United States Department of the Interior
Bureau of Land Management
Elko Field Office

March 20, 1998

ENVIRONMENTAL ASSESSMENT
BLM/EK/PL-98/008

PROGRAMMATIC ENVIRONMENTAL ASSESSMENT OF INTEGRATED WEED MANAGEMENT ON BUREAU OF LAND MANAGEMENT LANDS

File: 9011

FINDINGS OF NO SIGNIFICANT IMPACT
AND
DECISION RECORD
PROGRAMMATIC ENVIRONMENTAL ASSESSMENT
OF INTEGRATED WEED MANAGEMENT
ON BUREAU OF LAND MANAGEMENT LANDS
BLM/EK/PL-98/008, NV-060-EA97-39
and NV-020-08-11

Finding of No significant impact

Based on the analysis of potential environmental impacts contained in Environmental Assessment BLM/EK/PL-98/008, NV-060-EA97-39, and NV-020-08-11, I have determined that the action will not have a significant effect on the human environment, and therefore, an environmental impact statement will not be prepared.

Decision

It is my decision to authorize the Programmatic Environmental Assessment of Integrated Weed Management on Bureau of Land Management Lands as described in the proposed tion of BLM/EK/PL-98/008, NV-060-EA97-39, and NV-020-08-11.

Monitoring

No special monitoring needs have been identified for this action. Standard Bureau contracting inspection procedures will be used during weed treatments. Normal use supervision and rangeland monitoring studies will evaluate the effectiveness of the decision.

Rationale

This action will provide a way to treat noxious weeds using the Integrated Weed Management approach.

The Control with all Methods except Herbicides alternative was not selected because fewer acres would be treated and prescribed fire and mechanical methods would be increased. This alternative is unsatisfactory because additional burning and mechanical methods would add an additional load of particulates on the air quality.

The Chemical Control Only alternative was not selected because it would not allow the most flexible implementation of the most effective treatment methods on each site.

e No Action alternative was not selected because without any treatments, uncontrolled noxious weeds would continue to spread and out compete preferred forage for both wildlife and livestock. This would also result in an economic loss to land users such as ranchers and recreationists.

The Elko, Wells, Tonopah, and Shoshone-Eureka resource area resource management plans and the Sonoma-Gerlach and Paradise-Denio management framework plans are silent on weed management action and alternatives are however consistent with the objectives of the RMPs and MFPs and are consistent with Federal, State and local laws, regulations, and plans to the maximum extent possible.

Helen Hankins

HELEN HANKINS
DISTRICT MANAGER

March 20, 1998

Date

TABLE OF CONTENTS

CHAPTER 1.0 INTRODUCTION/PURPOSE OF AND NEED FOR ACTION

1.1 Introduction

Ecosystem health is a primary goal of the BLM. One of the greatest obstacles to meeting this goal is the rapid expansion of invasive and noxious weeds. These weeds can dominate many sites and often cause permanent damage to native plant communities. Noxious weeds are spreading on BLM-administered lands at a rate of over 2,300 acres per day, and on all western public lands at approximately 4,600 acres per day. This is occurring in both disturbed and relatively undisturbed areas. While weed infestations are increasing at an ever accelerating rate, currently only about 8.5 million acres or 5% of BLM's 180 million acres have serious weed populations. If local and regional cooperative weed management efforts are not dramatically increased, approximately 19 million acres of BLM-administered land would be infested with these invasive plants by the year 2000. On the positive side, effective and economical strategies are available to immediately protect the portion of the remaining 95% of the land that is susceptible to noxious weeds infestation (BLM, 1996).

These weeds infest disturbed areas, roadsides, rangelands, pasturelands, woodlands, forests, chaparral, desert shrub, wetlands and freshwater marshes, and cultivated fields in Churchill, Elko, Esmeralda, Eureka, Humboldt, Lander, Nye, Pershing, and Washoe Counties. Weeds generally invade disturbed sites, but can invade adjoining uninfested sites.

The weeds proposed for control are species not native to this region and therefore have no natural enemies and because of their natural defenses would readily replace native vegetation if left uncontrolled. On 29 million acres of public lands administered by the BLM's Battle Mountain, Elko, and Winnemucca Field Offices, there are numerous noxious weed infested sites totaling approximately 42,000 acres.

1.2 Purpose of and Need for Action

The proposed action and alternatives address the control and eradication of existing populations of noxious weeds on BLM managed lands to prevent continued uncontrolled spread.

The Record of Decision (BLM, 1991b) for Vegetation Treatment on BLM Lands in Thirteen Western States requires that site-specific documentation be prepared at the Field Office level for each proposed vegetation control plan. This would be accomplished by using a site-specific environmental analysis. This EA is a programmatic analysis of vegetation management on BLM administered lands in northern Nevada and is tiered to the Final EIS Vegetation Treatment on BLM Lands in Thirteen Western States.

1.3 Land Use Plan Conformance Statement

The Elko, Wells, Tonopah, and Shoshone-Eureka Resource Area Resource Management Plans and the Sonoma-Gerlach, and Paradise-Denio Resource Area Management Framework Plans are silent on weed management. The proposed actions and alternatives are however, consistent with the objectives of the RMPs and MFPs and are consistent with Federal, State and local laws, regulations, and plans to the maximum extent possible.

1.4 Legal Mandates

The BLM utilizes several regulatory authorities in controlling noxious weeds:

Carson-Foley Act of 1968

The Federal Insecticide, Fungicide and Rodenticide Act (1972) as Amended (1988).

Federal Noxious Weed Act of 1974 and Amendment of November 28, 1990.

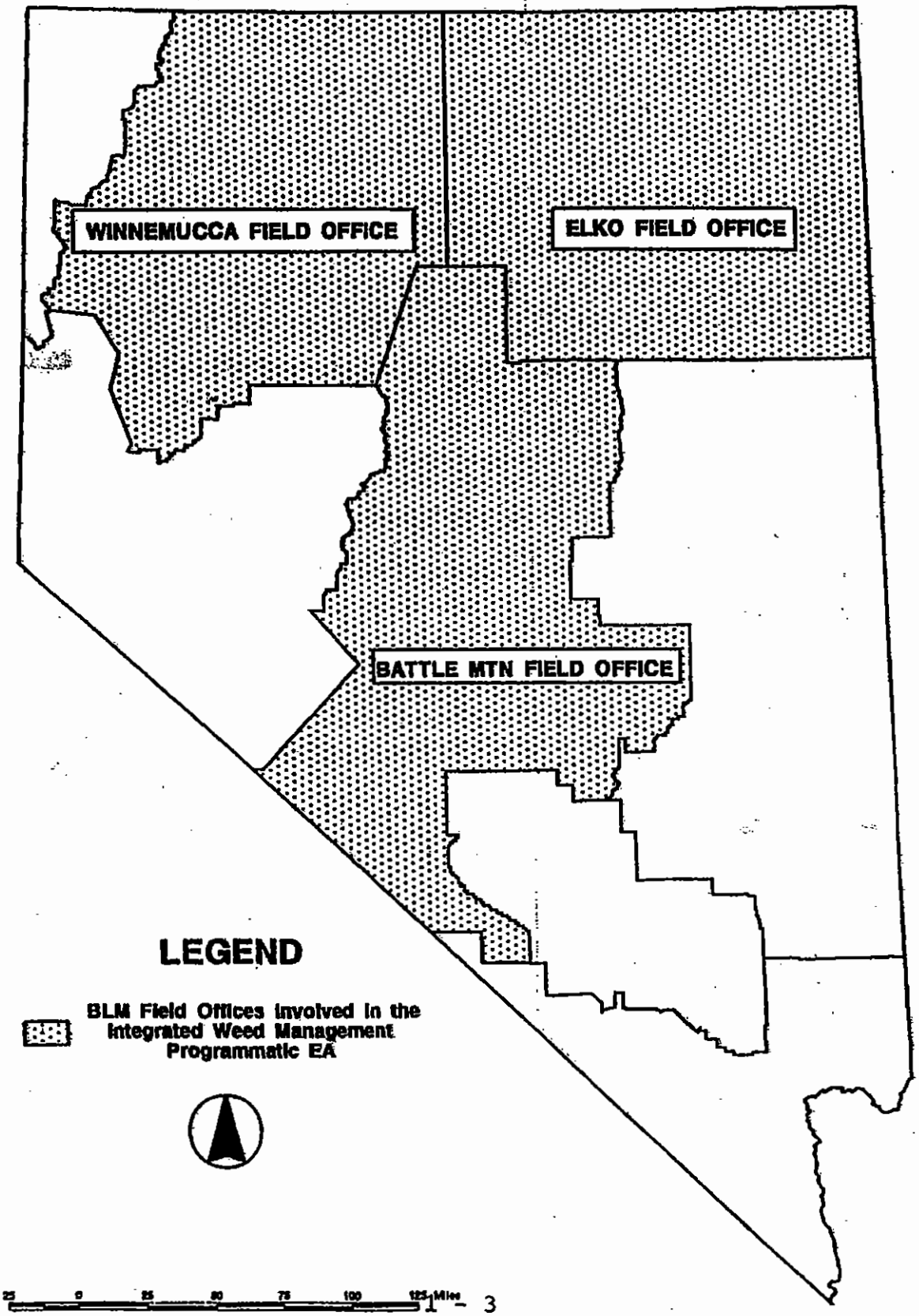
Federal Land Policy and Management Act of 1976.

Public Rangelands Improvement Act of 1978.

1.5 Cooperation between Federal, State and Counties

State authority for eradication, or suppression of noxious weeds in Nevada is derived from Nevada Revised Statutes Chapter 555, Nevada Administrative Code 555. Cooperating agencies in weed control include conservation districts, Nevada Department of Transportation, Nevada Division of Wildlife, U.S. Department of Agriculture, U.S. Forest Service, U. S. Fish & Wildlife Service, Nevada Weed Association, Nevada Division of Agriculture, and interested parties.

State of Nevada General Location Map



CHAPTER 2.0 PROPOSED ACTION AND ALTERNATIVES

2.1 Proposed Action

The proposed action is to control noxious weeds on approximately 29 million acres public lands administered by the BLM's Battle Mountain, Elko and Winnemucca Field Offices through a combination of manual, mechanical, herbicide treatments, prescribed fire, and biological control methods see Appendix A. The weed populations vary in size from very small groups of plants (one or two) to hundreds of acres in size. To determine actual locations of noxious weed infestations, inventories would be conducted on the ground by BLM employees and volunteers trained in plant identification and data recording techniques such as the use of Global Positioning System (GPS) instruments. Some of the noxious weeds listed in Appendix B would be treated by the BLM in the above mentioned counties. Appendix B contains a comprehensive list of noxious weeds in Nevada. Upon final approval, this document would be in effect for a period of ten years. This document would be subject to modification if needed.

The BLM would authorize the respective counties to control weeds on BLM administered land under the terms of Cooperative Agreements with the counties and Conservation Districts. The BLM would also conduct weed control on BLM administered lands. The number of acres treated could be affected by the method used, with chemical applications being the most desired and biological being the least desired. The timing of the treatments would generally depend on the weather, the susceptibility of the targeted species to the various treatment control methods and the phenology stage of the species. Treatments could take place any time of the year dependent upon these criteria. Throughout the 10 year life of the EA, the number of treated acres would vary each year based on budget, weather, climate and other constraints.

2.1.1 Work Plan

For each weed control project the annual work plan work plan, as outlined in Appendix C, and the Standard Operating Procedures listed below, would be used in the design of the project. Integrated weed control projects on public lands, in each District would be based on the Work Plan and the Standard Operating Procedures to assess, inventory, and mitigate any impacts in the treatment areas.

2.1.2 Standard Operating Procedures

a. The Standard Safety Procedures and Standard Operating Procedures found in Appendix D would be strictly followed.

b. Control of noxious weeds would not be conducted within 1/4 mile of active sage grouse leks (while sage grouse are using the leks) during strutting season, or within 1/4 mile of bald or golden eagles, Peregrine falcon, and ferruginous hawk nests during the active nesting season. This includes all protected and sensitive bird species listed on Appendix E.

c. All landowners within the treatment areas are welcome to attend training of proper identification and growth stages of noxious weeds before treatment. Periodic compliance checks of the weed control activities would be done during the treatment period with the BLM and the affected landowners. A monitoring and evaluation program would be cooperatively developed

between all the affected landowners within the treated sites to assess the annual progress of the Integrated Weed Management Program.

d. The Nevada Division of Water Resources (NDWR) would be given the opportunity to review and comment on any proposed monitoring plans.

e. Prior to any control efforts, Native American concerns would be solicited in accordance with Native American consultation regulation and policy.

f. When manual control is conducted on banks of perennial or intermittent streams, the weeds would be removed from the site and disposed of in such a manner that seeds would not get into the water and would not germinate.

g. Ripping compacted areas and placement of waterbars, as specified by BLM, would be required after heavy equipment use.

h. The proposed maximum herbicide application rates, as well as any new chemicals and technology becoming available, and that are approved for use on public lands are displayed in Appendix F. Herbicides would be calculated and purchased only in quantities needed to complete each BLM spot treatment and contractor applied treatment Appendix H. Label directions would be strictly followed. All herbicides which would be used are currently registered by the Environmental Protection Agency (EPA) for use on pasture, forestland, and rangeland. Any treatment across adjoining statelines would meet both states requirements.

i. Prior to any chemical treatment areas would be evaluated for the presence of riparian areas, special status plants and animals and if they fall within an ACEC or cultural site. No ground application (truck mounted sprayer or backpack) would be done within 50 yds of any sensitive and threatened and endangered species.

j. Reapplications of the herbicide would not be less than the persistence factor identified for each herbicide described in Appendix G.

k. Ground applications of herbicides (including backpack and power sprayer) would be limited to spraying the target weeds and the surrounding ground for 10 feet. Backpack applications of liquids would occur only at low nozzle pressure and at ground level. Granular formulations would be applied with broadcast spreaders or by hand to within 3.5 feet of the ground.

l. Ground application of granulars would be done in wind speeds not exceeding 10 miles per hour (mph). Ground applications of liquids would not occur when wind speeds exceed 8 mph. Aerial applications would be done when wind speeds are no greater than 5 mph. The Nevada Division of Agriculture, or a Certified Pesticide Applicator, would monitor for wind speed and herbicide drift at all control sites near surface waters through the use of drift cards. If the drift cards detect a positive herbicide presence in the buffer zone, spraying would be stopped immediately and monitoring would be initiated. On county projects, the county would conduct the monitoring. On BLM projects, the BLM would conduct the monitoring. Drift cards would be required.

m. Due to boom width for aerial applications, minimum treatment width would be 50 feet. Aerial application would occur at the minimum heights permitted above ground cover when terrain and safe flying conditions permit.

n. The BLM would notify the livestock permittee(s) when herbicides are used on grazing allotment(s). Wild Horses and Burros would be avoided during the foaling season if aerial application of herbicides is to be conducted. Any grazing use would take habitat requirements into account when planning a grazing system. Phenology of target species and multiple use objectives would also be considered.

o. The use of herbicides near water would be based on the buffer requirements established in the BLM Chemical Pest Control Manual, Handbook H-9011-1; distance from water (in horizontal feet) would be as follows: 10 ft--backpack, 25 ft--vehicle-mounted sprayer of granulars, 50 ft--vehicle-mounted sprayer of liquids, 100 ft--aerial, and only after consultation with the appropriate BLM Staff Specialist.

p. No herbicide application would be conducted when rain (greater than a 50% chance) is predicted within 24 hours of treatment. The BLM would use the Interagency Fire Dispatch Center for weather reports for rain predictions.

q. Aerial application of herbicides would not be allowed within 500 feet of a developed BLM recreation site and areas of high recreational use. Vehicle-mounted spraying would not be allowed within 50 feet of BLM recreation sites and areas of high recreational use, while backpack spot treatments may be applied within these sites. Prior to spot treatments, signs would be posted stating chemical used, date of application, and a contact phone number for more information. The signs would remain in place for two weeks after spraying.

r. No helicopter inventory or aerial application would be conducted within 1/2 mile of active Raptor nests. Surveys can be conducted after fledglings have left the nest. No noxious weed control would be conducted within 1/2 mile of Raptor nests during active nesting season, unless approved by the BLM Biologist.

s. Each time an area is designated for weed control, BLM archaeologists would be notified to determine if a ground applied treatment could be done. Each site and report number would be identified at this time. Due to the enormous number of sites throughout the Field Offices, they cannot be identified in this document.

2.1.3 Treatment Method Descriptions

a. Manual Control

1. Manual treatment includes the use of simple hand tools such as saws, axes, shovels, machetes, mattocks, and brush hooks for hand grubbing, cutting, and girdling operations. Hand grubbing involves digging plants from the soil with as much of their root system as necessary to prevent sprouting and regrowth.

b. Mechanical Control

1. Mechanical methods includes removal of top growth by mowing, cutting or roller chopping and removal of the entire plant by plowing, tilling, brushbeating, or using a chain saw.

c. Herbicide Control

1. Herbicide methods include the use of backpack sprayers, truck mounted power sprayers, and broadcast or aerial application. The herbicides would be in liquid or granular form see Appendix H.

2. Helicopter or packstock inventories and treatments would be conducted in remote areas or where all other vehicle travel is prohibitive. Only the patch of targeted weeds and immediate area surrounding them would be treated.

3. The Final EIS Vegetation Treatment on BLM Lands in Thirteen Western States analyzed the herbicides (by trade names) addressed in this EA. The analyses included application methods, degradation of the herbicides, and risks to humans, wildlife, and aquatic organisms.

d. Prescribed Fire Control

1. Prescribed burning is the planned application of fire to wildland fuels in their natural or modified state, under specified conditions of fuels, weather, and other variables, to allow the fire to remain in a predetermined area and to achieve site-specific fire and resource management objectives.

2. Management objectives of prescribed burning include the control of certain species, enhancement of growth, reproduction, or vigor of certain species; management of fuel loads; and maintenance of vegetation community types that best meet multiple use management objectives. Treatments would be implemented in accordance with District fire plans. These treatments may include a follow-up seeding to prevent or inhibit the reinvasion of noxious weeds.

3. BLM District's prescribed fire plans would be followed.

e. Biological Control

1. Biological methods of vegetation treatment employ living organisms to selectively suppress, inhibit, or control herbaceous and woody vegetation. This method is viewed as one of the more natural processes because it requires the proper management of plant-eating organisms and precludes the use of mechanical devices, chemical treatments, or burning of undesired vegetation.

