

5.0 ENVIRONMENTAL CONSEQUENCES

This Section expands on some of the environmental impacts briefly analyzed in the alternatives discussion throughout the Plan. The Plan incorporates by reference the Rocky Flats Environmental Technology Site Vegetation Management Environmental Assessment. Impacts from vegetation management practices are analyzed within that document, and it provides the impact analyses for many of the actions described within this Plan. Nothing in this Plan is to be interpreted as a diminishment of the policies, programs and projects as outlined in that EA.

As discussed in Section 1.3.2 of this document, three alternatives are considered:

- The “**proposed actions**” with implementation of the Plan.
- The “**options considered but not selected**” alternative, which discusses management strategies considered but not selected for inclusion within the Plan.
- The “**no action**” alternative. No action is the continuation of existing management practices.

The preferred (proposed) action is sometimes not a new proposal, but may be the continuance of a current management practice, or “no action” and is designated as such throughout the Plan under the heading ***Preferred Action: No Action***. For example, in much of the inventory and monitoring section the no action alternative (current monitoring program) is the preferred action.

The proposed action alternatives would not have long-term negative environmental consequences compared to existing conditions. The “options considered but not selected” alternatives could have a wide range of environmental consequences, ranging from positive to negative on various components of the Rock Creek Reserve environment. In some cases, the alternatives differ significantly in their ability to proactively manage natural resources, support the Rocky Flats mission, and comply with environmental laws.

The “options considered but not selected” discussion in this section also includes the “no action” alternative in cases where “no action” is not the preferred alternative. This is done for brevity and to simplify the discussions.

The Plan provides guidelines for managing natural resources, and describes actions designed to maintain and improve Rock Creek Reserve’s native, natural resources. The Plan describes preferred options that allow flexibility in management that will be exercised as more information becomes available.

5.1 ROCK CREEK RESERVE BOUNDARY EXPANSION

Proposed Action

One of the actions proposed in this Plan is the expansion of the boundaries of Rock Creek Reserve to include most of the Rock Creek watershed. The watershed encompasses approximately 1500 acres, most of which occur on the Site. The proposed boundary expansion would bring the total acreage of Rock Creek Reserve from 800 acres to 1700 acres (Fig. 2). The Service supports this proposed action. The other proposed management options in this Plan will not change with the implementation of the boundary

expansion. This Plan is not a watershed management plan. The intent is to protect, restore and conserve native species. Changing the boundary of the Rock Creek Reserve helps to do this by making a more definable land unit by incorporating natural and manmade boundary lines such as drainage features, topographical features and roads. The proposed boundary expansion does not include any known contaminated areas or eligible archaeological or historic sites. The proposed boundary expansion includes additional easements and structures, to include a never-used landfill with pond and support facility.

Options Considered But Not Selected

The Rock Creek Reserve proposed boundary expansion could have encompassed a wide range of acres and different boundary configurations. Contaminated areas were not considered for inclusion in Rock Creek Reserve. Range managers and wildlife biologists selected the best option based on the potential for contamination, and on an ecological approach. A general watershed approach was desired, and inclusion of as much of the tall grass prairie as practicable. Applying management practices to a better-defined land management unit allows a more unified approach, rather than managing fragments of habitat with no discernible boundaries. The No Action alternative would provide a more fragmented approach, since accessible areas of the watershed and adjoining sections of tall grass prairie would not be included in Rock Creek Reserve.

5.2 TOPOGRAPHY, PHYSIOGRAPHY, GEOLOGY AND SOILS

Proposed Action

The proposed action includes an existing integrated program for the planning of land maintenance and protection of soils through the management of vegetation. Brief periods of increased erosion could occur during land maintenance and rehabilitation activities (such as prescribed burning), but these would be insignificant compared to the erosion control benefits of enhancing native vegetation. There may be slight increases in erosion during bare ground aspects of rehabilitation of roads and other projects which disturb the soil, but the plan includes provisions to minimize erosion during and following these actions such as soil stabilization using structures and vegetation. The proposed action has evolved over years of active and successful management at Rocky Flats.

