas suitable for noxious weed growth. Alternatives A and C would have more beneficial impacts as compared to Alternative D (No Action), as road and trail maintenance (except for OHV trails) or removal are unspecified under Alternative D (No Action).

Alternative B would not obliterate roads. Potential impacts associated with open roads under Alternative B would be the same as Alternative D (No Action), which does not specify for road obliteration.

The Proposed RMP and Alternatives A, B, and C would repair, maintain, or upgrade existing trails and roads in poor condition. This would increase the chance of noxious weed invasion in areas where repair, maintenance and/or upgrading occurs. On the other hand, Alternative D (No Action) does not specify road and trail improvements.

The Proposed RMP and Alternatives A, B, and C would also include less area open to OHV travel as compared to Alternative D (No Action), thus; impacts to vegetation overall would be less (Proposed RMP and A: 6,202 acres; B: 5,434; C: 5,434 acres open, compared to 787,859 acres under Alternative D, No Action). Impacts associated with OHV travel include damage to and loss of vegetation, and the spread of noxious weed seeds.

The number of acres that would be closed to OHV travel varies under each action alternative and the Proposed RMP, but would be more than what would occur under Alternative D (No Action), which would close 50,388 acres. Thus, adverse impacts to vegetation would be less under the action alternatives than under Alternative D (No Action). Alternative C would close the second greatest number of acres (366,559 acres), with the Proposed RMP and Alternative A closing 75,845 acres, and Alternative B closing 60,187 acres.

4.18.2.13.2. ALTERNATIVE D (NO ACTION)

Alternative D (No Action) would allow 787,859 acres to remain open for unlimited OHV use. Approximately 887,275 acres would be designated as Limited for OHV travel, while 50,388 acres would be closed to OHV use.

The management of newly permitted roads and trails, once their purposes have been served, are unspecified under this alternative. Also, the management of roads and trails that would cause resource damage remains unspecified under this alternative.

4.18.2.13.3. ALTERNATIVE E

The impacts of travel decisions on vegetation would be the similar to the discussion under Alternative C above because the decisions are the same for acres of Open, Limited, and Closed OHV use. Under this alternative, approximately 57 miles of travel routes would be closed to travel in order to protect wilderness values within non-WSA areas with wilderness characteristics. The impacts of these travel route closures would be negligible, as there would be no reduction of or additional surface disturbances to vegetation resources along these previously disturbed routes.

4.18.2.14. IMPACTS OF VISUALS DECISIONS ON VEGETATION RESOURCES

Visual resource management (VRM) decisions would have impacts on vegetation resources under all of the alternatives and the Proposed RMP. Visual Resource Management Classes I and II would provide the highest level of visual resource protection, with direct, short-term and long-term, protection and preservation-related impacts on vegetation resources; VRM III and VRM IV would be less protective, allowing more surface-disturbing impacts, and therefore more impacts to vegetation resources, than VRM I and II.

4.18.2.14.1. PROPOSED RMP

Under the Proposed RMP, 289,687 acres of land within the VPA would be managed as VRM Class I and II. Under this alternative 1,430,253 acres would be managed as VRM Class III and IV. The Proposed RMP would manage approximately 74% more land as VRM Class I and II than Alternative D (No Action). Lands managed as VRM Class III and IV would be reduced by 8% compared to Alternative D (No Action). Due to the greater acreage of land managed as VRM Class I and II under the Proposed RMP it would have more beneficial impacts to vegetation resources than Alternative D (No Action).

4.18.2.14.2. ALTERNATIVES A

Under Alternative A, 513,644 acres of land within the VPA would be managed as VRM Class I and II. Under this alternative 1,960,356 acres would be managed as VRM Class III and IV. Alternative A would manage approximately 208% more land as VRM Class I and II than Alternative D (No Action). Lands managed as VRM Class III and IV would be increased by 26% compared to Alternative D (No Action). Due to the greater acreage of land managed as VRM

Class I and II under Alternative A it would have more beneficial impacts to vegetation resources than Alternative D (No Action).

4.18.2.14.3. ALTERNATIVE B

Under Alternative B, 166,794 acres of land within the VPA would be managed as VRM Class I and II. Under this alternative 1,553,146 acres would be managed as VRM Class III and IV. Due to the fact that the acreage managed under the different VRM classifications varies by less than 1% between Alternatives B and D the impacts would be nearly the same between these alternatives.

4.18.2.14.4. ALTERNATIVE C

Under Alternative C, 508,441 acres of land within the VPA would be managed as VRM Class I and II. Under this alternative 1,211,499 acres would be managed as VRM Class III and IV. Alternative C would manage over 200% more land as VRM Class I and II than Alternative D (No Action). Lands managed as VRM Class III and IV would be reduced by 22% compared to Alternative D (No Action). Due to the greater acreage of land managed as VRM Class I and II under Alternative C it would have more beneficial impacts to vegetation resources than Alternative D (No Action).

4.18.2.14.5. ALTERNATIVE D (NO ACTION)

Under Alternative D (No Action), 166,772 acres of land within the VPA would be managed as VRM Class I and II. The total acreage of land managed as VRM Class III and IV under this alternative would be approximately 1,553,168 acres. Impacts to vegetation resources would be the same as those discussed at the beginning of this section.