2. The use of biological control agents would be conducted in accordance with BLM procedures in Use of Biological Control Agents of Pests on Public Lands, BLM Manual 9014.

3. Biological control includes the use of livestock such as horses and cows in a grazing system or the use of goats in a controlled environment

f. Weed Control in Wilderness Study Areas and Wilderness

1. Mechanical, chemical, or biological control treatment methods to control noxious weeds and individual plants in Wilderness Study Areas may be used when there is no effective alternative and when control of noxious weeds or exotic plant is necessary to maintain the natural ecological balances within a WSA or portion of a WSA. Noxious weeds in WSAs and Wildernesses may be controlled by grubbing or with chemicals when they threaten lands outside the WSA or are spreading within a WSA, provided the control can be effected without serious adverse impacts on wilderness values. Proposals for weed control in WSAs would be evaluated according to the policies and procedures detailed in H-8550-1 - Interim Management Policy for Lands Under Wilderness Review (Rel. 8-67, 7/5/95).

2.2 Alternatives

2.2.1 Control With All Methods Except Herbicides

Under this alternative no herbicides would be used. Any one or a combination of the methods excluding herbicides identified above would be used.

2.2.2 Chemical Control Only

Under this alternative only the herbicides, as identified in the proposed action, would be utilized to control the target noxious weeds see Appendix A and H.

2.2.3 No Action

Under no action, no effort would be made to control the targeted noxious weeds. Uncontrolled noxious weeds would continue to spread.

CHAPTER 3.0 AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

3.1 Proposed Action

3.1.1 General Setting

The area is typical of the Basin and Range Physiographic Province in Nevada. It is characterized by fault block mountain ranges, most of which run in a north-south direction, separated by large valleys. Most valleys average 5,000 feet in elevation while the mountain ranges average 7,500 to 8,200 feet. Soils generally in the northern part of the EA area are mineral soils that have thick dark colored surface horizons rich in organic matter and are of volcanic origin. The rest of the EA area consists of soils that are light colored and low in organic matter and have accumulations of soluble salts and lime. Average annual precipitation ranges from six inches on valley floors to over 20 inches on the higher mountains. Vegetation consists of a wide variety of grasses, forbs, shrubs, and tree species including pinyon pine and junipers.

Known weed infestations are scattered throughout forest, range, and crop lands in Churchill, Elko, Esmeralda, Eureka, Humboldt, Lander, Nye, Pershing and Washoe counties. Not all weeds listed in Appendix B are found on the BLM lands analyzed in the EA, but are found on adjacent private lands and public lands within Nevada. The public land pattern is generally consolidated. The exception is "checkerboard" land ownership patterns which consists of alternating Federal and private sections of land.

3.1.2 Critical Elements

3.1.2.1 The following critical element of the human environment are not present or are not affected by the proposed action or alternatives:

Farm Lands (prime or unique)
Paleontology
Environmental Justice

3.1.3 Bureau specialists have further determined that the following resources, although present in the project area, are not affected by the proposed action:

Geology
Lands
Social and Economic Resources

3.1.4 Resources Present and Brought Forward for Analysis

3.1.4.1 Air Quality

Affected Environment: Existing air quality throughout much of the study area is unknown. Little monitoring data are available for most pollutants. The Standard Operating Procedures insure that reduced air quality would not be a factor.

The Clean Air Act Amendment of 1977 contains provisions to ensure that air quality does not deteriorate in areas with clean air. Class I areas, such as Wilderness Areas, allow virtually no deterioration. Temporary, moderate deterioration of air quality is allowed in Class II areas.

There are two air quality classes in the EA area. Prevention of Significant Deterioration (PSD) Class I areas, predominantly National Parks and certain Wilderness Areas, have the greatest limitations; virtually any degradation would be significant. Areas where moderate controlled growth would take place are designated as PSD Class II. All BLM-administered lands in the EA area are classified as PSD Class II (BLM, 1991a)

Environmental Consequences: Proposed Action: The most significant impacts to air quality would be moderate increases in noise, dust, and combustion engine exhaust generated by manual and mechanical treatment methods; smoke from prescribed burning; and moderate noise and minimal chemical drift from the aerial application of herbicides. Impacts would be temporary, small in scale, and dispersed throughout the study area. These factors, combined with standard management practices, minimize the potential impacts.

Environmental Consequences: Alternative # 2 - Control with all Methods except Herbicides: The most significant impacts to air quality would be moderate increases in noise, dust, and combustion engine exhaust generated by manual and mechanical treatment methods and smoke from prescribed burning. Biological control methods would have little potential to affect air quality. Impacts would be temporary, small in scale, and dispersed throughout the study area.

Environmental Consequences: Alternative # 3 - Chemical Control only: Moderate noise from application equipment and minimal chemical drift from the aerial application of herbicides would occur. Standard Operating Procedures would minimize these impacts.

Environmental Consequences: No Action: Under this alternative status quo would continue and there would be no impacts to air quality.

3.1.4.2 Area of Critical Environmental Concern

Affected Environment: The ACEC is 6037 acres located approximately 16 miles of Wendover, NV. The area lies on the eastern fringe of a major raptor migration route, the Goshute Mountain migration corridor. The falcon's habitat is associated with a rolling desert shrub community, dry washes, and numerous rock abutments and outcroppings. The dessert shrub community is dominated by winterfat, shadscale, Nuttail's saltbrush, together with Indian ricegrass and a variety of other perennial grasses.

Management requirements for the ACEC includes prohibiting discharge of firearms from March 1 through August 31, no surface occupancy for leaseables on a delineated portion, stipulate mining plans or operations to assure that surface disturbance does not cause unnecessary or undue degradation to peregrine falcon habitat, restrict off-road vehicle use March 1 through August 31, and regulate organized recreational events March 1 through August 31.

Environmental Consequences: Proposed Action: Protection and management of this natural habitat and site would enhance the potential of the natural recovery of the peregrine falcon. The following activities would be avoided if it alters the habitat to the point of being unsuitable, if it causes unnecessary and

undue degradation to breeding, nesting, rearing, or feeding habitat. If any range improvement that disturbs or alters the habitat to the point that it lessens the areas suitability.

Manual treatments would be the least obtrusive method for use in ACEC areas; they are also the most expensive and least practical. Manual treatments can be very selective and would minimize damage to non-target vegetation. This treatment would be best suited for small areas invaded by noxious weeds.

Mechanical treatments of vegetation would, in most cases, be compatible with ACEC management. I very limited, site specific cases, mechanical means may be appropriate if no other method is feasible. Positive effects in the long term could include greater vegetation diversity and increase wildlife habitat.

Chemical methods may be used to remove noxious weeds, as long as they are used without adversely affecting ACEC values. Determining whether to conduct aerial spraying on ACECs would have to be done on a site specific bases.

Prescribed burning is only a very limited option and would be used only if it does not disturb or alter the habitat to the point that it lessons the area's suitability.

Biological methods of vegetation treatments that may be considered for BLM use include grazing animals, insects, and pathogens. Because of their non-compatible uses ACECs have strict guidelines for vegetative treatment. Biological control by grazing animals in ACECs would only be practiced as specified in the Salt Lake ACEC Study Guide. Insects and pathogens are good candidates for serving as biological agents for noxious weed control in ACECs, if large infestations exist, because they are host specific and help restore the natural vegetative diversity of the treated area.

Environmental Consequences: Alternative #2 - Control with all Methods Except Herbicides: Consequences under this alternative would be the same as in the proposed action.

Environmental Consequences: Alternative #3 - Chemical Control Only: Consequences under this alternative would be the same as in the proposed action. Chemical use would be limited in the ACEC due to the sensitive nature of the falcon's habitat.

Environmental Consequences: No Action: , Noxious weeds would continue to increase with no control treatments. Habitat for small mammals and rodents would diminish, therefore reducing food source of the peregrine falcon.

3.1.4.3 Cultural Resources

Affected Environment: Archaeological and historical resources exist throughout the area. These cultural resources are the remains of past (both prehistoric and historic) and present human activities. They are non-renewable, generally fragile, and consist of sites or locations where humans lived or conducted some activity. As a general rule, site locations within a mile of permanent water sources and playa lake margins have a high probability of containing cultural materials. Moderate probability areas include pinyon pine belts in unwatered areas and areas one to two miles from springs and unwatered foothills.

Low probability areas include playa bottoms and unwatered mountainous areas.

Environmental Consequences: Proposed Action:

There would be minimal impacts caused by general surface disturbance. Workers may illegally collect artifacts. Due to the selectivity of manual control, native plant species and cultural sites would be avoided. The use of hard-edged tools may physically damage artifacts.

Mechanical treatment methods would damage both surface and subsurface cultural materials. Avoiding areas would significantly reduce impacts.

It is unlikely that cultural artifacts protected by soil or plant material would be adversely affected by chemical treatments. Impacts would occur based on the application method and the type of herbicide utilized.

The effect of prescribed fire on cultural resources depends on the location of the resource construction material with respect to location of fuels, and exposure to varying temperatures. The heat, smoke and soot could damage rock art. Historic sites would be avoided.

Biological methods using grazing may damage surface artifacts and disrupt the relative positions of cultural material. However, site specific investigations would decrease this possibility. Unless the weed species is utilized for traditional lifeways it is unlikely that insects or pathogens due to their size and host specific actions would affect cultural resources.

Environmental Consequences: Alternative #2 - Control With All Methods Except Herbicides: The consequences as discussed above would be the same.

Environmental Consequences: Alternative #3 - Chemical Control Only: The consequences would be the same as those identified above for chemical control

Environmental Consequences: No Action: Under this alternative, no impacts would occur to cultural resources.

3.1.4.4 Floodplains

Affected Environment: Floodplains are lands susceptible to being flood-inundated from any source, including small and often dry watercourses and areas adjoining coastal waters, areas along rivers, streams, and lakes. They are identified by the Federal Emergency Management Agency (FEMA) as 100 year floodplains. Floodplains occur adjacent to some of the rivers and streams in the project area.

Environmental Consequences: All Alternatives: All treatment methods would be considered to avoid any direct or indirect support of floodplain development. The long and short term impacts on natural and beneficial floodplain functions associated with the use and modifications of floodplains would be avoided. The treatments would be monitored to ensure that the floodplain objectives as identified in the BLM Manual 7221 - Floodplain Management are met.

Under these alternatives, manual and biological treatment methods would have a negligible effect on

floodplains because of minimal ground disturbing activities. Mechanical and prescribed burning treatments would increase short-term erosion and sedimentation, but are the least likely to be used in these areas. Drift onto surface water may occur from herbicide treatments, although mitigation measures make this unlikely. In general, because of the characteristics of the chemicals approved for use in floodplains and site-specific mitigation measures, it is unlikely that herbicides would have significantly long-term negative impacts.

Environmental Consequences: No Action: Noxious weed species would continue to expand under the no action alternative, impacting native plant diversity as weed species displace existing vegetation that restore, maintain, and preserve the natural and beneficial functions of floodplains.

3.1.4.5 Native American Religious Concerns

Affected Environment: Native plant materials, such as pinyon pine nuts, sagebrush, and plants roots, used for religious ceremonies, medicinal purposes and food, may fall within the proposed treatment areas. There could also be areas of religious and ceremonial concerns within the proposed treatment areas. During the site specific environmental analysis phase all of the concerns identified in the treatment area would be addressed. If cultural sites are identified within the treatment area the following items would have to be addressed: 1. Class III cultural inventory would have to be completed, and 2. Native American consultation would take place.

Environmental Consequences: Proposed Action:

Under the manual control method the least impacts would occur. Impacts may include injury or total removal of native vegetation or damage to structural sites. This method is very site specific and easiest to control. If a large area is encountered the increased labor and cost would make this method not practical.

The use of mechanical methods would be difficult to control if there was a large concentration of cultural sites within the treatment area. Impacts may include native plant damage or removal or damage to existing structural sites. On flat terrain maneuvering around cultural sites would be easier to control.

The use of herbicides could contaminate food sources in areas where food gathering may take place. If these sites are identified during the site specific environmental analysis they would be avoided. There would be no aerial spraying in areas where Native Americans are present within a treatment area.

Under the prescribed fire method areas that may be identified as having cultural concerns would have to be addressed on a site specific analysis because some of these areas may involve the burning of important religious items or food plants such as pinyon pines or sagebrush.

Biological method would have a negligible impact on these site, because the insects or pathogens are host specific and noxious weeds are non-native species.

Under any method chosen for control of noxious weeds, if the treatment area is identified as falling within an Native American cultural site a site specific environmental analysis would be

conducted with a Native American Consultation.

Environmental Consequences: Alternative #2 - Control with all Methods Except Herbicides: The consequences under this alternative would be the same as the proposed action. If these plants are identified within the treatment area, they would be treated with control methods that are designed for minimum impacts.

Environmental Consequences: Alternative #3 - Chemical Control Only: The consequences under this alternative would be the same as the proposed action.

Environmental Consequences: No Action: Under the no action alternative, status quo would be maintained with no impacts on Native American religious concerns.

3.1.4.6 Threatened, Endangered and Special Status Species

Affected Environment: There are 210 state and federal protected and special status plants and animals known to occur on the public lands in the state of Nevada (Appendix E). Any action that may affect these species is subject to consultation with the U.S. Fish and Wildlife Service under Section 7 of the Endangered Species Act. Land such as terrestrial, wetland, riparian, streams, lakes, and reservoirs can provide important habitat for these species. The BLM gives sensitive species special consideration to ensure that their populations do not decline to the point where listing as threatened or endangered becomes necessary (BLM, 1991a).

1. Plants

The species listed in Appendix E and occurring on Nevada BLM-managed lands are either Nevada State Protected Plants or Nevada BLM Special Status Species protected because of potential endangerment or extinction, and are provided the same level of protection as BLM candidate species.

2. Animals

The species listed in Appendix E have been listed as Nevada and BLM Special Status Species. This indicated they are protected or listed in a category implying potential endangerment or extinction. They also meet the Nevada State Protected Animal - BLM's 6840 Policy Definition.

Environmental Consequence: Proposed Action: Unidentified and unknown populations of special status plant and animal species in or near a treated site would be susceptible to impacts. The probability of impacts to special status plant and animal species from all alternatives is low because each proposed project is screened for its potential impacts to special status plants and animals during the site-specific environmental analysis process (BLM, 1991a)

Environmental Consequences: Alternatives #2 and #3 - The probability of adverse impacts to special status plant and animal species from all alternatives is low. Each proposed project would be screened for its potential impacts to special status plants and animals during this the site-specific environmental analysis. As a result of field investigations and coordination with knowledgeable individuals, project design or size may be adjusted, off-site mitigation may be recommended, other stipulations may be applied while the project is being carried out, or the project may be abandoned altogether, based on the

nature of potential impacts.

Environmental Consequences: No Action: No Action would be taken under any alternative that would affect the recovery of any threatened or endangered species. For example, several plants and animal sensitive or candidate species occur in riparian areas. If no action would occur noxious weeds may invade these species habitat which would diminish their available habitat.

3.1.4.7 Wastes (hazardous or solid)

Affected Environment: The existence of hazardous waste on the treatment areas at this time is unknown. This section will address potential generation of hazardous waste due to treatment methods, predominantly chemical spills. During mechanical control of noxious weeds there would be the use of vehicles or portable equipment in the treatment areas. Herbicides will be on site in both large diluted quantities and small concentrated quantities. The standard operating procedures listed in Appendix D are intended to ensure the proper and safe implementation of treatment methods. This includes proper and safe application of herbicides on BLM lands in this EA as required by Federal, State, and regional procedures. Federal and state laws and regulations set minimum standards to follow when applying herbicides on Government administered forests and rangelands.

Environmental Consequences: Proposed Action: The potential for generation of hazardous materials during mechanical control of noxious weeds is very small. However, there can be small amounts of fuel leaked from cans or the equipment it self. This may include spills on the ground or on the operator. Other spills could be generated with the use of herbicides. There could be large quantities of diluted and small quantities of concentrated herbicides on site at any time. With the existence of these chemicals on site the potential for a spill on the ground or the operator is there. Proper training of the operator and safety precautions would be used at all times. Both safety precautions and the SOP for contamination is addressed in Appendix D. Disposal of hazardous waste from these projects would be minimized by a number of methods. Because a large portion of the pesticide use in BLM is under contract, all contracts would specify that all containers be removed from BLM administered lands and disposal of these containers under EPA guidelines is the responsibility of the contractor. Where the BLM is the applicator, only the amount of pesticide needed for the project is purchased and stored. Guidelines for storage are provided in BLM Manual Section 9011.

Environmental Consequences: Alternative #2 - Control With All Methods Except Herbicides: Consequences under this alternative are the same as the proposed action. Since there is no herbicides used in this alternative the impacts are limited to the mechanical and biological controls. There will be no impacts form the manual control methods. Equipment fuel could be present, depending on a project's size, duration, and manpower needed. However, it is unlikely that these materials would become an issue as each site-specific environmental analysis would address their use and disposal.

Environmental Consequences: Alternative #3 - Chemical Control Only: Consequences under this alternative would be the same for herbicides used in the proposed action. Under this alternative there would be a stockpile of herbicide containers and other equipment/materials having chemical residues present at all project sites. Federal law requires all individual herbicide labels and Material Safety Data Sheets (MSDS) give explicit instructions on the proper use and disposal of such containers and materials. Therefore, the responsible party applying the herbicides (BLM, counties, contractors, etc.) would be required to strictly adhere to each chemical's instructions. Under these constraints, hazardous

wastes should not be a problem at any project site.

Environmental Consequences: No Action: Under this alternative no projects would be proposed or implemented. Therefore, no wastes of any nature would be generated or in need of disposal.

3.1.4.8 Water Quality (surface/ground)

Affected Environment: The Basin and Range region is the driest in the United States, with large parts of it being classified as semiarid and arid. Annual precipitation in the valleys in Nevada range from 4 to 16 inches. Most of the ground-water resources receive their recharge from rainfall on adjacent, higher elevation mountain and ridges. Surface streams originate in these higher rainfall areas and flow through the sagebrush region. With precipitation, material in the mountains in the Basin and Range areas, runs off rapidly down the valleys and out onto the fans, where it infiltrates into the alluvium. There are state water quality standards for certain streams in the BA area which are listed in the State of Nevada Administrate Codes (NAC). If any of these streams are identified in the treatment area these standards would be addressed and adhered to.