Options Considered But Not Selected

Other options could range from intensive erosion control programs that would provide relatively good soils protection to virtually no erosion control or damage prevention. Erosion, however, is not a major issue at this time on Rock Creek Reserve. Options in the Proposed Action will control limited areas of erosion that were identified in the tall upland shrubland areas. Most are aimed more at prevention than erosion repair. Construction of erosion control dams could have a greater impact than the current erosion. This would also impact a federal threatened species, the Preble's meadow jumping mouse found in Rock Creek riparian areas. Negative effects on Rock Creek Reserve's soils (and associated vegetation) would be greater using other options than under the proposed action.

5.3 WATER RESOURCES

Proposed Action

Implementing the monitoring described in the Plan will not have a negative impact on the environment. It could have a very positive impact if potential problems are identified and subsequently mitigated. Monitoring water quantity and quality is not a legal requirement on Rock Creek Reserve, as it is within the other two watersheds that occur on the Site. Exploring the feasibility of obtaining water rights gives land managers a wider array of options for management of water quantity in the future, an option which could become necessary for protection of a federal-listed, threatened species, such as the Preble's meadow jumping mouse.

Options Considered But Not Selected

Other options range from doing nothing to intensive monitoring and testing of the groundwater and surface water of Rock Creek. The No Action alternative could result in negative impacts, going undetected, therefore causing harm to the Preble's meadow jumping mouse, and other native animal and plant species.

5.4 AIR QUALITY

Preferred Action: No Action

No negative long-term impacts would occur from implementation of the proposed actions. Air quality monitoring and management are currently done as determined by law and specific agreements between Rocky Flats and the regulatory agencies. Monitoring less than the existing level would result in noncompliance with State and federal law. Increased monitoring would be unnecessary as the current level of monitoring is based on statistical requirements for accuracy. Continued reclamation of roads and bare areas will further reduce the likelihood of PM-10 and TSP generation as fugitive dust.

Options Considered But Not Selected

Negative environmental impacts would not result from enhanced air quality projects, such as using dust suppressants (that have been assessed for impacts to vegetation and water) on roads, prohibiting traffic or no implementation of occasional prescribed burns. Prohibiting all traffic is not a viable alternative. Access is necessary for environmental programs and maintenance activities. Traffic is already kept to a minimum and is strictly controlled in the Buffer Zone, including Rock Creek Reserve.

5.5 BIOLOGICAL RESOURCES/ VEGETATION AND FAUNA

Proposed Action

The proposed action would provide management of faunal and vegetation resources on Rock Creek Reserve on an integrated basis. The Plan uses an ecosystem management strategy to achieve biological

diversity conservation. It emphasizes the use of native species and the monitoring and control of invasive species, as emphasized in the Presidential memorandum to the heads of federal agencies (Office of the President, 1994) and Executive Order 13112, Invasive Species. The Plan incorporates biodiversity principles and analyzes impacts to biodiversity as outlined in the Council on Environmental Quality's 1993 report entitled Incorporating Biodiversity Considerations Into Environmental Impact Analysis Under the National Environmental Policy Act. Implementation of this Plan will have positive effects on the biodiversity of Rock Creek Reserve.

The plan includes specific actions to inventory, monitor, and manage the watershed and semi-arid ecosystem of Rock Creek Reserve, including wildlife habitat, native species introductions, protection of increasingly rare native plant communities, and an integrated approach to noxious weed management. These programs include monitoring a variety of plants and animals, wetlands protection, prairie ecosystem management to maintain and improve wildlife habitat, and means to detect and reduce impacts to surface waters.

This Plan incorporates by reference the Rocky Flats Environmental Technology Site Vegetation Management Environmental Assessment. Impacts from vegetation management practices are analyzed within that document, and it provides the impact analysis for many of the actions analyzed within this Plan. Nothing in this Plan is to be interpreted as a diminishment of the policies, programs and projects as outlined in that EA.