4.18.2.14.6. ALTERNATIVE E

Under Alternative E, 595, 980 acres of land within the VPA would be managed as VRM Class I and II. Under this alternative 1,126,563 acres would be managed as VRM Class III and IV. Alternative E would manage over 250% more land as VRM Class I and II than Alternative D (No Action). Lands managed as VRM Class III and IV would be reduced by approximately 27% compared to Alternative D (No Action). Due to the greater acreage of land managed as VRM Class I and II under Alternative C it would have more beneficial impacts to vegetation resources than any other alternative.

4.18.2.15. IMPACTS OF WILD HORSES DECISIONS ON VEGETATION RESOURCES

Decisions for wild horse management would involve eliminating, maintaining, or re-establishing herds. Amounts of forage allocated for horses would be altered depending on the wild horse management decisions. Where wild horse herds are maintained or re-established direct, adverse impacts to vegetation from trampling, fencing, and grazing would result. Where wild horses are eliminated vegetation would benefit from a reduction in these impacts.

4.18.2.15.1. PROPOSED RMP AND ALTERNATIVE B

Under the Proposed RMP and Alternative B, wild horses would be gathered and removed from the planning area. Forage would be allocated for wild horses until they are removed. The Proposed RMP and Alternative B would be more beneficial to vegetation resources than Alternative D (No Action) because wild horses would be removed and impacts related to trampling, fencing, and grazing would be eliminated.

4.18.2.15.2. ALTERNATIVES A, C, D (NO ACTION), AND E

Decisions for wild horse management under Alternatives A, C, D (No Action), and E would involve re-establishing herds and altering amounts of forage allocated for horses. Impacts would be the same as those described above. Adverse impacts to vegetation would be greater under these three alternatives than under Alternatives A and B because wild horses would remain.

4.18.2.16. IMPACTS OF WILDLIFE DECISIONS ON VEGETATION RESOURCES**4.18.2.16.1. PROPOSED RMP AND ALTERNATIVES A, B, C, D (NO ACTION), AND E**

Seasonal restrictions and limitations on surface-disturbing activities for the protection of wildlife would indirectly benefit vegetation. The Proposed RMP and Alternatives A, B, and C would provide slightly more protection than Alternative D (No Action), as Alternative D (No Action) would only restrict minerals activities. The Proposed RMP and Alternatives A, B, C and E would stipulate limits on the amount of surface disturbance (10% of crucial deer habitat for the Proposed RMP, up to 560 acres of new surface disturbance per township under Alternatives A and B; and up to 560 acres of total surface disturbance per township for Alternatives C and E), further reducing the direct adverse impacts to vegetation when compared to Alternative D (No Action), under which new surface disturbances remain unspecified.

Sagebrush habitat reclamation or enhancement (at a ratio of 3:1) within crucial deer winter range under Alternatives C and E would benefit this vegetation type, when compared to Alternative D (No Action, under which sagebrush habitat reclamation remains unspecified). Vegetation treatments in sagebrush communities would beneficially impact the development of the desired seral stages. The Proposed RMP would approach compensatory mitigation on an as appropriate basis where it can be performed on-site, and on a voluntary basis where it is performed offsite, or, in accordance with current management. Alternatives A and B would also reclaim disturbed sagebrush habitat areas, but at a lower ratio (1.5:1 and 1:1, respectively) than Alternatives C and E and would therefore produce fewer beneficial impacts to the vegetation than Alternatives C and E, but more than Alternative D (No Action).

4.18.2.17. IMPACTS OF WOODLAND DECISIONS ON VEGETATION RESOURCES**4.18.2.17.1. PROPOSED RMP**

Under the Proposed RMP, up to 546,152 acres of forest and woodlands would be harvested or have vegetation treatments applied to reduce the risks of wildland fire. All other components of

woodland decisions under the Proposed RMP are the same as Alternative A below except that there would be special management actions for the old growth pinyon areas found in Bitter Creek to reduce impacts to this vegetation community. Special management actions for old growth pinyon areas in Bitter Creek are not specified under Alternative D (No Action).

4.18.2.17.2. ALTERNATIVE A

Under Alternative A, up to 552,152 acres of forest and woodlands would be harvested or have vegetation treatments applied to reduce the risks of wildland fire. Forest and woodlands would be managed to maintain and restore biodiversity and reduce the occurrences of insect infestations, fire, and disease to levels normally expected in healthy forest and woodlands. Relict stands would be maintained for biological and genetic diversity. These management actions would have long-term direct and indirect protection-related beneficial impacts on vegetation resources by reducing the risks of wildland fire, and reducing the damage caused by insects and disease. Other beneficial impacts are described under Section 4.18.1 Impacts Common to the Proposed RMP and All Alternatives. When compared to Alternative D (No Action), Alternative A would have more beneficial impacts on vegetation.

Woodland harvesting and associated access road and trail construction disturbances, and subsequent soil erosion would have direct and indirect, long-term adverse impacts on vegetation by increasing soil erosion rates and increasing the potential for noxious weed establishment. Applying best management practices to reclaim obsolete access roads and trails created for woodland harvesting, and reducing soil erosion caused by woodland harvesting would reduce adverse impacts to vegetation resources (and to vegetation productivity) to the short-term.