Precipitation in the sagebrush portion of the Columbia Plateau provides generally small and marginal sources of water.

Surface Water

Drainage from BLM land contributes to the flow of major rivers in Nevada, but more directly affects the flow of ephemeral, intermittent, and small perennial creeks and rivers. These smaller streams flow both into major rivers and into closed basins. The two major hydrographic basins are the Snake River Basin and the Humboldt River Basin. Many small springs and seeps important for wildlife and livestock are also found on the public lands. Water quality varies throughout the area. Data collected indicates that, except for a few thermally influenced springs, all surface waters are suitable for livestock consumption and irrigation uses. Human influences on the surface waters are from agriculture, livestock grazing, and mining.

Ground Water

The ground water regions are within the Columbia Plateau to the north and an alluvial basin to the south.

Groundwater quantity and quality vary greatly and are normally a direct product of the geologic formation in which the groundwater originates. Groundwater basins underlying significant areas of public land are often minimally developed for groundwater use due to their distance from high use areas or because of the yield or quality characteristics of the aquifer.

Environmental Consequences: Proposed Action:

> Manual control of the targeted species near water could, on a short term and minimal basis, affect water residue conditions by increasing suspended sediment or total dissolved solids. Peak flows would not increase.

There may be some localized short-term increases in erosion and sedimentation resulting from exposed soil.

Herbicides may enter streams through drift, in surface runoff, or from erosion of previously treated soils after treatment. Herbicides may also enter streams by subsurface flow or by movement in ephemeral channels. Key factors that would affect peak concentrations include presence of buffers, storm size, herbicide properties, soil properties, and downstream mixing and dilution. Since buffers are seldom used on ephemeral channels and herbicides may be applied directly to the channel, rainfall may flush herbicide residues downslope when little time has passed since spraying.

The amount of herbicide available for movement from site of application with surface or infiltrating water would be determined, in part, by the herbicides persistence. The herbicide may be unavailable for movement due to photodegradation, volatilization, and plant uptake. The more soluble the herbicide is, the greater is its uptake (see BLM, 1991a and Appendix G).

Prescribed fire may increase stream nutrients, stormflows and sediment loads. In general the amount of increase depends on fuel types and resultant fire severity. Factors determining the extent of post fire erosion are the amount of residual vegetation and organic matter remaining, the rate and amount of vegetative recovery, the timing of the vegetative recovery with respect to season and severity of precipitation events, and slope.

Prescribed fire could reduce stream nutrients, storm flows and sediment loads in the long-term depending upon the type of vegetation returning to the area. The postburn vegetation could provide better cover than the preburn vegetation.

Grazing with sheep or goats to control noxious weeds would produce little effect on overall water quality although trampling within the stream channels could degrade water quality through sedimentation. Water quality indicators such as coliform numbers would increase, and in shallow streams might exceed drinking water standards. These accedence periods, however, would extend no longer than 24 hours after livestock removal (BLM, 1985).

Environmental Consequences: All Alternatives - Under all alternatives, manual and biological treatment methods would have a negligible effect on ground water resources. Mechanical and prescribed burning treatments would increase short-term erosion and sedimentation. Drift onto surface water may occur from herbicide treatments, although mitigation measures make this unlikely. In general, because of the characteristics of the chemicals used, the properties of the soils in the region, and the generally low precipitation in most areas, it is highly unlikely that herbicides would reach ground water.

Environmental Consequences: No Action: Under the no action alternative where noxious weeds continually grow without control, several adverse action would occur. There would be more sedimentation, increased erosion, increased turbidity, resulting in less light to the bottom, and which would inhibit fish production in the spawning areas. Noxious weeds would out compete the desired vegetation that would provide shade.

3.1.4.9 Wetland/Riparian Zones

Affected Environment: Wetlands and riparian areas occur along ponds, marshes, rivers, and streams. They are often inundated by water and normally have saturated or seasonably saturated soil conditions within 10 feet of surface water. The width of the areas may vary from a few feet along small streams, ponds and within spring meadows to several hundred feet along major rivers, lakeshores, and within large meadow basins. Because of the presence of moisture and abundant nutrients, wetlands and riparian areas are often the most productive areas of vegetative growth. They are valuable for wildlife habitat. Occasionally noxious weed infestations occur in these areas and if not controlled can totally dominate and destroy the site.

Typical wetland and riparian vegetation species include aspen, willow, chokecherry, rose, sedge, rush and Kentucky bluegrass.

Environmental Consequences: Proposed Action

There would be localized disturbance to non-target vegetation from manual removal of weeds. This would occur when non-target plants are growing near noxious weeds and are removed by crews using hand tools. Manual methods should not increase peak flows because plant water use would be little affected. Stream nutrients and sediment loads would not increase because litter and duff would not be left intact and re-vegetation would not be suppressed.

Mechanical treatments would be restricted in wetland and riparian areas if the potential for serious sedimentation and erosion could occur. However, if noxious weeds infestation would be dominating the area it could be a benefit to use mechanical control rather than loose the area to the weeds. Each wetland and riparian area would be addressed in the site specific environmental analysis.

There would be localized loss of non-target vegetation from the use of non selective herbicides.

Herbicides may enter streams during treatment through accidental direct application or drift, or after treatment through surface and subsurface runoff. Direct application of herbicides to surface water may occur if aircraft accidentally fly over streams and lakes. Utilizing buffer zones as identified in BLM Pest Control Handbook H-9011-1 and the Standard Operating Procedures, would minimize any impacts that occur.

Prescribed fire would have a very limited utility as the adverse impacts outweigh the benefits.

The impacts of biological treatment by insects and pathogens on these habitats would be negligible as only the specific host plants would be affected. Plant composition would be diversified over time. Grazing animals, used as a biological control agent, may affect the plant composition and habitat occupied by many species. Any grazing use would take habitat requirements into account as well as noxious weed phenology and preference when planning a grazing system designed to control noxious weeds.

Environmental Consequences: Alternatives #2 and #3 - Under these alternatives, manual and biological treatment methods would have a negligible effect on wetland/riparian areas. Mechanical and prescribed burning treatments would increase short-term erosion and sedimentation, but are the least likely to be used in these areas. Drift onto surface water may occur from herbicide treatments, although mitigation

measures make this unlikely. In general, because of the characteristics of the chemicals approved for use in wetland/riparian areas and site-specific mitigation measures, it is unlikely that herbicides would have significantly long-term negative impacts.

Environmental Consequences: No Action: Under this alternative, noxious weeds without good soil holding or forming properties would continue to invade native plant communities on these sites. Increased soil erosion without treatment could occur until the more desirable plants are allowed to reestablish.

3.1.4.10 Wild and Scenic Rivers

Affected Environment: There are rivers in the Elko Field Office portion of this EA, that are eligible for Wild and Scenic River status. A 1992 BLM study evaluated 24.6 miles of the South Fork Owyhee River and 2.6 miles of Fourmile Creek (a tributary) for eligibility as wild, scenic, or recreational river segments under the Wild and Scenic Rivers Act of 1968 (P.L. 90-542). This study found that 23.6 miles of the South Fork Owyhee River meet the wild river criteria and 1.0 mile meets the scenic river criteria. Also, 2.2 miles of Fourmile Creek were found eligible for wild river status.

The river corridors extend one-half mile on either side. Small isolated patches of halogeton exist above the rivers on the benches and within the corridor area. It is unknown if other noxious weed species occur within the river corridor area. However, it is likely that noxious weeds exist in the area of high human use at the river access points. It is also likely that weeds exist where livestock have one access point to the river and the land is severely impacted by grazing. (BLM, 1995)

Environmental Consequence: Proposed Action: The rivers can only be accessed at three points for the entire 27.2 miles. The Interim Management Policy (IMP) and Guidelines for Lands Under Wilderness Review states that: "Noxious Weeds may be controlled by grubbing or with chemicals when the threaten lands outside the WSA are spreading within the WSA provided the control can be affected without serious adverse effects on wilderness values. Manual control such as the use of simple hand tools and herbicide control with a hand sprayer for small infestations is probably the most likely treatment methods. Infestations on the river and access point used by livestock could be accessible by floating the river.

Mechanical control would require driving across WSA's which is not allowed. Areal application of herbicides would have a high probability of chemical drift into the rivers caused by erratic winds. Prescribed burning may be used where necessary to maintain fire-dependant natural ecosystems. Prescribed fire probable would not be a viable option because of the sparse fuels which would limit the fire spread and its effectiveness.

Biological control would probably not be a preferred method because large infestations are required to sustain a viable population of insects and pathogens. To date large infestations of noxious weeds within the rivers corridors are not none to exist.

Environmental Consequences: Alternative #2 - Control With All Methods Except Herbicides: No use of herbicides in these areas would have detrimental effects, because of accessibility and practicality constraints. The least offensive and most practical treatment methods would likely be manual with the use of hand tools and or biological control using insects or pathogens as described in the proposed

action. If through the noxious weed inventory process, only small isolated infestations are found, manual treatments may provide all the treatment required. If several larger infestations are found and herbicides are not used the untreated areas, would have a detrimental effect on the existing preferred vegetation because of the weeds competitive nature.

Environmental Consequences: Alternative #3 - Chemical Control Only: The consequences of this alternative will be the same as the use of herbicides in the proposed action. The sole use of herbicides would also have detrimental effects because of accessibility and practicality constraints. Drift onto surface water could occur from only using herbicides near water's edge. Other methods may be more appropriate given site specific circumstances.

Environmental Consequences: No Action: Under this alternative, noxious weed infestations would continue to invade native plant communities. Allowing noxious weeds infestations to expand would negatively impact the aesthetic nature of wild and scenic river systems.

3.1.4.11 Wilderness

Affected Environment: There are 45 Wilderness Study Areas (WSA) and one Instant Study Area in the project area (Table 1 and 2). Twenty acres of the Arc Dome Wilderness are located in the Battle Mountain District. The majority of Arc Dome Wilderness is located on Forest Service-administered lands. The WSAs were identified through an inventory process in the late 1980s. Those lands that were found to contain wilderness values were named as Wilderness Study Areas. WSA management is guided by the 1995 edition of the BLM Manual Handbook H-8550-1, IMP. These areas are defined as areas where the earth and its community of life are untrammeled. It is also an area of undeveloped Federal land retaining its primeval character and influence, without permanent improvements or human habitation. Wilderness management guidelines are described in BLM Manual 8560 (1983), 8561 (1984), and H-8560-1 (1988).

Environmental Consequences - Proposed Action:

Manual treatments would be the best method for use in wilderness or WSAs where small areas are affected by noxious weeds. Manual treatments can be very selective, would minimize damage to nontarget vegetation, and could least affect wilderness values.

Mechanical treatment of vegetation would be incompatible with wilderness or WSA management. A mechanical treatment would require the use of motorized equipment and the use of farm implements such as plows and disc. Access to and treatment of noxious weeds with this equipment would require surface disturbance which is not allowed in a WSA.

Chemical methods may be used to remove noxious weeds, as long as they are used without adversely affecting wilderness values. Determining whether to conduct aerial or hand spraying in wilderness or WSAs would have to be done on a site-specific basis.

Prescribed burning is the most "natural" of the proposed vegetation treatment methods. The IMP states that prescribed burning may be used where necessary to maintain fire-dependent natural ecosystems. It would also reduce the risk of wildfire by eliminating litter accumulation of the existing vegetation. Use of prescribed burning would result in decreased air quality from smoke,

as well as readily visible and unsightly black areas. This method would not be used unless density of vegetation is such that a fire would be required and would not propagate the noxious weeds.

Biological control methods that may be considered include insects and pathogens. Because of its special status, wilderness has strict guidelines for vegetative treatment. Vegetation management in designated wilderness must follow guidance contained in the Wilderness Management Manual (1983). If large infestation are discovered, insects and pathogens maybe good candidates for biological control agents in wilderness and WSAs because they are host-specific and would tend to control the spread of noxious weeds without affecting the primeval character of the site.

Environmental Consequences: Alternative #2 - Control With All Methods Except Herbicides: These consequences would be the same as addressed in the proposed action. This alternative would increase the dependency on manual, prescribed burning and biological control methods. However, with limited use as mentioned above in the proposed action, prescribed burning and biological control would not be an effective control measure or treatment in most circumstances.

Environmental Consequences: Alternative #3 - Chemical Control Only: The consequences would be the same as in the proposed action. This alternative would obviously increase the dependence on herbicide use, which may not necessarily be the most appropriate use given certain site-specific circumstances.

Environmental Consequences: No Action: Under this alternative, noxious weed infestations would continue to encroach native plant communities. Allowing noxious weeds infestations to expand would negatively impact the, primeval character of WSA's.

Table 1 WILDERNESS STUDY AREAS

	Acreage
Elko District	
Bluebell	55,665
Goshute Peak	69,770
South Pequop	41,090
Cedar Ridge	10,009
Red Spring	7,847
South Fork Owyhee River	7,842
Owyhee Canyon	21,875
Little Humboldt River	42,213
Rough Hills	6,685
Bad Lands	9,426
TOTAL for Elko District	272,422
Winnemucca District	
High Rock Lake	62,382
Poodle Mountain	142,050
Fox Range	75,404
Pole Creek	12,969
Calico Mountains	67,647
Selenite Mountains	32,041

Mount Limbo	23,702
China Mountain	10,358
Tobin Range	13,107
Blue Lakes	20,508
Alder Creek	5,142
South Jackson Mountains	60,211
North Jackson Mountains	26,457
Black Rock Desert	319,594
Pahute Peak	57,529
North Black Rock Range	30,191
North Fork Little Humboldt River	69,683
Pueblo Mountains	600
Disaster Peak	13,200
Augusta Mountains	89,372
Lahontan Instant Study Area	12,316
TOTAL for Winnemucca District	1,144,823
Battle Mountain District	
Kawich	54,320
Rawhide Mountain	64,360
South Reveille	106,200
Palisade Mesa	99,550
Blue Eagle	59,560
The Wall	38,000
Fandango	40,940
Morey Peak	20,120
Antelope Range	87,400
Silver Peak Range	33,900
Pigeon Spring	3,575
Queer Mountain	81,550
Grapevine Mountains	66,800
Simpson Park	49,670
Roberts Mountain	15,090
TOTAL for Battle Mountain District	821,035
TOTAL for study area	2,238,280

Table 2 DESIGNATED WILDERNESS

Elko District	none
Winnemucca District	none
Battle Mountain District	
Arc Dome	20

3.1.4.12 Human Health

Affected Environment: The health of local communities in treatment areas are not known. Although some exposure to chemicals can cause health concerns the greatest segment of the human population at risk in routine herbicide applications are the weed control crews who may be exposed while: 1) mixing and loading herbicides into application equipment, 2) applying herbicides to vegetation using ground-based equipment, or 3) supervising or monitoring aerial or ground-based herbicide applications.

Environmental Consequences: Proposed Action

With manual control some hand pulling of weeds is needed. Pulling weeds by hand exposes workers to dust and the hazards of physical contact with irritant weeds which cause health risks such as blisters, inflammation, and dermatitis. There is also a risk of workers injuring themselves using hand tools. Use of proper personal protective equipment greatly reduces these risks. Sensitive individuals can react severely to the weed pollens.

The public might be at a slight risk from flying debris if they were near a mowing operation. Workers would be at risk from the same types of injuries that agricultural or construction workers face when they operate heavy equipment. Proper use of personal protective equipment greatly reduces these risks and warning the public, who may be looking on, to stay clear.

The general public may receive dermal and inhalation exposure if they are within the area of drift of the smaller spray droplets. The proposed herbicides pass rapidly through mammalian systems without apparent detrimental effects even at relatively high concentrations. The risk assessment indicates that risks to the public of systemic or reproductive toxic effects from routine spraying operations are very low for the proposed herbicides. Cancer risks for the proposed herbicides are low. Available laboratory evidence indicates that dicamba and hexazinone do not cause cancer. A cancer risk analysis was conducted and it was found that 2,4-D has a worst case cancer risk of less than 2 in 100,00. The proposed herbicide may cause mild irritations but are not likely to cause illness; the use of safety clothing and equipment would greatly minimize or eliminate the risk of mild irritations (BLM, 1991a).

Neurotoxic disorders can arise from exposure to a wide range of chemicals, including some pesticides. Dermatologic conditions, such as contact dermatitis, infection, trauma, cancer, vitiligo, urticaria, and chloracne may occur with the continued use of herbicides. As with the manual control method, the proper use of personal protective equipment greatly reduces these risks.

Areas identified by Native Americans for plant resource collection would be limited to spot treatments of known noxious weed vegetation only. Area would be completely avoided during site occupancy by Native Americans.

Effects on human health from the use of prescribed fire on rangeland and in forests vary by the type of land, based on the amount of fuel available for burning and its moisture content. Sensitive members of the public and some workers may experience minor ill effects, including eye and lung irritation from the smoke of prescribed fires. Workers may suffer burns from igniting or managing prescribed fires, although normal safety precautions should minimize this

possibility. Use of safety equipment and standard operating procedures mandated by BLM minimize the potential for impacts of smoke on human health (BLM, 1991a).

Biological control treatments would have little or no impacts to human health.

For further analyses of exposure and human health risks to both workers and the general public refer to BLM, 1991a.

Environmental Consequences: Alternative #2 - Control With All Methods Except Herbicides: The consequences under this alternative would be the same as those in the proposed action for manual, mechanical, prescribed burning, and biological control. The risk of injuries to workers from manual and mechanical treatments and prescribed fire would increase slightly because chemical use will not be utilized. The increased use of hand tools and machinery would increase potential for injury. Risks of public and worker health effects from herbicides would be totally eliminated. There would be less control of noxious weeds than in the proposed alternative, because more noxious weeds can be treated with herbicides than with these methods.

Environmental Consequences: Alternative #3 - Chemical Control Only: Under this alternative, detrimental health risks associated with herbicide use would increase slightly. Herbicides, however, should not affect members of the public in routine applications, although they may be affected if they are exposed as a result of an accidental spraying or spill.