Some proposed actions with the potential for short-term negative impacts, or public concern are analyzed further here. These are:

Introduction of native species and removal of non-natives- Public concern for the potential for protected species to migrate off federal lands on to private lands has been raised. Introducing the Plains sharp-tailed grouse would not require Endangered Species Act coordination since the species is not federally-listed or being considered for listing. Establishment of these sensitive species, especially on lands that will remain open space in perpetuity, helps to avoid future federal listing by increasing their numbers and survival rates. The species is State listed as endangered, but is considered abundant in other states. The introduction would only occur after successful habitat restoration (decreasing the noxious weeds to an acceptable level) and enhancement of the native prairie. The DOW would be the lead agency in the introduction and would most likely use Rock Creek Reserve as one part of a region wide effort to establish the grouse. Although Rock Creek Reserve alone (or even the entire Site) would not afford enough habitat to establish viable populations, the connected acreage devoted to open space in this area may make the project more feasible. Introductions will be discussed and studied (availability of lek sites, predation, weed control, etc.), and the option to do so if an introduction plan is developed was desirable for this Plan.

Introduction of sensitive, native fish species- None of the native fish species proposed for introduction into the Rock Creek Reserve are being considered for federal listing. Establishing these species in more areas could help preclude listing in the future, and make more individuals available for transplant to other areas. Although the habitat in Rock Creek Reserve is considered marginal by Site ecologists and on the edge of the species' range, the loss of the core habitat areas in Colorado is one of the factors that have pushed the species to State listing. Because of the loss of core habitat area, habitat on the periphery if the species range usually holds the remaining populations, and are usually the potential sites for early

restoration work. Both species proposed for introduction into Lindsay Pond are listed by the State of Colorado.

The long-term survival of bass and other aquatic species within the Lindsay Pond indicates that the site is capable of supporting fish populations. The presence of aquatic vegetation in Lindsay Pond also indicates that siltation events are usually of limited duration. Since floods and siltation are normal for foothill streams, most native fish are better adapted to flood and siltation events than the largemouth bass population. Larger sites than Lindsay Pond are desired, but as long as a species is sensitive and not a game fish, there is reluctance to allow the introduction of protected species due to regulatory concerns. Although the site is small, it is one of the few sites identified to date for possible restoration of native non-game fish species. This site has several benefits, such as isolation from non-native fish populations that could repopulate the area, and a lack of pressure to maintain a sport fishery at the site.

Predation from pelicans and cormorants could have a short-term impact until the fish population is well-established. Native Colorado fish are adapted to bird predation, but they are not adapted to predation from largemouth bass. The proposed action to remove the non-native largemouth bass and introduce native fish species will also benefit native bird species, as well as other native species over the long-term. The existing vegetation around the edge and throughout the bottom of the pond provides sufficient cover to maintain small fish species such as darters and dace.

Methods of non-native fish removal and impacts on non-target species- The purpose of the proposed action is to remove non-native largemouth bass. The bass have a long-term negative impact upon all native fish, amphibians, invertebrates and possibly some bird species. There are two EPA approved chemicals for the removal of fish within the United States. These two compounds are rotenone (powdered and liquid formulations) and antimycin (Fintrol). Rotenone is derived from the root of a South American plant, and is most often used for large fish restoration projects, with an application rate of 0.5 to 3.0 ppm. Antimycin is an antibiotic, and is effective in waters of low pH. Due to the expense of antimycin, it is most often used for smaller alpine trout restoration projects and the removal of sunfish from commercial catfish ponds at the rate of 2 to 10 ppb. An approved Fish Restoration Plan, and a Fish Control Permit must be obtained from the DOW prior to start of the project. The restoration plan would address the existing water quality, chemical best suited for the site, species salvage, time of application, duration of chemical contact, neutralization and restocking. At the legal application rate, impacts to mammals are highly unlikely. A 150 lb. person would have to ingest from 5 to 70 lbs. of Rotenone dust for mortality to occur. Due to the low application rates of antimycin, and low toxicity of antibiotics to mammals, there would be little impact to mammals from application up to 10 ppb. However, both fish control compounds and potassium permanganate (a neutralizer used in conjunction with control chemicals) can have short-term impacts to amphibians and invertebrates, within the legal application rates. To offset this impact, sensitive species are collected and set aside in a refugium during the fish control project and returned to the area after the chemical has been neutralized with potassium permanganate. Impacts to non-target species are also controlled by treating at times of the year when there are the fewest numbers of sensitive aquatic-dependent forms, and limiting the concentration and contact time of the chemical. The short-term impacts from the rotenone/antimycin projects are off-set by the long-term benefits to native species from the removal of non-native species.