4.18.2.17.3. ALTERNATIVE B

Management actions under Alternative B would allow the harvesting of forest and woodlands before and after vegetation treatments to achieve desired future conditions. Up to 554,108 acres would be open to harvesting or vegetation treatments, and public harvesting would be allowed to achieve the greatest output of woodland and forest products. Similar to Alternative A, management actions would allow salvaging of dead, dying, diseased trees with the intent of promoting healthy forest and woodlands. These management actions would have long-term beneficial impacts on vegetation resources, when compared to Alternative D (No Action, which does not specify management actions for forest and woodlands), by reducing fuel loading and reducing the risks of wildland fire. The adverse impacts would be similar to those described under Alternative A.

4.18.2.17.4. ALTERNATIVE C

This alternative would allow harvesting or treatments on 552,152 acres (the same as Alternative A), with impacts similar to those described under Alternative A. Compared to Alternative D (No Action), Alternative C would have more beneficial impacts on vegetation resources. The indirect impacts of soil erosion and sedimentation would be less under Alternative C because of the greater restrictions on woodlands and forest species salvage, and thus less surface disturbance would be caused by this activity under Alternative C than under Alternative D (No Action).

4.18.2.17.5. ALTERNATIVE D (NO ACTION)

Alternative D (No Action) would allow up to 88,200 acres of forest and 200,100 acres of woodlands to be harvested or have vegetation treatments, which would have beneficial impacts on vegetation resources by reducing fuel loads and by reducing the risks of wildland fire. Adverse impacts would be similar to those described under Alternative A.

4.18.2.17.6. ALTERNATIVE E

This alternative would have woodland harvesting and treatments impacts similar to those described under Alternative A, except that approximately 131,809 acres of woodlands within the 277,596 acres of non-WSA lands with wilderness characteristics would be managed to prohibit woodland harvesting and salvage in order to protect non-WSA lands with wilderness characteristics values. Under this alternative, these non-WSA areas would be managed as closed to private and commercial harvesting and seed collection, closed to cross-country OHV access, closed to road construction, and managed under VRM I objectives. The impacts of these decisions on woodland vegetation would be beneficial in the long term from preservation and maintenance of woodland vegetation communities, reduced direct and indirect impacts to soils, and a reduced potential for noxious or invasive species establishment from surface disturbances; however, there would be long term, adverse impacts to vegetation from prohibitions on treatments to reduce fuel loading, which would maintain the risks of wildland fire and the subsequent exposure of burned areas to noxious and invasive species establishment. Compared to Alternative D (No Action), this alternative would have more beneficial impacts on vegetation because of the more protective decisions to preserve wilderness values that include vegetation.

4.18.2.18. SUMMARY

In general, the impacts from surface disturbance are directly related to vegetation impacts, therefore the alternatives with greater surface disturbances would have the highest impacts to vegetation resources. The greatest surface disturbance from oil and gas leasing (which includes CBNG) would be due to Alternative B, followed by Alternative A, the Proposed RMP, and Alternatives C, D and E, respectively.

Off highway vehicle use would be generally unrestricted under Alternative D (No Action), therefore direct adverse impacts would be greatest under this alternative, followed by the Proposed RMP and Alternative A, and Alternatives B, C, and E, respectively.

4.18.3. MITIGATION MEASURES

Mitigation measures for vegetation resources would include:

- 1) seeding with native seed where surface disturbance occurs to limit the spread of noxious weeds. Treatments of weed infestations with chemical and mechanical means would be done as well;

2) reclamation of obsolete roads and trails to reduce soil erosion and subsequent loss of vegetation productivity.

4.18.4. UNAVOIDABLE ADVERSE IMPACTS

Unavoidable adverse impacts would occur to vegetation resources from road building, minerals development, and the construction of recreational facilities and trails.

4.18.5. SHORT-TERM USE VERSUS LONG-TERM PRODUCTIVITY

Construction of roads and well pads with mineral development would provide short-term mineral use that could result in long-term degradation of vegetation resources. Areas converted to developed sites would lose the original vegetation and soil while being used for other resource purposes. Roads provide a pathway for invasive plant species to infest more remote areas, and improper rehabilitation and re-vegetation of well pads would also provide a route for invasive species area to spread.

4.18.6. IRREVERSIBLE AND IRRETRIEVABLE IMPACTS

There could be irreversible and irretrievable impacts to vegetation resources in areas where invasive species are allowed to proliferate. Irreversible impacts would include loss of vegetative cover, reduced productivity, and weed infestation as a result of surface-disturbing activities such as mineral development. Provided continued management and mitigation measures these impacts would not likely be permanent. However, invasive species, particularly cheatgrass, once established are difficult to remove (populations can be controlled but complete eradication is unlikely), thereby causing an irretrievable impact in terms of loss of productive vegetation resources free of weeds (a permanently altered vegetation community). Other irretrievable impacts to vegetation resources would occur where land is cleared and permanent structures are built.