Environmental Consequences: No Action: There would be no foreseeable human health risks associated with noxious weed management operations under this alternative

3.1.4.13 Livestock Grazing

Affected Environment: Livestock grazing (cattle, sheep, and horses) is a primary use of BLM lands in the area. Livestock use levels are administered through the issuance of leases and permits. Nevada BLM achieves desired livestock grazing management through the interdisciplinary evaluation and multiple use decision process. They prescribe the manner in and the extent to which livestock grazing is conducted and managed to meet multiple use, sustained yield, economic, and other goals and objectives. Cattle generally use the valley bottoms and fans and eventually move to the tops of the mountain ranges where they stay until fall. During winter, they are confined to the valleys and bench lands. This pattern varies with the availability of water, the steepness of slope, weather, and forage supply and distribution. The majority of cattle use is from April to October. Sheep use is made both in trailing through the area and on seasonal ranges within the area. The majority of the sheep use on the Utah border is made by the Utah livestock operators between November and March. Domestic horses are licensed in a few allotments throughout the area.

Environmental Consequences: Proposed Action

Manual treatment methods are labor and cost intensive and therefore may not be affective in controlling competing vegetation on a large scale. However, these methods are species specific. and could be effective in controlling small, localized areas of weeds (BLM, 1991a)

Mechanical control may temporarily reduce livestock forage. This would be minimal because the

areas to be treated would be small and they would usually be dominated with undesirable forage.

Impacts to ungulates would occur from indirect exposure to herbicides. Spot treatments for control of noxious weeds would be applied at anytime, regardless of the presence of livestock or wildlife, except where otherwise specified in the Standard Operating Procedures. The proposed herbicides would be applied in a form or at such low rates that they do not affect livestock. However, sometimes these herbicides would make certain plants poisonous or make poisonous plants palatable. This is the case with 2,4-D. If 2,4-D was used, livestock may have to be excluded from the site for one growing season. However, the risk of direct toxic effects to these animals is negligible, even assuming exposure immediately after herbicide treatment. The use of herbicides would decrease competition between noxious weeds and forage producing plants (BLM, 1991a).

Grazing palatability changes could occur depending on the individual plant species.

In the short term, livestock forage would be temporarily lost due to burning but forage quality and quantity and diversity in the long term would be greatly improved. The area treated would be, in most cases, closed to livestock grazing for a period of at least one growing season to allow the perennial vegetation an opportunity to recover.

Biological treatments using insects and microbes have little potential for affecting livestock because these treatments are slow acting and highly specific for the target species. However, in some situations it is possible that these agents may prohibit animals from using a pasture during reactively short periods (BLM, 1991a). The impacts of biological treatment by insects and pathogens on livestock grazing would generally be slight. Also, in the long term, these insects and pathogens would reduce the numbers of the target weeds and allow more palatable species to reintroduce.

Environmental Consequences: Alternative #2 - Control With All Methods Except Herbicides: Consequences under this alternative would be the same as in the proposed action for manual, mechanical, prescribed fire and biological control. Fewer acres would be treated for noxious weeds due to the labor intensity of manual and mechanical controls, and the limited use of prescribed fire and slow reaction time of biological control. There would be a decline in desirable forage because noxious weed species would not be controlled on a greater portion of rangeland than under the proposed action.

Environmental Consequences: Alternative #3 - Chemical Control Only: Application of herbicides is the most effective and efficient way of controlling competing vegetation and some noxious weeds. However, total dependence on herbicide applications for weed management would increase the elimination of nontarget plant species that are used by livestock for food and shelter.

Environmental Consequences: No Action: Livestock may be adversely affected by having less palatable forage if undesirable plants are not effectively controlled.

3.1.4.14 Recreation

Affected Environment: A wide variety of outdoor recreation activities occur on BLM administered lands, including sightseeing, pleasure driving, collecting, photography, water sports, winter sports, off-

road vehicle use, picnicking, camping, fishing, hiking and hunting. This wide range of opportunities is possible because virtually all of the public lands are accessible and offer a variety of settings suitable for different recreational activities. Many of these activities may occur on sites where noxious weed control activities are planned.

Environmental Consequences: Proposed Action: The Integrated Weed Management approach identified in the Proposed Action would benefit recreation areas infested with noxious weeds. In general, recreation is dispersed, and with the exception of developed recreational sites, weed treatments would be dispersed. Therefore, impacts would be low because of the Standard Operating Procedures.

Manual treatment methods would have no adverse impact on recreational areas. These methods are typically used in areas difficult to reach by vehicle or in sensitive areas.

Mechanical treatments such as tilling disrupts the land surface and expose bare soil. This could be an impact to some people because of its unnatural look until the site is re-vegetated with desirable vegetation.

The application of herbicides reduces vegetation variety and can prevent the occurrence of seasonal changes (spring flowers, fall colors) within the treated areas. Treated areas would turn brown and contrast with surrounding vegetation for a short period of time.

Prescribed burning could affect air quality and could be a problem in designated recreation areas. Visitation in burned areas would be reduced during and after treatment on a short term basis. In the long term visitation would increase due to improved natural vegetation.

The use of biological control treatment methods is not expected to have a great effect on recreation.

Environmental Consequences: Alternative #2 - Control With All Methods Except Herbicides: Manual and mechanical treatment methods have been preferred techniques in the past, but in some cases (sprouting species, and etc.) these methods may not be effective. If nonchemical measures fail to control undesirable species in the areas that are treated, visitor use may also decline. Prescribed burning would be expected to increase under this alternative, possibly resulting in decreased air quality from smoke, as well as more blackened areas that would be avoided by recreationists.

Environmental Consequences: Alternative #3 - Chemical Control Only: Weed control operations would not be conducted at developed recreational sites. This may be due to high levels of visitor use at the optimal treatment period. To offset this, developed recreation areas, such as campgrounds may need to be closed to treat infestations while protecting the public from chemical residues. However, in general herbicide control would be the preferred treatment on BLM-administered land where a variety of outdoor recreational activities occur. The effectiveness and quick response of this method makes it the preferred alternative.

Environmental Consequences: No Action: Under this alternative, noxious weed infestations would continue to expand across BLM-administered public lands used for recreation. Visitor use in these areas could decline to avoid exposure to noxious weeds. Over time these infestations could result in decreased recreational visits on public lands. In addition, visitors to infested sites would likely transport noxious

weed seeds off-site to other more desirable areas. One of the most common methods of seed transportation is by vehicle.

3.1.4.15 Soils

Affected Environment: The soils, mainly Aridisols and Mollisols, are highly variable in depth, texture, stoniness, chemical and physical properties. Aridisols are mineral soils that have developed in dry regions, are light colored, low in organic matter, and may have accumulations of soluble salts and lime. They are mainly in the valleys and normally do not have water continuously available for three months when the soils are warm enough for plant growth. Mollisols are deeper mineral soils that have thick, dark-colored surface horizons rich in organic matter, and are very fertile. Mollisols are found mainly in the mountains with grass cover. Both Aridisols and Mollisols are older and occur on more stable alluvial fans and terraces. These characteristics imply a wide variation in drainage, permeability, erodibility, inherent fertility, water-holding capacity and any other soil properties that are important to nutrient cycling and decomposition of organic compounds such as herbicides. They are within the Columbia Plateau and the Upper Basin and Range physiographic regions of the states (BLM, 1991a).

Environmental Consequences: Proposed Action:

The disturbance of soils caused by manual methods of vegetation treatments should be negligible. Because manual vegetation methods generally are reserved for small isolated areas. There may be some localized short-term minimal increases in erosion and sedimentation resulting from exposed soil.

The direct effects of mechanical disturbance on soils depend on the type and extent of disturbance, soil texture and structure, and soil water content when disturbed. There may be some localized short-term increases in erosion and sedimentation resulting from exposed soil. The size of the disturbed area to be treated mechanically would vary due to size of infestation.

Cutting and mowing would have localized impacts of a slight to moderate increase in soil compaction where heavy equipment is used. Cutting and mowing may produce soil-protecting mulch.

Root plowing, diskplowing, and tilling would completely disturb the surface and sometimes the subsurface soil. These impacts are relatively short-term until vegetative cover has been reestablished on the treatment site.

Removal of solid stands of vegetation may result in short-term increases in surface erosion that would diminish as vegetation reoccupies the site. Treatment of one or a few scattered plants would have a minimal impact.

The greatest proportion of program acreage would be treated with herbicides. Although the herbicides would not alter the soils physical properties, soil microorganisms could be indirectly affected. Herbicides can either stimulate or inhibit soil microorganisms, depending on application rates and the soil environment. The potential adverse effects relate to possible toxic effects on soil microorganisms or changes in species composition of these organisms.

The movement of herbicides is influenced by mobility (based on chemical properties), water solubility, and adsorption. The chemical and environmental properties of the herbicides proposed for use are presented in Appendix G.

Fire may alter soil chemical properties, nutrient availability, postfire soil temperatures, microorganism populations and their activity rates, physical properties, wettability, and erosion. The degree of impacts depends on the severity of the burn, fuel type, soil type, soil moisture, weather patterns, topography, plant cover remaining, rate of negative recovery, and frequency and area of bare soil (BLM, 1991a). Prescribed burning provides the positive effect of immediately releasing nutrients into the soil.

Biological methods of vegetation treatment include grazing animals, insects, and pathogens. The size of the treatment would depend on the target plant species and the method of treatment. Insects and pathogens generally have a lesser impact because of the slower, more "natural" action of this method. The organisms used in biological treatment methods are directed at modifying the frequency and occurrence of certain targeted plant species and have little interaction with the soil.

The use of grazing animals for biological treatment has greater potential for impacts because of the animals' greater size and more immediate disturbance of the sites. The main effects on soils caused by grazing include compaction of wet soils from trampling and surface erosion on hillsides due to loss of plant cover from overgrazing. Livestock would be closely controlled to prevent damage to desired vegetation. Proper grazing management practices, such as timing of use based on phenology of target species and preference levels, should minimize any adverse impacts.

Environmental Consequences: Alternative #2 - Control With All Methods Except Herbicides: Consequences under this alternative will be the same as the proposed action for all but the use of herbicides.

Environmental Consequences: Alternative #3 - Chemical Control Only: Under this alternative, the impacts to soil are expected to be minimal. Although the soil would contain the herbicides for a period of time, the herbicide would not be expected to persist in the soil or have effects on soil microorganisms and soil properties. Some short-term increases in soil erosion could occur in some critical areas by the removal of large stands of competing vegetation. However, the competing plant residue and minimum disturbance of surface soil and desirable plants within the treated site would mitigate the soil erosion loss. There would also be minimal impacts to the surface soil when ground application equipment is used (BLM, 1991a).

Environmental Consequences: No Action: Under no action, no effort would be made to control the targeted noxious weeds. Noxious weeds root system has poor soil holding capabilities, therefore increasing the possibility of soil erosion. Controlling the noxious weeds would allow for native vegetation to reestablish and create a better soil holding capability. Increased soil erosion without treatment could also occur until the more desirable plants are allowed to reestablish.

3.1.4.16 Vegetation

Affected Environment: The area supports vegetation typical of the Great Basin region. The extremes of

climate, elevation, exposure and soil type all combine to produce a diverse growth environment for a wide variety of plants. Several Vegetation Regions exist within the area. Habitats found at the extreme limits of climatic situations do not lend themselves to the types of vegetation treatments analyzed in this EA because of the tremendous limitations in growing conditions. They are: Sagebrush, Desert shrub, Plains grasslands and Chaparral-mountain shrub. The area contains numerous plant communities, all of which contain or have the potential to contain the noxious weeds. Most of the targeted noxious weeds listed in the proposed action are found in the grass and shrub communities.

The vegetation in the area can be broken down in a general way by elevation:

Grasslands (4,300 - 10,300)

In these areas, the vegetation consists of saltgrass, basin wildrye, crested wheatgrass, Idaho fescue, galleta, bluebunch wheatgrass, bottlebrush squirreltail, bluegrass, cheatgrass, big sagebrush, and rabbitbrush.

Valley Bottoms (4,500 - 5000 feet) Salt Desert Shrub

In the valley bottoms, the vegetation ranges from pure stands of greasewood to mixtures of greasewood, shadscale, rabbitbrush, sagebrush, saltbush, and winterfat.

Benches and Fans (5,000 - 5,300 feet) Shadscale Type

On benches and fans, the vegetation consists primarily of shadscale, saltbush, rabbitbrush, and hopsage.

Foothills and Mountains (5,000 - 10,000 feet) Sagebrush Type

In these areas, the vegetation consists of sagebrush, snowberry, serviceberry, bitterbrush, and mountain mahogany with scattered pinyon pine and juniper interspersed with perennial grass types.

Foothills and Mountains (6,000 - 8,000 feet) Pinyon-Juniper Type

On the mid-level foothills and mountains, the vegetation consists of pinyon pine, juniper and mountain mahogany interspersed with the sagebrush type in localized areas which may vary from nearly pure stands of pinyon-juniper to stands of pinyon-juniper mixed with big sagebrush and rabbitbrush.

Foothills and Mountains (7,100 - 9,400 feet) Perennial Forbs

In these areas, vegetation consists of beardstongue, mules ear, arrowleaf balsamroot, lupine, astragalus, Idaho fescue, and bluebunch wheatgrass.

Mountain Meadows (8,000 feet)

In these areas, the vegetation consists of stands of perennial grasses, sedges and rushes.

High Mountain (8,000 - over 10,000 feet) Forest Type

At the highest elevations, the vegetation ranges from pure stands of mountain mahogany to mixtures of mountain mahogany, aspen, limber pine, bristlecone pine, spruce, fir and juniper.

Environmental Consequences: Proposed Action:

The degree to which vegetation would be affected would depend on the types of treatments used and the number of acres treated under each alternative.

Manual controls are highly intensive and require periodic retreatment ranging from 3 weeks during the growing season to annually depending on the target species. These methods have been somewhat successful in controlling annuals and bi-annuals in noxious weed control and vegetation removal along rights-of-way, recreation areas, pipeline, and so on. However, manual treatments have proven inefficient in controlling established creeping perennial in these citations. Manual methods are impractical for large-scale rangeland improvement projects.

Manual methods of vegetation treatment are selective. Non-target species should not be affected. Non-target plants would benefit from reduced competition for water and nutrients (BLM, 1991a).

In the short term, mechanical treatment would result in disturbance of non-target vegetation. Disturbed areas would be kept to a minimum but would encompass the infestation. Direct effects on target and nontarget vegetation from mechanical treatments depend on how a particular method affects a species at its growing points and its vegetative or sexual reproductive abilities. Indirect effects on nontarget vegetation depends on the availability of resources (water, minerals, light) previously used by the target species (BLM, 1991a).

The impacts would be the loss of non-target vegetation. Control takes into account the biology of the weeds not of the non-target vegetation therefore the impacts would be minimal. The extent of any non-target vegetation loss would depend on closeness of desirable species to treated weeds, method and rate of herbicide application, formulation of the herbicide, herbicide used, and the crushing of vegetation by the equipment. Herbicide control could have effects on sensitive forest species such as aspen if used near this specie. Long term effects would be the increase of preferred vegetation and the reduction of economic loss caused by noxious weeds.

Prescribed fire is used to manage unwanted plants, especially woody species that compete with herbaceous species for water, nutrients and space; to remove the excessive litter accumulation in some herbaceous species that may ignite, smolder for a long time, and kill the herbaceous species growing points; to modify species composition; to enhance herbaceous productivity; to manage plant community structure; to improve quantity and quality of wildlife habitat; and to reduce fire hazard from surface fuel build-up (BLM, 1991a).

Prescribed fire would affect the productivity of plants and affect plant competition. In general, prescribed fires are planned with specific goals in mind and conducted under constraints to ensure that fire is contained, that fire and resource objectives are met, and that long-term site productivity of a diverse and desired vegetative community is maintained or enhanced.

Biological methods of vegetation treatments that may be considered for BLM use include insects and pathogens, and grazing animals. The impacts of biological treatment by insects and pathogens on non-target species would generally be slight. The target species would remain standing, though it would be weakened or unable to reproduce, thus reducing noticeable and immediate effects. Over time the composition would change as the native plants regain their competitiveness. Any insect or pathogen used would be carefully tested for host specificity, thus reducing or eliminating possible negative effects on native vegetation (BLM, 1991a).

Grazing is the most significant biological tool available to make a change in cover and composition. Grazing as a biological tool would take into account the phenology of the target species and management objectives affected by livestock use and would be considered the most significant tool.

Environmental Consequences: Alternative #2 - Control With All Methods Except Herbicides: The consequences of this alternative would be the same as the proposed action. Manual control is labor intensive and few acres would be completed. Under mechanical control access to treatment areas would be a limiting factor. Most noxious weeds would respond positively to prescribed fire, although to prevent the re-invasion of noxious weeds reseeding would be required. This additional cost and a possible delay in livestock grazing may not be an appropriate control method. Biological control does not work on small infestations. In addition cost of insects and pathogens may be high and availability may be limited for targeted species. Control of some target species would not be possible in some areas because of lack of suitable substitute treatments.

Environmental Consequences: Alternative #3 - Chemical Control Only: The management of competing vegetation by chemical treatment would have both beneficial and adverse impacts on vegetation. Both target and nontarget vegetation in areas scheduled for treatment could be affected. The degree to which vegetation could be affected would depend on the type and timing of chemical treatment and method of application. Chemical use would usually result in brush defoliation and a minimum of respouting. Treatment would not necessarily eliminate all competing vegetation, but would reduce competition, thereby increasing the amount of light reaching the surface and decreasing brush competition for soil moisture and nutrients (BLM, 1991a).

Environmental Consequences: No Action: No effort would be made to control the targeted noxious weeds. Uncontrolled noxious weeds would continue to spread. This would also result in an economic loss to land users such as ranchers and recreationists. For example, native and diverse vegetative communities would be lost or destroyed.

3.1.4.17 Wild Horses and Burros

Affected Environment: Wild horses and burros are protected under the Wild Free Roaming Horse and Burro Act of 1971. One of the main objectives of the Act is to keep populations at a level that would achieve and maintain a thriving natural ecological balance on the public lands. They are scattered throughout the area and their distribution is limited to herd areas identified in the Field Office's planning documents. Normally the diet of wild horses is composed almost exclusively of grasses. Burros have a more diverse diet, composed of grasses, forbs, and shrubs.

Environmental Consequences: Proposed Action:

Manual treatment methods are labor and cost intensive and therefore may not be affective in controlling competing vegetation on a large scale. However, these methods are species specific and could be effective in controlling small, localized areas of weeds (BLM, 1991a)

Mechanical control may temporarily reduce forage for wild horses and burros. This would be minimal because the areas to be treated would be small and they would usually be dominated with undesirable forage.

In the short term, forage would be temporarily lost due to burning but forage quality and quantity and diversity in the long term would be greatly improved.