Introduction of federally-listed plant species- Two species considered in the Plan for introduction to Rock Creek Reserve are the Ute Ladies' Tresses Orchid and the Colorado Butterfly Plant. These plants would

only be introduced after a successful noxious weed control effort that would provide healthy and stable habitat for these plants. Plants will not be considered for introduction if weed control measures are ongoing in suitable (without weeds) areas. Introductions would only be accomplished as part of an approved USFWS Recovery Plan for the species. The purpose of Recovery Plans is to increase a federally-listed species' numbers within populations and/or number of populations to a point where they can be de-listed. Introduction of the species would benefit the species in the long-term and provide for a greater diversity of native species in Rock Creek Reserve. Input from the public goes into the development of Recovery Plans.

Increased biological control of noxious weeds- Although it may seem contradictory to import exotic species into an area when so much emphasis is on removal of non-native species, in the case of biological control it is considered necessary. When exotic plants enter the United States, their natural enemies are usually left behind. This lack of natural suppression allows the exotics to out-compete our native plants resulting in expansive monocultures of the invaders. When these invaders are aggressive, hard to control, pose a health risk to humans or livestock, or are considered to cause economic injury, they are listed as "noxious weeds" by federal and state agencies. Current laws mandate control of these weeds on both public and private lands. Biological control is one weapon used to fight noxious weeds. Unlike other control methods, biological control is self-sustaining, does not introduce toxic chemicals into the environment, is less labor intensive and less costly in the long-term. A well-planned program consists of releases into protective cages and/or open field releases, monitoring of baseline conditions, redistribution of established colonies, monitoring for results and feasibility studies. Although there are generally no short-term impacts from biological control, issues have been raised as to potential negative long-term impacts on non-target species. To date, data does not show significant negative impacts to native plants from any insect species released intentionally for weed biological control. The insects released as part of the proposed action in the Plan have all been released elsewhere in Colorado, have shown success in establishment and control, and have all been approved for release by USDA/APHIS and the Colorado Department of Agriculture. Each species undergoes a rigorous host screening process under starvation parameters before it is allowed for release in the United States. Only species that are shown to be specific for the target plant under study conditions are chosen for releases. Sometimes the insect will feed on plants within the genus of the target plant only when the target plant is not available. An example is *Rhinocyllus conicus*, a small weevil that was released in the 1960's and 1970's for control of musk thistle. That beetle has been observed on sensitive native thistles. Significant negative impacts to native thistles have not been quantified to date. *R. conicus* was known, however, to be a generalist (feeding on several plant species) when it was approved for release on musk thistle. Since then many environmental laws have been passed (NEPA, ESA) that make the approval for release of generalist species with a wide host range in the United States highly unlikely. Some beneficial species have been accidentally introduced into the United States along with their weed host species. The benefits of biological control of a given weed species must be considered to outweigh the risks of the insect species feeding on sensitive native plants. If this risk is considered acceptable, the insect species will be used in the program. Displacement of sensitive native species by noxious weeds, and the potential for common plants to become increasingly rarer because of noxious weeds is considered to be a greater risk than impacts from approved biological control agents.