Biological treatments using insects and microbes have little affect on wild horses and burros because these treatments are slow acting and highly specific for the target species. However, in some situations it is possible that these agents may prohibit animals from using a pasture during reactively short periods (BLM, 1991a). The impacts of biological treatment by insects and pathogens on grazing would generally be slight. Also, in the long term, these insects and pathogens would reduce the numbers of the target weeds and allow more palatable species to reintroduce.

Wild horses and burros could be indirectly affected by changes in forage supplied and herbicide exposure. Chemical control only would result is destruction of or damage to nontarget plants. This could result in a reduction of food and cover and a further reduction in favored or even required forage for wild horses and burros. Since seasonal ranges for wild horses and burros are limited, reductions in forage on these ranges could cause losses of these species.

Aerial herbicide treatments could disrupt the normal grazing, watering, and social behavior patterns of horses and burros and cause them additional stress. During foaling season areas with wild horses and burros will be avoided. This alternative should not pose any short-term or long-term threats to these animals' habitat, and the impacts would be addressed on a site-specific basis.

Environmental Consequences: Alternative #2 - Control With All Methods Except Herbicides: Consequences of this alternative would be the same as the proposed action. Because nonchemical methods would be employed, the potential exists for failure of the remaining treatments to control vegetation. Target species would compete with and reduce desirable forage species, which could adversely affect herd populations. Wild horses' and burros' habitat potentially could be affected if noxious weed species are not controlled using these methods.

Environmental Consequences: Alternative #3 - Chemical Control Only: Consequences of this alternative would be the same as the proposed action for chemical control.

Environmental Consequences: No Action: Uncontrolled noxious weeds would continue to spread and out compete preferred forage for both wild horses and burros.

3.1.4.18 Wildlife (terrestrial and fisheries)

Terrestrial

Affected Environment: With the tremendous variation of terrestrial habitats on public lands, there is a comparable variety of wildlife species. Proposed treatments in these areas need to be well planned to prevent further adverse impacts to previously heavily impacted species (e.g. sage grouse). Site specific environmental analysis of all proposed actions as they relate to the surrounding wildlife habitats for all species impacted by the treatment and the effects on a total diversity of the wildlife populations and communities in the region. The districts are a mosaic of forests, shrublands, grasslands, and wetlands associated with numerous north-south mountain ranges separated by broad, flat valleys or rolling hills. Table 3 is a listing by districts of the numbers of species found in each district of mammals, birds, reptiles and amphibians that are known to inhabit the EA area. The list of these animals can be found in the local BLM Field Offices.

Table 3 District and Number of Species

District	Acres BLM-Administered Lands	Mammals	Birds	Reptiles and Amphibians
Battle Mountain	12 million acres	73 species	231 species	34 species
Elko	7.4 million acres	76 species	246 species	28 species
Winnemucca	8.0 million acres	81 species	260 species	32 species

Environmental Consequences: Proposed Action

Manual control measures are highly selective thus minimizing impacts to wildlife. There would be temporary disturbance and/or displacement of wildlife when manual control measures are carried out. Manual methods have the advantage of being highly selective, thus avoiding the potential loss of valuable habitat. Accumulated materials resulting from manual control could provide cover for smaller mammals and birds, therefore increasing their use of an area. The impacts created by manual treatments should be relatively insignificant.

Mechanical methods can result in soil compaction, damaging the subterranean habitat used by certain burrowing animals. As with manual methods, accumulated material can hinder movements of the larger mammals, but removal of this material would reduce the potential habitat niches for many small mammals and birds. Habitat shifts or changes as a result of down material could last as long as two decades, assuming normal decomposition rates.

Mechanical treatments can be beneficial for wildlife if the treatment areas are arranged in strips and patches and if methods are selected that increase browse and forage availability. Negative impacts can be lessened if the period of treatment avoids the bird nesting season and other critical seasons when loss of cover would be critical to wildlife, for example, during critical reproductive periods and prior to severe winter weather conditions (BLM, 1991a).

Wildlife species dependant upon seasonal habitats could be harmed by chemical treatments that removed or modified these habitats. Chemical control of vegetation could potentially reduce total available habitats and increase crowding and stress on nearby populations. If displaced animals, added to resident populations, exceeded a habitat's carrying capacity, populations would

eventually decline to a level equal to or below that carrying capacity.

Herbicides can modify wildlife habitat by suppressing certain forms of vegetation for the release of others. On BLM lands, control of infested acres would result in the production of preferred forage for wildlife and long-term diverse and preferred habitats. Big game, upland game, and non-game populations and diversity would benefit in localized areas as a result of increasing vegetation and structural diversity.

Many prescribed fires are staged with the principal objective of modifying some aspect of the vegetation for wildlife. In general, fire effects wildlife by direct killing, alteration of immediate postfire environments, and postfire successional influences on habitat. Fire may have a positive effect on wildlife habitats by creating habitat diversity, by creating lost or degraded habitats for indigenous species, and by allowing for the reintroduction of extirpated species when habitat degradation was significant to their extinction. Negative impacts can be lessened if the period of treatment avoids the bird nesting season and other critical seasons when loss of cover would be critical to wildlife, for example, during critical reproductive periods and prior to severe winter weather conditions (BLM, 1991a). Prescribed fire provides the positive effect of immediately releasing nutrients into the soil, which benefits wildlife by regenerating natural or native grasses.

The impacts of biological treatment by insects and pathogens on terrestrial wildlife habitats are negligible as only the specific host plants would be affected. Plant composition would be diversified over time as native plants gain their competitive edge. Grazing animals may affect the plant composition and habitat occupied by many species.

Environmental Consequences: Alternative #2 - Control With All Methods Except Herbicides: The consequences of these alternative would be the same as the proposed action. Without using herbicides, noxious weeds would not be as effectively controlled in all cases or as quickly. In areas with seriously degraded habitats, without sufficient vegetation to carry prescribed burns, the lack of herbicides may also prevent restoration of historic native vegetation habitats and their associated wildlife communities.

Environmental Consequences: Alternative #3 - Chemical Control Only: The consequences of this action would be the same as the proposed action. Most impacts to wildlife species would consist of losses of food and cover in treated areas. Since winter ranges for big game animals are limited compared to summer ranges, reduction in winter forage with chemicals only, on these ranges, could cause a loss of forage due to destruction of non-target species. Chemical treatment of certain vegetative types would change the habitat character of these areas for small burrowing rodents, upland game birds such as sage grouse, and numerous species of small nongame birds.

Environmental Consequences: No Action: Under no action, no effort would be made to control the targeted noxious weeds. Uncontrolled noxious weeds would continue to spread and out compete preferred forage for wildlife.

Fisheries Habitat

Affected Environment: Native and introduced species of game and non-game fish habitat occur throughout many of the valleys and streams in Northern Nevada. Relict springs, mountain streams and some of the larger river systems all provide habitat for the State's numerous species of minnows,

suckers, native salmonids and introduced game species. In most cases, the quality and quantity of fisheries habitat in Nevada is a function of the health of the riparian zones. A healthy riparian zone serves to dissipate flood energies, filter sediments, protect stream banks against erosion, recharge ground water supplies, moderate ambient temperatures, and; to provide food and cover for aquatic organisms. Impacts to riparian areas can result in a decline or loss of habitat for fisheries as well as other aquatic resources.

Environmental Consequences: Proposed Action: Any changes in vegetation community structure or composition affects resident fish and can be both negative and positive. Positive impacts from the Integrated Weed Management Program would be the reduction of noxious weeds that out-compete soil stabilizing sedges and grasses and shade plants such as willows. Treatments that reduce long-term runoff and sedimentation would have positive benefits for fish and aquatic wildlife. Vegetation treatments can negatively affect aquatic habitats causing changes in food supply, water temperature, water chemistry, and bottom composition. Elimination of multi-storied vegetation along streambanks would increase water temperature and reduce the supply of invertebrates used as a food source for fish. None of the designated treatment methods would eliminate streamside vegetation to any significant degree. In general, an improvement in riparian vegetation would be expected as a result if terrestrial treatments, which would improve watershed conditions (BLM, 1991a).

Manual methods have the advantage of being highly selective, thus avoiding the potential loss of valuable habitats. The vegetation communities are generally so expansive and manual labor so expensive that the potential for significant changes are not likely. There may be some localized short-term increases in sedimentation.

Mechanical treatments could increase siltation resulting in loss or degradation of spawning substrate.

Near riparian areas, using chemicals to control vegetation can increase sedimentation, which could reduce or eliminate suitable spawning habitat with decreased water quality However, if an appropriate buffer width of existing vegetation is retained and sufficient unaffected vegetation exists within the treated area, there should be no significant erosion sedimentation occurring (BLM 1991a).

The BLM Pest Control Handbook, H-9011-1, requires buffering of domestic waters, perennial marsh areas, important fishing and recreational waters, and/or significant fish spawning, rearing, and migration streams. There is no reasonable expectation of any detectable discharge of herbicides into surface waters with the use of the Standard Operating Procedures.

If chemicals are introduced to streams, the amounts would be non-detectable and any exposure to fish would likely be very short duration. Because of this short exposure and the proposed application rates, herbicides are not expected to affect fish, most aquatic organisms, or their habitat.

Fire could increase erosion and sedimentation and remove non-target aquatic plant species in the short-term. In many cases, these negative impacts could outweigh the long-term benefits. Noxious weeds have a poor root system allowing for erosion and sedimentation to enter streams. The control of these weeds would allow native aquatic and riparian vegetation to return and

stabilizing stream banks.

The impacts of biological treatment by insects and pathogens on fisheries habitat would generally be slight. Livestock use as a control agent could have direct impacts to fisheries habitat by removal of vegetation that shades streams resulting in increased water temperatures if the grazing treatments are not properly monitored and tied to the attainment of noxious weed control and multiple use objectives. Negative impacts can be avoided by using grazing systems for biological control that help to increase or maintain diversity of habitat.

Environmental Consequences: Alternative #2 - Control With All Methods Except Herbicides: Without the use of herbicides, the potential negative impacts caused directly by the herbicide chemical would not occur. For many noxious weeds there is no suitable substitute for herbicide control. These species would continue to invade and spread in and near fisheries habitat without significant limitation. Also, there is no suitable substitute for herbicides for habitat conversion in areas suffering from past abuses that cannot grow sufficient ground cover to carry fires. This alternative would cumulatively have a significant impact on our ability to effectively recover these areas of serious past abuse.

Environmental Consequences: Alternative #3 - Chemical Control Only: The consequences of this alternative would be the same as the proposed action. Any herbicides that enter surface water are the result of drift, although some of these chemicals can also enter streams or lakes through surface runoff or the erosion of previously treated areas. May be better to treat small isolated infested areas with manual control thereby eliminate herbicides from entering surface water. This could cause continued soil erosion and sedimentation into streams.

Environmental Consequences: No Action: Under no action, no effort would be made to control the targeted noxious weeds. Uncontrolled noxious weeds would continue to spread and out compete preferred forage for streamside and fisheries habitat and native riparian vegetation.

3.1.4.19 Visual Resources

Affected Environment: Visual resources are identified through the Visual Resource Management (VRM) inventory. This inventory consist of a scenic quality evaluation, sensitivity level analysis and a delineation of distance zones. Based on these factors, BLM administered lands are placed into four visual resource inventory classes. Class I and II being the most valued, Class III representing a moderate value, and Class IV being of least value. Of the approximate 29 million acres of land covered in the environmental assessment Class IV represent the most common landscapes (BLM, 1986).

Visual resource classes serve two purposes: (1) an inventory tool that portrays the relative value of visual resources, and (2) a management tool that portrays the visual management objective. Class I objective is to preserve the existing character of the landscape. This class provides for natural ecological changes. Change to the existing landscape should be very low and must not attract attention. Class II objective is to retain the existing character of the landscape. Then level of change to the existing landscape should be low. Management activities may be seen but not attract the attention of the casual observer. Class III objective is to partially retain the existing character of the landscape. The level of change to the existing landscape should be moderate. Management activities may attract attention but should not dominate the view of the casual observer. Class IV objective is to provide for management objectives which require major modification of the existing character of the landscape. The

level of change to the characteristic landscape can be high. These management activities may dominate the view and be the major focus of viewer attention (BLM, 1986).

Environmental Consequences: Proposed Action: A visual impact is any modification in land forms, water bodies, landscape, colors, vegetation, or any introduction of structures that disrupts the visual character of the landscape and the harmony of the basic elements.

Where areas are treated by methods that could significantly change visual contrast (quality), short-term impacts on visual resources would occur. The intensity of the impact would depend on the treatment method and the area where it was implemented. Most of the land considered for the vegetation treatment program is Class IV. In Class IV visual resource areas management activities may dominate the view and be the major focus of viewer attention (BLM, 1986). Every attempt would be made to minimize the impact of integrated weed management through careful location, minimal disturbance and repeating treatments only if necessary. Factors that affect the degree of visual contrast are: distance, angle of observation, length of time in view, relative size or scale, season of use, degree of color change, light conditions, recovery time, atmosphere conditions and motion (BLM, 1991a).

Under this prescribed treatment there would be minimal impact to lands in all four visual resource class objectives. This method is designed to treat relatively small areas and to control specific species without disturbing surrounding vegetation. There would be no change in the form of the landscape because there would be no mass or object introduced into the landscape. There would be no evidence of line because treatment areas would be small and patchy. The only color changes that would be noted would be in areas where actual removal of weeds may have taken place. Texture would be unaffected because of the small application areas. Because this method is used on a small scale and treatment areas are generally dispersed, the visual effects would likely be apparent only at close range (BLM, 1991a).

Mechanical methods such as chaining, chainsaws, trimmers, and tilling disrupt the land surfaces and expose the soil to view. Using these methods in Class I, II, or III visual resource areas may require completion of a visual contrast rating work sheet. The impact on Class IV visual resource areas management activities may dominate the view and be the major focus of viewer attention (BLM, 1986). This disturbance would be of a short-term. In the long-term, the regrowth of more aesthetically desirable vegetation may prove to be a beneficial effect when used to control unsightly vegetation along rights-of-way and in recreation areas. Visual impacts would be less apparent on level terrain.

Line, color, and texture may be affected with the use of this method, because of the surface disturbance. However, every attempt would be made to minimize the impact of integrated weed management through careful location, minimal disturbance and repeating treatments only if necessary.

Herbicide use reduces the variety of vegetation and may prevent the manifestation of seasonal changes such as spring flowers and fall color in a treated area. However, visual impacts would be dependant upon the size and location of the treatment area. Areas treated with herbicides turn brown and contrast with surrounding vegetation for a short period of time. However, applying herbicides to remove noxious weeds would have a beneficial visual impact of allowing regrowth

of more aesthetically desirable vegetation.

Using this method in Class I, II, or III visual resource areas may require completion of a visual contrast rating worksheet. The impact on Class IV visual resource areas management activities may dominate the view and be the major focus of viewer attention (BLM, 1986). This disturbance would be of a short-term. In the long-term, the regrowth of more aesthetically desirable vegetation may prove to be a beneficial effect when used to control unsightly vegetation along rights-of-way and in recreation areas. Visual impacts would be less apparent on level terrain.

Line, color, form and texture may be affected with the use of this method, because of the surface disturbance. However, every attempt would be made to minimize the impact of integrated weed management through careful location, minimal disturbance and repeating treatments only if necessary.

Using this method in Class I, II, or III visual resource areas may require completion of a visual contrast rating worksheet. The impact on Class IV visual resource areas management activities may dominate the view and be the major focus of viewer attention (BLM, 1986).

Line, color, and texture may be affected with the use of this method, because of the surface disturbance. However, every attempt would be made to minimize the impact of integrated weed management through careful location, minimal disturbance and repeating treatments only if necessary.

This disturbance would be of a short duration. In the long-term, prescribed fire would allow the regrowth of more aesthetically desirable vegetation, a more diverse natural vegetative communities and a more desirable landscape. Visibility due to the smoke would be reduced on a temporary basis. The burned area would contrast with surrounding areas.

Biological methods of vegetation treatment include grazing animals, insects, and pathogens. Biological treatment methods would have only minimal visual impacts. The application of biological control of weeds would allow for a gradual destruction of the targeted vegetation. As this weed is being destroyed native vegetation would reappear in the landscape. The use of this method would have minimal impact on lands in all four visual resource class objectives. Line, color, texture, and form would not be affected with this application method.

Environmental Consequences: Alternative #2 - Control With All Methods Except Herbicides:

Impacts under this alternative would be the same as the proposed action.

Environmental Consequences: Alternative #3 - Chemical Control Only: Herbicide use reduces the variety of vegetation and may prevent the manifestation of seasonal changes such as spring flowers and fall color in a treated area. However, visual impacts would be dependant upon the size and location of the treatment area. Areas treated with herbicides turn brown and contrast with surrounding vegetation for a short period of time. However, applying herbicides would have a visual impact of allowing regrowth of more aesthetically desirable vegetation. Removal of noxious weeds would have a benefit

on visual resources by permitting more aesthetically desirable vegetation to become established.

Impacts under this alternative would be the same as the proposed action.

Environmental Consequences: No Action: No effort would be made to control the targeted noxious weeds. Uncontrolled noxious weeds would continue to spread and out compete native vegetation and adversely affect lands in the four visual resource management classes. Native communities and ecosystems could also be affected if noxious weeds are allowed to encompass the landscape.

3.2 Cumulative Impacts

Undesirable cumulative effects are unlikely because the treatment areas would be relatively small in relation to the total treatment area of the environmental assessment. Some areas would be subjected to repeated herbicidal control of noxious weeds. After repeated treatments in some areas, there is the chance of a residual buildup of herbicides. The greatest impact to soils would be the impact to soil microorganisms resulting from the residual buildup of chemicals. Some herbicides are readily available to bacteria because they have zero to low adsorption to soil particles and are highly soluble. However, these effects are minimized given the life expectancies of the above chemicals see Appendix H.

3.3 Evaluation and Monitoring

As stated in the Proposed Action, Standard Operating Procedures (Appendix D), an Evaluation and Monitoring Program would be cooperatively developed. The monitoring program constitutes a portion of the overall Integrated Weed Management Program and would help to assess its progress.

CHAPTER 4.0 CONSULTATION AND COORDINATION

4.1 List of Preparers:

Name	Title	Responsibility or Topic
Battle Mountain Field Office		
Bobbie McGonagle	Archaeologist	Cultural Heritage and Paleontology
Gene Ottonello	Fire Control Officer	Fire Management
Dave Davis	Planning and Environmental Coordination	Forestry
Eldon Allison	Mineral Specialist Leader	Minerals
Jeff Weeks	Renewable Resources	Range and Threatened and Endangered Plants
Lynn Ricci	Reclamation	Reclamation and Soils
Chip Kramer	Recreation	Recreation
Duane Crimmins	Wildlife Biologist	Riparian and Wetlands Wildlife Threatened and Endangered

		Animals
Walt Brown	Geologist	Visual Resources
		Wilderness and Wilderness Study Areas
John Winnepenninkx	Horse and Burro Specialist	Wild Horses and Burros
Matt Spaulding	District Weed Coordinator	Noxious Weeds
Bernard Wehinger	Range Technician	Noxious Weeds

Elko Field Office

Stan Kemmerer	Rangeland Management Spec.	Co-author
Robert Miller	Planning and Environmental Coordinator/Public Affairs	Environmental Coordination
Carol Evans	Fisheries Biologist	Fisheries
Ray Lister	Rangeland Management Specialist	Livestock Grazing
Carol Marchio	Hydrologist	Soil/Water/Air
Kathy McKinstry	Wild Horse and Burro Specialist	Wild Horses
Roy Price	Wildlife Biologist and Threatened and Endangered Species	Wildlife (Terrestrial)
Skip Ritter	Natural Resource Specialist	Forestry
Steve Dondero	Outdoor Recreation Planner	Recreation and Visual Resources
Cristina Weinberg	Archaeologist	Cultural
Deb McFarlane	Geologist/Hazardous Material	Waste(Hazardous or Solid)
Evelyn Treiman	Outdoor Recreation Planner	Wilderness/Wild and Scenic Rivers

Winnemucca Field Office

Bob Hopper	Range/District Weed Coordinaator	Co-Author
Duane Wilson	Range Management Specialist	Livestock/Grazing/Vegetation
Mike Zielinski	Soil Scientist	Soils/Water & Air Quality/Floodplains
Regina Smith	Archaeologist	Cult. Res./Nat. Amer. Rel. Concerns
Jerry Moritz	Environmental Coordination	Planning
Ron Hall	Wild Horse and Burro Specialist	Wild Horse and Burros
Rodger Bryan	Wildlife/Fisheries Biologist	T&E, Special Status Species Wetlands/Riparians/Wildlife
Lynn Clemons	Outdoor Recreation Planner	Wild and Scenic Rivers/Wilderness/Recreation/Visual

4.2 Persons, Groups or Agencies Consulted:

Eureka County
Nevada Division of Agriculture
Nevada Department of Transportation
Nevada Division of Wildlife
Bureau of Land Management - Battle Mountain Field Office

Bureau of Land Management - Winnemucca Field Office
Bureau of Land Management - Elko Field Office
United States Department of Agriculture - U.S. Forest Service - Humboldt-Toiyabe National Forest

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APPENDICES

Appendix A: List of Weed Species, Their Potential Habitat and Proposed Treatment are as Follows:

Common Name	Habitat *	Herbicide
Austrian fieldcress	Occurs in cultivated fields and waste areas near cultivated fields	2,4-D-see label for recommended rate on rangelands
Austrian peaweed	Occurs in cultivated fields and waste areas near cultivated fields	2,4-D ester at 2.0 lb.ae/A
Black henbane	Occurs in right-of-ways and waste areas	Tordon at .25 to .5 lb ai/A Banvel at .125 to.375 lb ai/A
Camelthorn	Occurs in areas of high water tables such as saline meadows, playas, riparian areas and cropland	Escort at 1.0 oz. ai/A Tordon 22 K see label for recommended rate on rangelands
Canada thistle	Occurs in cropland, riparian areas, pastures, rangelands, rights-of-way and other disturbed areas	Banvel at .25 to .5 pt. ai/A plus 2,4D at .23 to .5 lb. ae/A. Tordon at 1 to 2 pt. ai/A plus 2, 4D at 1 lb. ae/A. Curtail at 1 to 5 qts product/A Stinger at .13 to .19 ae/A Telar at 1.5 oz. ai/A Escort at .6 oz. ai/A
Carolina Horsenettle	Occurs in old meadows, pastures, waste areas and cultivated cropland	2,4-D-see label for recommended rate on rangelands
Common crupina	Occurs in abandoned cropland, improved pasture, gravel pits, disturbed areas and right-of-ways.	Tordon at .5 lb ai/A Banvel at .5 to .75 lb ai/A Tordon at .5 lb ai/A plus 2,4-D at 1.0 lb ai/A. Banvel at .5 to 1.0 lb ai/A plus 2,4-D at .75 to 1.0 lb. ai/A
Common St. Johnswort	Occurs in old meadow, pastures, right-of-ways and waste areas. Prefers dry, sandy, gravely soils.	2,4-D at 2.0 lb ae/A in 50 gal of water Escort at .6 oz ai/A Tordon at 1 to 2 pt. ai/A

Common Name	Habitat *	Herbicide
Dalmation toadflax	Occurs on drier, open areas on rangeland, right-of-ways, and other disturbed sites. Prefers gravelly soils	Banvel at 4-6 lb. ae/A Tordon at 1.5 lb ae/A Tordon at .5 lb ae/A plus 2,4D at 1.5 lb ae/A . Telar at .75 oz. ai/A
Diffuse knapweed	Occurs in pastures, riparian areas, rights-of-way and disturbed areas	Roundup at 3.0 lb ae/A Tordon at .25 to .5 lb ae/A 2,4-D at 1.0 to 2.0 lb ae/A Curtail at 2 to 5 qts. product/A Stinger at .5 lb ae/A
Dyer's woad	Occurs in pastureland, rangeland and waste areas.	2,4D at 2 to 2.5 lb ae/A Telar at .75 oz. ai/A Escort at .3 to .6 oz. ai/A
Hoary cress	Occurs in disturbed areas and in croplands, rangelands and riparian areas. Prefers alkaline soils	Banvel at .25 to .5 pt/A plus 2,4D at .25 to .5 lb ae/A Escort at .3 to .6 oz. ai/A Telar at .37 to .75 oz. ai/A 2,4D at 2 to 3 lb ae/A Amitrole at 3.0 lb ai per 50 gallons of water
Houndstongue	Occurs in disturbed areas such as rights-of-way, rangeland and abandoned cropland	2,4D at 2.0 lb ae/A Escort at .75oz. product/A Tordon at .5lb. ae/A
Iberian starthistle	Occurs on arid and semiarid rangeland, abandoned cropland and waste areas	2,4-D ester at 1.0 lb ae/A in 50 gallons of water. Tordon at .25 to .375 lb ae/A Telar at .75 to 2.25 oz ai/A
Johnsongrass	Occurs in pastures, cultivated cropland, meadows and waste areas	Roundup at 2.25 lb ae/A Oust at 4.5 to 9.0 oz. ai/A
Leafy spurge	Occurs in floodplains and streambanks to rangelands, croplands and disturbed areas	Tordon at 1 pt/A plus 2,4D at 1 qt/A Banvel at 4.0 to 8.0 lb ae/A Amitrole at 8.0 lb ai/A
Mediterranean sage	Occurs on pastures, meadows, rangeland and other open disturbed areas	No data available see Biological Control

Common Name	Habitat *	Herbicide
Medusahead	Occurs in sparsely vegetated rangeland degraded to low seral stage. Prefers soils with a high clay content	Roundup at 1 pt./A Pro at 1 qt. product/A
Musk thistle	Occurs in cropland and rangeland, rights-of-ways, riparian areas and meadows	Banvel at .5 to 1.0 lb ae/A Tordon at .25 lb ae/A Telar at .75 oz ai/A Escort at .3 to .6 oz. ai/A 2,4D at 1.5 to 2.0 lb ae/A
Perennial pepperweed	Occurs in waste areas, riparian areas, roadsides, rangeland and cropland	2,4D at 4.0 lb. ae/A in combination with burning or mowing Escort at .6 oz. ai/A Telar at .75 oz. ai/A
Perennial sowthistle	Occurs in cultivated fields, pastures, wastelands, and prefers poorly drained, fine-textures soils.	2,4D at 2.0 lb. ae/A Banvel at 1 qt ae/A Roundup at 4 qt ai/A Banvel at 5 pt. ae/A plus 2,4-D at 1 pt ae/A Amitrole at 4.0 lb ai/A Curtail at 1 to 5 qts product/A
Poison Hemlock	Occurs on borders of pastures and cropland and tolerates poorly drained soils and would occur in riparian areas.	Weedar 638 at 1.5 qt./A Escort at .75 oz ai/A Telar at 1.0 oz ai/A
Puncturevine	Occurs in disturbed areas, right-of-ways, and disturbed dry rangelands	2,4D at 2.0 lb. ai/A in 10 -20 gallons of water. Atrazine at 8.0 lb product/A plus Amitrole at 2.0 lb product/A. Paraquat at .38 to .47 lb ai/A Telar at 1.5 oz ai/A
Purple loosestrife	Occurs on wetlands, flood plains, drainage ditches and in riparian areas.	Glyphosate at 1% solution with hand held equipment. Rodeo at 4-6 pts ae/A Triclopyr at 1.5 to 2.0% solution

Common Name	Habitat *	Herbicide
Purple starthistle	Occurs in waste areas, right-of-ways, and pastureland	Banvel at 1 to 2 lb. ae/A Tordon at .25 to .5 lb ae/A 2,4 D at 1 to 2 lb ae/A Curtail at 2 to 5 qts product/A Stinger at .25 to .5 lb ae/A
Rush skeletonweed	Occurs on rangeland, cropland, rights-of-way, waste areas and prefers thin rocky soils or gravelly to sandy soils	Tordon at .25 pt/A plus 2,4D at 1 pt/A. Banvel at 1 to 2 qts/A plus 2,4D at 1 to 2 qts/A. Tordon at 1.0 lb ae/A 2,4-D or MCPA at 2.0 lb ae/A
Russian knapweed	Occurs on cropland, rangeland, riparian and waste areas	Tordon at 1 to 1.5 lb ae/A 2,4-D at 4.0 to 8.0 lb ae/A Roundup at 3.0 lb ae/A Telar at 1 to 3 oz. product/A
Saltcedar	Occurs along streams, canals and reservoirs, floodplains and riparian areas	Arsenal at 4 to 6 pt product/A Rodeo at 4 to 6 pt product/A Garlon 4 at 5% volume
Scotch thistle	Occurs in waste areas, right-of-ways, pastureland, rangeland and riparian areas.	Banvel at .5 to 1 lb/A Tordon at .25 lb ae/A Telar at .75 oz. ai/A Escort at .3 to .6 oz. ai/A 2,4-D at 1.5 to 2.0 lb ae/A
Silverleaf nightshade	Occurs in meadows, pastures, and cultivated fields	Arsenal at 1 lb ae/A 2,4-D see label for recommended rates on rangelands
Spotted knapweed	Occurs in pastures, rangeland, disturbed areas and a variety of habitats.	Roundup at 3.0 lb ae/A Tordon at .25 to .5 lb ae/A 2,4-D at 1.0 to 2.0 lb ae/A Curtail at 2 to 5 qts/A Stinger at .5 lb ae/A
Squarrose knapweed	Occurs in pastures, rangeland, disturbed areas and a variety of habitats.	Tordon at .25 lb ae/A plus 2,4-D at 4 lb ae/A Roundup at 3.0 lb ae/A Tordon at .25 to .5 lb ae/A 2,4-D at 1.0 to 2.0 lb ae/A Curtail at 2 to 5 qts/A Stinger at .5 lb ae/A

Common Name	Habitat *	Herbicide
Sulfur cinquefoil	Occurs on mesic and xeric disturbed sites such as rights-of-ways, abandoned croplands, and waste areas	Tordon or Banvel at 1 pt/A plus 2,4-D at 1-2 qts/A
Yellow starthistle	Occurs on arid and semiarid rangeland and abandoned cropland. Prefers shallow, gravely soils	2,4-D ester at 1.0 lb ae/A in 50 gallons of water. Tordon at .25 to .375 lb ae/A Telar at .75 to 2.25 oz ai/A Curtail at 1 to 5 qts product/A Stinger at .375 lb ae/A
Yellow toadflax	Occurs in disturbed areas on rangelands, rights-of-way and on disturbed soils.	Banvel at 4.0 to 6.0 lb ae/A Tordon at 1.5 lb ae/A Tordon at .5 ae/A plus 2,4-D at 1.5 lb ae/A. Telar at .75 oz. ai/A
Waterhemlock	Occurs in old meadows, waste areas and floodplains	2,4-D or MCPA at 2.0 lb ae/A
Western waterhemlock	Occurs in old meadows, waste areas and floodplains	2,4-D or MCPA at 2.0 lb ae/A
Wild licorice	Occurs on mesic sandy soils of meadows, pastures, rangeland, riparian areas and waste areas	Tordon at 1 qt. product/A Banvel at 2 qt. product/A

* Habitats for listed weed species are not inclusive.

Appendix B: Nevada Noxious Weed List

These are the weed species that are identified for control in this EA.

NEVADA NOXIOUS WEED LIST		
Common Name	***Latin Name***	**Other Name(s)**
Austrian fieldcress	*Rorippa austriaca*	Swaisonpea
Austrian peaweed	*Sphaerophysa salsula*	
Black henbane	*Hyoscyamus niger*	
Camelthorn	*Alhagi pseudalhagi*	*A. camelorum*
Canada thistle	*Cirsium arvense*	
Carolina Horsenettle	*Solanum carolinense*	
Common crupina	*Crupina vulgaris*	
Common St. Johnswort	*Hypercium perforatum*	Goatweed; Klamath weed
Dalmation toadflax	*Linaria genistifolia ssp. dalmatica*	
Diffuse knapweed	*Centaurea diffusa*	
Dyer's woad	*Isatis tinctoria*	
Hoary cress	*Cardaria draba*	whitetop
Houndstongue	*Cynoglossum officinale*	
Iberian starthistle	*Centaurea iberica*	
Johnsongrass	*Sorghum halepense*	Perennial sorghum
Leafy spurge	*Euphorbia esula*	
Mediterranean sage	*Salvia aethiopis*	
Medusahead	*Taeniatherum caput-medusae*	Medusahead rye
Musk thistle	*Carduus nutans*	
Perennial pepperweed	*Lepidium latifolium*	Tall whitetop
Perennial sowthistle	*Sonchus arvensis*	
Poison Hemlock	*Conium maculatum*	

NEVADA NOXIOUS WEED LIST		
Common Name	***Latin Name***	**Other Name(s)**
Puncturevine	*Tribulus terrestris*	
Purple loosestrife	*Lythrum salicaria*	Purple lythrum
Purple starthistle	*Centaurea calcitrapa*	
Rush skeletonweed	*Chondrilla juncea*	
Russian knapweed	*Centaurea repens*	
Saltcedar	*Tamarix ramosissima*	Tamarisk
Scotch thistle	*Onapordum acanthium*	
Silverleaf nightshade	*Solanum elaeagnifolium*	White horsenettle
Spotted knapweed	*Centaurea maculosa*	
Squarrose knapweed	*Centaurea virgata ssp. squarrosa*	
Sulfer cinquefoil	*Potentilla recta*	
Yellow starthistle	*Centaurea solstitialis*	
Yellow toadflax	*Linaria vulgaris*	butter and eggs
Waterhemlock	*Cicuta ssp.*	
Western waterhemlock	*Cicuta douglasii*	
Wild licorice	*Glycyrrhiza lepidota*	American licorice

Appendix C: The Work Plan

The Work Plan between the BLM and all cooperators for Integrated Weed Management programs would be a written document. The Work Plan would be written annually.

1. Representatives from the respective Counties and the BLM would meet annually; this would be the Coordination Meeting to discuss that year's Integrated Weed Management Program.

2. Each county would annually notify the BLM of new locations of noxious weeds on public lands.

3. The BLM would annually notify each county of new noxious weed locations.

4. The BLM would review the counties proposals and furnish them, in a timely manner, any modifications or recommended monitoring if necessary.

5. When new noxious weed locations are found by helicopter surveys, helicopter application of herbicides would not be conducted until the area has been surveyed by the BLM for Special Status species.

6. BLM personnel would evaluate whether a "no effect" or "may effect" situation exists on Special Status species. If a "may effect" (both beneficial and adverse) situation exists and adverse impacts cannot be eliminated, a Section 7 Consultation with the US Fish and Wildlife Service must be conducted.

7. All projects would incorporate the Standard Operating Procedures and the Standard Safety Procedures and Standard Operating Procedures of Appendix D of this Environmental Assessment.

8. A site specific environmental analysis tiered to this programmatic EA would be prepared by the BLM that would incorporate the County's proposal, BLM Staff concerns, mitigation, and monitoring needs. This would be done in a timely manner to ensure the weed treatment occurs at the optimum time.

9. The BLM would provide on the ground specialists to monitor treatment activities and assist in compliance with Standard Operating Procedures.

10. The Counties would keep BLM informed of current progress of their activities.

11. All weed control treatments applied on or near WSA's, ACEC's, Research Natural Areas, National Scenic Trails, and other special areas would incorporate features designed to avoid or mitigate impacts, (Final, 1991).

12. The BLM would notify the Nevada Regional Water Quality Control Board of the Noxious Weed Work Plan when spraying is called for as per the existing Memorandum of Understanding between the Nevada WQCB and the BLM.

13. Spray crews would be trained annually in the identification of sensitive plants in their county by a

BLM, Nevada, State, or County Botanist or a designated individual. Upon request, photos and descriptions of the sensitive plants and their habitats would be furnished to each spray crew. Treatment areas would be inspected for sensitive plants by the spray crews prior to treatment.

14. Monitoring of approved pesticide applications must be done by a Federal or State Certified Pesticide Applicator to ensure compliance with requirements and to determine the effects of the application. Records would be made by the applicators of the actual application dates, application rates, amounts and locations, and any associated problems with the project. BLM personnel would also conduct random checks of contract work.

15. The BLM would assure that the weed control program for that year includes measures which prevents the discharge of herbicides into surface waters.

16. Spill prevention and spill containment measures must be identified and accompany the Pesticide Use Proposal.

17. Each time an area is designated for an on the ground weed control treatment on public land, a cultural resource inventory would be conducted.

18. If a control treatment requires the complete removal of all vegetation in a treatment area, a reseeding plan will be considered. This determination will be made by the BLM Field Office responsible for that area. A suitable native seed mixture will be utilized for a follow-up treatment. This should provide an adequate ground cover avoiding reinfestion of noxious weeds.

Appendix D: Standard Safety Procedures and Standard Operating Procedures

Standard Safety Features

From the Nevada Department of Agriculture and the BLM

A. Use spray equipment in good repair to eliminate leaks and spillage. Use equipment that is correct for the job. Inspect equipment weekly. Aerial applicators and appurtenances would be inspected daily.

B. Work and operate machinery according to the standards established by the Nevada or Federal Occupational Safety and Health Administration (OSHA).

C. Wear Personal Protective Equipment (PPE) when using herbicides according to standards established by California or Federal OSHA and EPA and BLM. PPE for sprayers include body, hand and foot, head and neck, eye and respiratory protection.

D. Use existing roads and trails, when possible, to prevent soil compaction and erosion. All cross country travel would be approved by the BLM.

E. Train and supervise applicators annually, by a Certified Applicator. Training includes the safe and proper use of herbicides.

F. Equip all vehicles with fire fighting equipment including a shovel, a bucket, and a fire extinguisher.

G. Train crews in the proper and safe use of hand tools.

H. Respond to spills, both minor and major.

1. Notify the appropriate BLM District Hazardous Materials Coordinator immediately of a spill of any quantity of chemical concentrate occurring on public lands. Each chemical has a legal reportable quantity. This would be addressed during the EA or AD for site specific chemicals.

2. On or near highways and roadways where toxic fumes or fire with smoke may occur:

a. Quickly evacuate persons and animals that are downwind from the danger area.

b. Confine the spill as quickly as possible

c. If fire occurs, do not attempt to extinguish with water. Use dirt or a CO2 type fire extinguisher.

d. Give immediate first aid to persons contaminated or overcome by the herbicide according to the label directions.

e. Block off the area and have traffic diverted around the spill site.

3. In the event of a spill of 50 gallons diluted mixture or less:

a. Immediately wash off any herbicide spilled on a person.

b. Confine the spill and prevent its spread by using sand, or soil to dike around it.

c. Use sand, soil or kitty litter to soak up the herbicide and shovel contaminated material into a leak-proof container and seal it. Vehicles would be equipped with leak-proof containers.

d. Dispose of contaminated material after letting it stand for at least one hour. Remove absorbent with 1-3 inches of topsoil and dispose at a Class I landfill. A manifest is required to dispose of materials.

e. Do not hose down the area.

f. Work carefully and safely; do not hurry.

g. Equip vehicles with sand which can be used immediately in the event of a spill. This is especially critical when crews are in rocky areas where soil for diking is unavailable.

4. In the event of a spill of 50 gallons diluted mixture or more:

a. Notify the appropriate BLM District Hazardous Materials Coordinator immediately.

b. Follow steps listed under minor spills.

c. Notify the Nevada Department of Health and Nevada Department of Wildlife if the spill contaminates water.

Standard Operating Procedures

This appendix outlines the Standard Operating Procedures which would be applied to all vegetation treatments. Additional actions or more restrictive procedures may be identified in site-specific pretreatment surveys and the Final EIS, 1991a.

PRETREATMENT SURVEYS

Documentation of the following information is required as a minimum when conducting pretreatment vegetation management field surveys.

1. Management program/objective for the site.

2. Consideration of all feasible vegetation management alternatives.

a. Identification of environmental effects of each alternative such as fish, wildlife, soil, cultural, water, air, rare/endangered plants and animals.

b. Human safety associated with each method.

c. Hazard to nontarget species would depend on the effectiveness of each method.

d. Map of survey unit(s).

3. Recommended treatment methods (combinations).

4. If chemical herbicides are recommended, the following additional information is required.

a. Herbicide, application rate, carrier.

b. Posting requirements.

c. Positive placement techniques planned to minimize drift and effects on nontarget areas.

d. Method of application.

e. Special restrictions on the herbicide label concerning handling, buffer strips, grazing, planting, wind speed, and droplet size.

f. Monitoring for water quality protection.

Mechanical Standard Operating Procedures

1. Mechanized treatments should not be conducted on slopes greater than 40%.

2. Treatments which compact and disturb the soil to the degree that runoff and erosion would be increased should be ripped and properly drained.

3. Treatment would have irregular boundaries for maximizing the edge effect and minimizing the negative impacts on aesthetic values. Untreated islands of natural vegetation would be left to minimize negative impacts of the natural community.

Herbicide Standard Operating Procedures

Buffer Strips

Minimum buffer strips would meet or exceed those in the Standard Operating Procedures for all herbicides applied next to live streams, lakes, or ponds. Wider buffer strips would be applied if a requirement is stated on the herbicide label.

Aerial applications require that a 500-foot unsprayed buffer strip be left next to inhabited dwellings unless waived in writing by the resident. A buffer strip of at least 100 feet would be left next to

cropland and barns.

Application Contract Requirements

Most of the herbicides listed in the Final Environmental Impact Statement Vegetation Treatment on BLM Lands in Thirteen Western States, 1991, are applied by contractors, who normally both supply and apply the chemicals. In the case of noxious weed control often the contractor is the state or county agricultural district.

1. Contracts for applying herbicides would require that the water intake system for mixing be arranged so that an air gap or reservoir would be placed between the live water intake and the mixing tank to prevent any backflow of chemical into the water source.

2. Contracts for application would require that contractors not wash out spray tanks in or near streams or dispose of chemical containers on the contract area. Chemical containers would be rinsed according to the method approved in writing by the BLM Hazardous Material Coordinator and disposed of at sites approved by the state.

3. During aerial spraying, spray would be turned off at the end of spray runs and while the aircraft is turning to start another run. Initial spray swaths along buffer strips or areas to be protected would be made parallel to these areas and before the rest of the project is sprayed.

4. Herbicides would be mixed and loaded in an area where an accidental spill cannot flow into a stream or water body. Mixing and loading would be conducted at least 100 feet from water, riparian areas, areas with shallow water tables or with pervious soils, and on slopes no greater than 10 percent.

5. Precautions would be taken to assure that equipment used for storage and transport would not leak into water or soil.

6. Herbicides would not be applied to asphalt or other types of paved roads.

7. Aerial application equipment would be equipped with no-drip nozzles that use a vacuum or syphon automatic shutoff system or ball check valve that would draw the chemical back from the boom when not spraying. Spray nozzles on the boom would not be extended horizontally on the boom to more than 6/7 of the length of the helicopter rotor.

8. In aerial applications, the contractor would provide at least one qualified person for each mixing truck to handle fueling, mixing spray solutions, and loading. The contractor would also provide a foreman for each heliport to supervise operations. The foreman would be equipped and trained to take remedial action for equipment malfunctions or spills of herbicide or herbicide carrier mixes.

9. Aerial spraying would be prohibited when any of the following conditions exist on the spray area: wind velocity exceeds 5 miles per hour for liquids and 15 miles per hour for granular; rain or expected rain reduces or would reduce the effectiveness of the chemical being applied; fog obscures the visibility of the target area; air turbulence (thermal updrafts) is so great as to seriously affect the normal spray pattern; temperature inversions could lead to offsite movement

of spray; snow or ice covers the target foliage; or equipment is not designed to deliver a median droplet size of 200 to 800 microns.

Label directions would be followed instead of the above restrictions if the directions prescribe different conditions of use. Low volatile formulations of phenoxy herbicides would be used to reduce the potential for offsite contamination.

10. During application, weather conditions would be measured hourly by trained personnel at spray sites to insure safe placement of the spray on the target area.

11. Helicopters would normally be required to fly at an air speed of 40 to 50 miles per hour at a safe distance above the vegetation. Spray pressure in the boom would normally be 20 to 35 pounds per square inch. Maximum drift reduction techniques would be used with normal spray formulations and application equipment. Herbicides labels may specify boom pressures, air speeds, aircraft heights and nozzle configurations desirable to reduce drift and increase effectiveness. In the event of a conflict, the label specifications would be followed instead of the above requirements.

12. During air operations, direct radio communications would be maintained to link all parts of the project.

13. On herbicide application projects conducted directly by the BLM, a federal or state certified employee would monitor and supervise the project. Contractors would be licensed according to state and Federal law. A BLM project inspector would ensure compliance with contract requirements.

14. Buffer strips (or no-spray areas) would be determined by individual states. Buffer strips may also be designated by the contracting officer's authorized representative (COAR) or the project inspector (PI) during operations as a means to protect undetected rare plants, critical riparian zones, and other sensitive areas.

15. No more than one broadcast application of picloram would be made on a given site in any given year to reduce the potential for picloram accumulation in the soil.

16. Commercial applicators must be state licensed

Special Design Features

Special provisions for treatments would be selected according to the scope of the action and the physical characteristics of the specific site.

Water Monitoring and Studies

To determine the effectiveness of buffer strips and administrative controls in eliminating impacts on water quality and the aquatic environment, BLM would monitor water quality as appropriate to the actions implemented. Each district would evaluate its monitoring needs. When an annual spray program is developed, each district would determine the location of streams and areas that might require special

attention, such as domestic water supplies and fish hatcheries. The district would then use this information in establishing priority sampling areas. When reviewing the locations of planned herbicide treatments, a BLM Watershed Specialist would select sites for water quality sampling.

Monitoring schedules would be designed to allow sampling when concentrations are most detectable. In addition, contingency plans would be developed to permit sampling during any phase of the treatment program should a situation arise that requires a quick reaction. Control samples would be taken before treatment, ideally within 24 hours of the treatment period. The sample should be taken from the same site as the other monitoring samples.

Any stream may be considered for water quality sampling, but all waters need not be sampled. To aid in selecting streams for monitoring, a priority system has been developed to give highest priority to streams with important fisheries, extensive human use, or a potential for major environmental impacts. The following are priorities for which monitoring is considered:

1. municipal watersheds;
2. fish hatchery supply watersheds;
3. domestic and agricultural watersheds;
4. major fish-bearing streams;
5. wildlife and wild game;
6. unique situations; and
7. special status species

Monitoring should also be considered in the following other situations.

1. The stream is not a special attention stream but contains an important population of resident fish.

2. The stream flows into a marsh or lake within 5 miles downstream from the treatment area. Herbicide dissipates gradually in flowing water but accumulates in quiet areas such as lakes or marshes. In the lakes or marshes, the herbicide can kill or injure rooted or planktonic plants.

3. Any herbicide entering a small stream would be quickly diluted when the stream merges with other streams. But if several areas in a watershed are treated, the dilution effect may be lost. In watersheds with extensive herbicide treatment where the dilution effect may be reduced, sampling should be considered, at least on the larger streams downstream from the treatment area.

4. The watershed is considered to be socially sensitive. Public interest is often much greater in some areas than others. Those areas for which the public has expressed the most interest should be considered for water quality monitoring.

Appendix E: Threatened, Endangered and Special Status Species

Ia. FEDERALLY LISTED SPECIES

Scientific Name	Common Name	Status*
Nitrophila mohavensis	Amargosa niterwort	FE,SL
Spiranthes diluvialis	Ute lady's tresses; plateau l. t.	FT,SL
Catostomus warnerensis	Warner sucker	FT
Crenichthys nevadae	Railroad Valley springfish	FT,SL
Oncorhynchus clarki henshawi	Lahontan cutthroat trout	FT
Rhinichthys osculus lethoporus	Independence Valley speckled dace	FE,SL
Rhinichthys osculus nevadensis	Nevada speckled dace	FE,SL
Rhinichthys osculus oligoporus	Clover Valley speckled dace	FE,SL
Falco peregrinus	Peregrine Falcon	FT,SL
Haliaeetus leucocephalus	Bald Eagle	FT,SL

Ib. FEDERALLY PROPOSED SPECIES

Astragalus lentiginosus sesquimetralis	Sodaville milkvetch	PT,SL	var.

Ic. FEDERAL CANDIDATE SPECIES

Salvelinus confluentus	bull trout	C
Rana pretiosa	spotted frog	C
Charadrius montanus	Mountain Plover	C
Astragalus oophorus var. *clokeyanus*	Clokey eggvetch	C

*Status

FE-Federally endangered
FT-Federally threatened
PT-Proposed threatened
C-Candidate
SL-Listed by the State of Nevada in a category implying potential endangerment or extinction

IIa. NEVADA STATE PROTECTED ANIMALS THAT MEET BLM'S 6840 POLICY DEFINITION

Species of animals occurring on BLM-managed lands in Nevada that are: (1) "protected" under authority of NAC 501.100 - 503.104; (2) also have been determined to meet BLM's policy definition of "listing by a State in a category implying potential endangerment or extinction"; and (3) are not already included as BLM Special Status Species under federally listed, proposed, or candidate species. Nevada BLM policy is to provide these species with the same level of protection as is provided for candidate species in BLM Manual 6840.06 C.

Scientific Name	Common Name
Mammals	
Euderma maculatum	spotted bat
Birds	
Aquila chrysaetos	Golden Eagle
Accipiter gentilis	Goshawk
Buteo regalis	Ferruginous Hawk
Buteo swainsoni	Swainson's Hawk
Pandion haliaetus	Osprey
Pelecanus erythrorhynchos	White Pelican
Plegadis chihi	White-faced ibis
Speotyto cunicularia	Burrowing Owl
Fishes	
Gila bicolor euchila	Fish Creek Springs tui chub
Gila bicolor newarkensis	Newark Valley tui chub
Gila bicolor ssp.	Big Smoky Valley tui chub
Gila bicolor ssp.	Fish Lake Valley tui chub
Gila bicolor ssp.	Railroad Valley tui chub
Relictus solitarius	relict dace
Rhinichthys osculus lariversi	Big Smoky Valley speckled dace
Rhinichthys osculus ssp.	Monitor Valley speckled dace
Reptiles	
Heloderma suspectum	Gila monster

IIb. NEVADA STATE PROTECTED PLANTS

Species of plants occurring on BLM-managed lands that are protected under authority of NRS 527.270 - .300 because of potential endangerment or extinction, but are not already included as BLM Special Status Species under Federally listed, proposed, or candidate species. Nevada BLM policy is to provide these species with the same level of protection as is provided for candidate species in BLM Manual 6840.06 C.

Scientific Name	Common Name
Astragalus beatleyae	Beatley milkvetch
Astragalus geyeri var. *triquetrus*	threecorner milkvetch
Astragalus mohavensis var. *hemigyrus*	halfring milkvetch; curvepod Mojave m.; Darwin Mesa m.
Astragalus yoder-williamsii	Osgood Mountains milkvetch; Yoder-Williams m.
Castilleja salsuginosa	Monte Neva paintbrush
Cryptantha insolita	unusual catseye; Las Vegas cryptantha
Eriogonum viscidulum	sticky buckwheat; clammy b.
Frasera gypsicola	Sunnyside green gentian; S. elkweed
Phacelia inconspicua	obscure scorpion plant
Polyctenium williamsiae	Williams combleaf
Rorippa subumbellata	Tahoe yellowcress; T. watercress

III. NEVADA BLM SENSITIVE SPECIES LIST---Species designated by the State Director, in cooperation with the State of Nevada Department of Conservation and Natural Resources, that are not already included as BLM Special Status Species under (1) Federally listed, proposed, or candidate species; or (2) State of Nevada listed species. BLM policy is to provide these species with the same level of protection as is provided for candidate species in BLM Manual 6840.06 C.

Scientific Name	Common Name	
Mammals		
Eumops perotis californicus	greater western mastiff bat	
Idionycteris phyllotis (=*Plecotus p.*)	Allen's big-eared bat	
Macrotus californicus	California leaf-nosed bat	
Myotis ciliolabrum	small-footed myotis	
Myotis evotis	long-eared myotis	
Myotis thysanodes	fringed myotis	
Myotis velifer	cave myotis	
Myotis volans	long-legged myotis	
Myotis yumanensis	Yuma myotis	
Nyctinomops macrotis	big free-tailed bat	(=*Tadarida*
m., T. molossa)		
Plecotus townsendii pallescens	pale Townsend's big-eared bat	
Plecotus townsendii townsendii	Pacific Townsend's big-eared bat	
Sorex preblei	Preble's shrew	
Thomomys umbrinus abstrusus	Fish Spring pocket gopher	*Thomomys*
umbrinus curtatus	San Antonio pocket gopher	
Birds		
Chlidonias niger	Black Tern	
Charadrius alexandrinus nivosus	Western Snowy Plover	
Centrocercus urophasianus	Western Sage Grouse	
Oreortyx pictus	Mountain quail	
Phainopepla nitens	Phainopepla	
Reptiles		
Sauromalus obesus	Chuckwalla	
Amphibians		
Bufo nelsoni	Amargosa toad	

BLM SENSITIVE SPECIES (CONTINUED)

Fishes (10 total)

Catostomus latipinnis	flannelmouth sucker
Catostomus sp.	Wall Canyon sucker
Crenichthys baileyi thermophilus	Moorman White River springfish
Gila bicolor ssp.	Hot Creek Valley tui chub
Gila bicolor isolata	Independence Valley tui chub
Lepidomeda mollispinis mollispinis	Virgin River spinedace
Oncorhyncus clarki utah	Bonneville cutthroat trout
Oncorhyncus mykiss gibbsi	interior redband trout
Rhinichthys osculus ssp.	Meadow Valley Wash speckled dace
Rhinichthys osculus ssp	Oasis Valley speckled dace

Snails

Pyrgulopsis micrococcus	Oasis Valley springsnail
Pyrgulopsis wongi	Wongs springsnail
Tryonia clathrata	grated tryonia

Clams & Mussels

Anodonta californiensis	California floater

Beetles

Aegialia crescenta	Crescent Dune aegialian scarab
Aegialia hardyi	Hardy's aegialian scarab
Aegialia magnifica	large aegialian scarab
Aphodius sp.	Crescent Dune aphodius scarab
Aphodius sp	Big Dune aphodius scarab
Pseudocotalpa giulianii	Giuliani's dune scarab
Serica sp.	Crescent Dune serican scarab

Butterflies & Moths

Euphilotes rita mattonii	Mattoni's blue
Euphydryas editha monoensis	Mono checkerspot
Hesperia uncas ssp.	Railroad Valley skipper
Hesperopsis gracielae	MacNeill sooty wing skipper
Limenitis archippus lahontani	Nevada viceroy
Limenitis weidemeyerii nevadae	Nevada admiral
Phyciodes pascoensis ssp.	Steptoe Valley crescentspot
Polites sabuleti sinemaculata	Denio sandhill skipper
Speyeria atlantis greyi	Grey's silverspot

BLM SENSITIVE SPECIES (CONTINUED)

Plants

Angelica scabrida	rough angelica
Antennaria arcuata	meadow pussytoes
Arabis bodiensis	Bodie Hills rockcress
Arabis falcatoria	Grouse Creek rockcress
Arabis falcifructa	Elko rockcress
Arabis ophira	Ophir rockcress
Asclepias eastwoodiana	Eastwood milkweed
Astragalus aequalis	Clokey milkvetch; equal m.
Astragalus anserinus	Goose Creek milkvetch
Astragalus eurylobus	Needle Mountains milkvetch; Peck Station m.
Astragalus funereus	black woollypod; Funeral milkvetch; black m.; Rhyolite m.
Astragalus gilmanii	Gilman milkvetch
Astragalus inyoensis	Inyo milkvetch
Astragalus mokiacensis	Mokiak milkvetch
Astragalus oophorus var. *lavinii*	Lavin eggvetch
Astragalus oophorus var. *lonchocalyx*	long-calyx eggvetch; pink e.
Astragalus solitarius	lonesome milkvetch; weak m.
Astragalus tiehmii	Tiehm milkvetch
Astragalus toquimanus	Toquima milkvetch
Astragalus uncialis	Currant milkvetch
Botrychium crenulatum	dainty moonwort; crenulate m.
Calochortus striatus	alkali mariposa lily; striped m. l.
Camissonia megalantha	Cane Spring evening-primrose
Chrysothamnus eremobius	remote rabbitbrush; Pintwater r.
Collomia renacta	Barren Valley collomia
Cordylanthus tecopensis	Tecopa birdsbeak
Cryptantha schoolcraftii	Schoolcraft catseye
Cryptantha welshii	White River catseye; Welsh c.
Cusickiella quadricostata	Bodie Hills draba; four-rib whitlowgrass

BLM SENSITIVE SPECIES (CONTINUED)

Cymopterus goodrichii	Goodrich biscuitroot; G. parsley
Cymopterus ripleyi var. *saniculoides*	sanicle biscuitroot; Ripley b.
Didymodon nevadensis	Gold Butte moss
Enceliopsis argophylla	silver leaf sunray
Epilobium nevadense	Nevada willowherb
Erigeron latus	broad fleabane
Erigeron ovinus	sheep fleabane
Eriogonum anemophilum	windloving buckwheat
Eriogonum bifurcatum	Pahrump Valley buckwheat; forked b.
Eriogonum corymbosum var. *aureum*	golden buckwheat
Eriogonum crosbyae	Crosby buckwheat
Eriogonum heermannii var. *clokeyi*	Clokey buckwheat
Eriogonum lewisii	Lewis buckwheat
Eriogonum prociduum	prostrate buckwheat; Austin b.
Eriogonum robustum	altered andesite buckwheat; Lobb b.
Eriogonum tiehmii	Tiehm buckwheat
Frasera pahutensis	Pahute green gentian; P. elkweed
Galium hilendiae ssp. *kingstonense*	Kingston bedstraw
Glossopetalon pungens var. *glabra*	smooth dwarf greasebush
Glossopetalon pungens var. *pungens*	dwarf greasebush
Haplopappus graniticus	Lone Mountain tonestus
Ionactis caelestis	Red Rock Canyon aster
Ivesia aperta var. *aperta*	Sierra Valley ivesia
Ivesia arizonica var. *saxosa*	rock purpusia
Ivesia jaegeri	Jaeger ivesia
Ivesia pityocharis	Pine Nut Mountains ivesia; P.N.M. mousetails
Ivesia rhypara var. *rhypara*	grimy ivesia
Ivesia webberi	Webber ivesia
Jamesia tetrapetala	waxflower
Lathyrus grimesii	Grimes vetchling
Leptodactylon glabrum	Bruneau River prickly phlox; Owyhee p.p.
Lomatium graveolens var. *clarkii*	Clark parsley
Lupinus holmgrenanus	Holmgren lupine
Mentzelia mollis	smooth stickleaf
Mentzelia packardiae	Packard stickleaf
Oryctes nevadensis	oryctes

BLM SENSITIVE SPECIES (CONTINUED)

Penstemon albomarginatus	white-margined beardtongue
Penstemon arenarius	Nevada dune beardtongue
Penstemon bicolor ssp. *bicolor*	yellow twotone beardtongue
Penstemon concinnus	Tunne Springs beardtongue
Penstemon floribundus	Cordelia beardtongue
Penstemon fruticiformis ssp. *amargosae*	Death Valley beardtongue; Amargosa bush penstemon
Penstemon pahutensis	Pahute Mesa beardtongue
Penstemon pudicus	bashful beardtongue
Phacelia beatleyae	Beatley scorpion plant
Phacelia minutissima	least phacelia; dwarf phacelia
Phacelia monoensis	Mono phacelia
Phacelia parishii	Parish phacelia; playa p.
Pinus washoensis	Washoe pine
Polyctenium fremontii var. *confertum*	crowded combleaf
Porophyllum pygmaeum	pygmy poreleaf
Potentilla basaltica	Soldier Meadows cinquefoil; basalt cinquefoil
Potentilla cottamii	Cottam cinquefoil
Salvia dorrii var. *clokeyi*	Clokey mountain sage; C. purple sage
Sclerocactus blainei	Blaine pincushion; B. fishhook cactus
Sclerocactus nyensis	Nye pincushion
Sclerocactus schlesseri	Schlesser pincushion; S. fishhook cactus
Silene nachlingerae	Jan's catchfly; Nachlinger catchfly
Sphaeralcea caespitosa	Jones globemallow
Streptanthus oliganthus	Masonic Mountain jewelflower; M. M. twistflower
Stroganowia tiehmii	Tiehm stroganowia
Townsendia jonesii var. *tumulosa*	Charleston grounddaisy
Trifolium andinum var. *podocephalum*	Currant Summit clover
Trifolium leibergii	Leiberg clover
Viola lithion	rock violet

Appendix F: Chemical and Application Rate

[illegible]	[illegible]	[illegible]	[illegible]
2,4-D	Weedone LV4™ Weedone LV6™ Weedone 638™	2 lbs	Nonrestricted rangelands
dicamba	Banvel™	2 lbs	Nonrestricted rangelands
hexazinone	Velpar™ Velpar L™ Pronone™	2 lbs	Forested Areas
glyphosate	Roundup™ Rodeo™ Accord™	2 lbs	Nonrestricted rangelands
triclopyr	Garlon™	2 lbs	Nonrestricted rangelands
[illegible]4-D & [illegible]mba	Weedone™ Banvel™	1 lb & 2 lbs, respectively	All weeds; used 90% of time
2,4-D & glyphosate	Weedone™ Roundup™	1 lb & 2 lbs, respectively	Dalmatian toadflax & marlahan mustard
2,4-D & triclopyr	Weedone™ Garlon™	1 lb & 2 lbs, respectively	marlahan mustard & knapweeds

Appendix G: Chemical and Environmental Properties of Herbicides Used On Rangeland

Herbicides	Soil Half-life (days) (range)[1]	Solubility mg/l	Koc ml/g	Leaching Index[2]	Vapor Pressure mm Hg
Non Persistent (half-life of less than 30 days)					
2,4-D acid	10 (2-16)	890	20	2.70	$8.0x10^{-6}$
2,4-D esters	10 (2-41	1E[3]	1000E	1.00	
Dicamba salt	14 (3-35)	400000	2	4.24	0
Mefluidide	2(2)	180			$1.0x10^{-4}$
Sulfometuron methyl	20(20)	70(pH7)[4]	78(pH7)	2.74	$6.0x10^{-16}$
Moderately persistent (half-life of 30 to 100 days)					
Atrazine	60(18-120)	33	100	3.56	$2.9x10^{-7}$
[illegible]ocil acid	60(60-360)	700	32	4.44	$3.1x10^{-7}$
[illegible]alid	30(12-70)	300000E	6	5.46	0
Diuron	90(30-328)	42	480	2.58	0
Glyphosate amine salt	47(21-60)	900000E	24000E	-0.64	0
Hexazinone	90(30-180)	3300	54	4.43	$2.0x10^{-7}$
Imazapyr acid	90(90-712)	11000	100E	6.45	less than $1x10^{-8}$
Picloram salt	90(20-277)	200000E	16	5.46	0
Simazine	60(11-149)	6	130	3.49	$2.2x10^{-8}$
Triclopyr ester	46(30-90)	23	780	1.84	$1.3x10^{-6}$
Persistent (half-life of more than 100 days)					
Chlorsulfuron	160(28-160)	7000(pH7)	300(pH7)	3.36	$4.46x10^{-6}$
Metsulfuron-methyl	120(14-180)	9500(pH7)	35(pH7)	5.11	$2.5x10^{-12}$
Tebuthiuron	360(13-450)	2500	80	5.36	$2.0x10^{-6}$

1. Most representative half-life value and range of reported values (Wauchope et al. 1991)
2. Relative ranking of leaching potential using the equation L.I. = Log(Half-life)*(4-Log(Koc)), (Goss 1988).
3. E-estimate, probable error: solubility: less than 3X, Koc: 3-5X, or wide range in reported values (Wauchope et al. 1991).
4. Solubility and Koc are a function pH, values given are for pH7.

Appendix H: Herbicide Formulations Approved for use on BLM Lands

ACTIVE INGREDIENT	CHEMICAL COMPANY	PRODUCT NAME	EPA REG. NUMBER	SPECIAL NOTES
Atrazine	Ciba-Geigy	AAtrex 80W	100-439	
	Ciba-Geigy	AAtrex Nine-0	100-585	
	Ciba-Geigy	AAtrex 4L	100-497	
	Ciba-Geigy	Atratol 90	100-622	
	Setre	Atrazine 4 L	5905-470-38167	
	Setre	Atrazine 90DF	35915-3-38167	
Bromacil	*Dupont	Hyvar X	352-287	
	*Dupont	Hyvar XL	352-346	
Bromacil + Diuron	*Dupont	Krovar II DF	352-440	
	*Dupont	Krovar I DF	352-505	
	*Riverdale	DiBroTM 4+4	228-235	
	*Riverdale	DiBroTM 2+2	228-227	
Chlorsulfuron	*Dupont	Telar	352-404	
Clopyralid	*DowElanco	Reclaim	62719-83	
	*DowElanco	Stinger	62719-73	Former Registration No. 464-600
	*DowElanco	Transline	62719-73	
Clopyralid + 2,4-D*	*DowElanco	Curtail	62719-48	
2,4-D	*Rhone-Poulenc	Aqua-Kleen	264-109-AA	Granular

4-D(Cont)	*Rhone-Poulenc	Esteron 99C	62719-9-264	
	*Rhone-Poulenc	Formula 40	62719-1-264	
	*Rhone-Poulenc	WEEDAR 64	264-2AA	
	*Rhone-Poulenc	Weedone 170 Brush out	264-222ZB	
	*Rhone-Poulenc	Weedone LV-4	264-20ZA	
	Platte Chem.	Cl.Cr. Amine 4	34704-5 CA	CALIFORNIA ONLY
	Platte Chem.	SALVO LV ester	34704-609	
	Platte Chem.	2,4D 4# Amine Weed Killer	34704-120	
	Platte Chem.	Cl.Cr. LV4 ES	34704-124	
	Platte Chem.	SAVAGE DF	34704-606	
	Platte Chem.	SWORD (MCPA)	228-267-34704	
	Cornbelt Chem	Weed Pro 4#Am	10107-31	
	Cornbelt Chem	Weed Pro 4#LV	10107-27	
	Cornbelt Chem	Weed Pro 6#LV	10107-40	
	PBI/Gordon	Hi-Dep	2217-703	
	PBI/Gordon	Dymec	2217-633	
	*Cenex/Land O' Lakes/Agr.Co.	MCP Ester	1381-98	
	*Cenex/Land O' Lakes/Agr.Co.	LV6 2,4-D	1381-101	
	*Cenex/Land O' Lakes/Agr.Co.	LV6 2,4-D	1381-102	

2,4-D(Cont)	*Cenex/Land O' Lakes/Agr.Co.	MCP Amine	1381-104	
	*Wilbur-Ellis	Amine 4	228-145-2935	
	*Wilbur-Ellis	Lo Vol-4	228-139-2935	
	*Setre	2,4-D Amine	44215-108-5905	
	*Wilbur-Ellis	Lo Vol-6 Ester	228-95-2935	
	*Setre	2,4-D LV 4	5905-90	
	*Setre	2,4-D LV 6	5909-93	
	*Setre	Barrage LV Ester	5905-504-38167	
	*Riverside/ Terra Corp	2,4D LV 6	9779-256	
	*Riverside/ Terra Corp	2,4D Amine 4	9779-263	
	*Riverdale	2,4-D LV 6 Ester	228-95	
	*Riverdale	DP-4 Ester	228-196	
	*Riverdale	2,4-D 4 Amine IVM	228-145	
	*Riverdale	MCPA-4 Amine IVM	228-143	
	*Universal	2,4-D Amine	1386-43	
	*Universal	2,4-D Lo-V Es	1386-60	
	*Universal	2,4-D Lo-V 6E	1386-616	
Dicamba	*Sandoz	Banvel Herb	55947-1	
	*Sandoz	Vanquish	55947-46	
	*Sandoz	Banvel 720	55947-20	
	*Riverdale	Veteran 10G	228-309	

	*Riverdale	Veteran CST	228-297	
Dicamba + 2,4D	*Sandoz	Weedmaster	55947-24	
	PBI/Gordon	Brush Kill 4-41	2217-644	
	PBI/Gordon	Brush Kill 10-5-1	2217-543	
	*Riverdale	Veteran 720	295-228	
	*Riverdale	Veteran 2010	228-296	
Diuron	*Dupont	Karmex DF	352-508	
	*Wilbur-Ellis	Diuron-DF	00352-00-508-02935	Former Registraion # 19713-274-295
	*Griffin	Direx 4L	1812-257	
	*Griffin	Direx 4L-CA	1812-257	For California Only
	*Griffin	Direx 80DF	352-508-1812	
	*Platte	Diuron 80WDG	34704-648	
	*Riverside/ Terra Corp	Diuron 80 DF	9779-318	
Diuron + Imazapyr	American Cyanamid	Topsite	241-344	
	*American Cyana-mid	Sahara DG	241-372	
	*American Cyana-mid	Sahara CP	Diuron:19713-274-241 Imazapyr:241-346	
	*American Cyana-mid	Sahara II CP	Diuron:9779-318-241 Imazapyr:241-346	
Diuron + Tebuthiurorn	SSI Mobley	SpraKil SK-13 Granular	34913-15	

	*SSI Mobley	SpraKil SK-26 Granular	34913-16	
Fosamine Ammonium	*DuPont	Krenite S	352-395* *W. OR VM EIS	If used in other areas other than Western Oregon refer to Western Oregon EIS Risk Assessment 1989 Program -Management of Competing Vegetation
Glyphosate	*Monsanto	Accord	524-326	
	*Monsanto	E-Z-Ject	524-435	
	*Monsanto	Expedite	524-432	
	*Monsanto	Honcho	524-326	Not approved in all states
	*Monsanto	Rodeo	524-343	
	*Monsanto	Roundup	524-445	Former Registration # 524-308-AA
	*Monsanto	Roundup Pro	524-475	Same product but labelled for different uses
	*Monsanto	Roundup Ultra	524-475	Same product but labelled for different uses.
	*Monsanto	Roundup RT	524-454	Not approved in all states
	*Monsanto	Ranger	524-382	
	*Monsanto	Pondmaster Aquatic Herb	524-308	
	*Wilbur-Ellis	Ruler	524-326-2935	
	Platte	Mirage	524-326-34704	

	*Monsanto	Campaign	524-351	
Glyphosate+ Dicamba	*Monsanto	Fallowmaster	524-390	
Hexazinone	*Dupont	Velpar	352-378	
	*Dupont	Velpar ULW	352-450	
	*Dupont	Velpar L	352-392	
	*Pro-Serve	Pronone MG	33560-21	
	*Pro-Serve	Pronone 10G	33560-21	
	*Pro-Serve	Pronone 25G	33560-45	
	*Pro-Serve	Pronone Power Pellet	33560-41	
Imazapyr	Amer. Cyanamid	Arsenel	241-273	
	Amer. Cyanamid	Arsenel	241-295	
	Amer. Cyanamid	Arsenel RTU	241-330	
	Amer. Cyanamid	Arsenel App Con	241-299	
Mefluidide	PBI/Gordon	Embark 2-S	7182-7	
Metsulfuron-methyl*	Dupont	Escort	352-439	
Picloram	*DowElanco	Tordon 22K	62719-6	Former Registration # 464-323
	*DowElanco	Tordon K	62719-17	Former Registration # 464-421
	*DowElanco	Grazon PC	62719-181	Former Registration # 820002 FOR NM, OK, TX only

41" {.5 tordon 1b / 1 lbaactive 18-20" 1 lb / 1 1/2 yr x .5 sandy

Picloram + 2,4-D	*DowElanco	Tordon 101M Forestry use only	62719-5	Former Registration # 464-306
	*DowElanco	Tordon RTU	62719-31	Former Registration # 464-510
	*DowElanco	Pathway	62719-31	
	*DowElanco	Access	62719-57	
Simazine	Ciba-Geigy	Princep 80W	100-437	
	Ciba-Geigy	Princep 4 L	100-526	
	Ciba-Geigy	PrincepCali90	100-603	
Sulfometuron methyl	*Dupont	Oust	352-401	
Tebuthiuron	*DowElanco	Spike 80W	62719-107	Former Registration # 1471-97
	*Dow Elanco	Spike20P	62719-121	Former Registration # 1471-123
	EliLilly & Co.	Spike 20P	1471-123	
	*DowElanco	Spike 40P	62719-122	Former Registration # 1471-124
	*SSI Mobley	SpraKil S-5 Granules	34913-10	-
Triclopyr	*DowElanco	Garlon 3A	62719-37	Former Registration # 464-546
	*DowElanco	Garlon 4	62719-40	Former Registration # 464-554
	*DowElanco	Remedy	62719-70	
	*DowElanco	Pathfinder II	62719-176	
Triclopyr + 2,4D	*DowElanco	Crossbow	62719-260	

*As other formulations of the above chemicals become available and are cleared through BLM Washington Office, they would be considered for use on BLM-administered lands.