Options Considered But Not Selected

Management options selected within the Plan are the result of years of on-the-ground research, monitoring and management of biological resources in the Rocky Flats Buffer Zone as well as consultations with local, regional, and federal natural resources management professionals. The Plan package represents the best recommendations of Rocky Flats natural resources personnel as well as those of cooperating partner agencies.

The other options, as a total package, would likely produce a lesser degree of ecosystem-wide benefits or be detrimental to some biological resources. Below are a few examples of “options considered but not selected” and their likely effects:

- Rock Creek Reserve could be managed with no monitoring of natural resources, which has the potential for ecological harm to the Rock Creek Reserve by allowing potential impacts to go undetected. This would not meet stewardship goals, support biological diversity, or satisfy requirements of threatened and endangered species management.
- Rock Creek Reserve could be managed for production of game species. This could reduce biological diversity, especially those species that require unique habitats.
- Rock Creek Reserve’s fish species could be managed for the existing, non-native species which occur there now, with no removal of exotics or introductions of species native to the area. This would not support biodiversity, a primary goal of this Plan.
- Land managers could manage exotic invasive species on Rock Creek Reserve without the benefit of enhanced integrated pest management strategies. This has the potential to reduce biological diversity in the long run and would be detrimental to native species of vegetation through continued reliance on chemical control.
- Expansion of the Rock Creek Reserve boundary could be configured differently, or not changed at all. This would not provide for the ecosystem management unit approach, and would promote management of fragmented habitats.

The “options considered but not selected” alternative would likely produce a less-balanced effect on biological resources than the proposed action. However, the degree of effect would be dependent upon objectives of natural resources management and the degree of implementation applied.

This alternative sometimes would emphasize reaction to problems rather than a proactive approach to natural resources management. This approach would emphasize site-specific responses to environmental compliance. Additional studies, surveys and monitoring of natural resources, and long term programs, would be lower priority. A reaction-to-problems approach would probably achieve compliance with laws and agreements, but it would not provide as many benefits to biological resources. Species level management would promote management of one or a few species, and could cause harm, or neglect of others. Examples include predator control, plantings of specific host plants, and habitat enhancement efforts targeting only limited areas. This could have a negative impact on predator/prey relationships, distribution of native plants and communities and create artificial habitats that would require intensive management to maintain.

The “no action” alternative is preferred in some cases. Where it is not, no action could result in lack of information for good decision making, such as no monitoring for water quantity or quality, or data to help formulate access and recreation plans. No action could lessen biodiversity goals if the reintroduction of native wildlife species is not accomplished. No action would not allow for the enhancement of the biological control of certain noxious weeds, and continue or increase the reliance on herbicide use.

5.6 CULTURAL RESOURCES

Preferred Action: No Action

The proposed implementation of the Plan is consistent with existing cultural resources protection policy as documented in the CRMP, and as required by law. The Plan includes steps to protect cultural resources that may be discovered on Rock Creek Reserve during implementation of this plan. Ground-disturbing natural resources projects have the potential to uncover sites even in surveyed areas. The review of potential eligible sites by an archaeologist and the NEPA process are used to ensure protection of known and potential cultural resources while implementing the Plan. Study and possible stabilization of all or part of the Lindsay Ranch will not affect cultural or other resources and could preserve a locally recognized point of interest. Activities undertaken in Preble’s meadow jumping mouse habitat will undergo review by the Service, and all other management policies protecting natural resources will be complied with.

Options Considered But Not Selected

DOE must comply with laws and policies related to protection of cultural resources. Other options for monitoring and inventorying would be to conduct more in depth surveys than required by law, e.g., subsurface testing (testing below the surface for buried cultural deposits before a project is implemented). This option is not necessary since the CRMP identifies the Buffer Zone as a low-density (low probability) area for cultural resources. These options could negatively impact subsurface cultural deposits that otherwise may have been left unharmed. Other options would not apply in this case since Rocky Flats has undergone archaeological surveys and historic assessments for the entire Site.

5.7 LAND AND INFRASTRUCTURE MAINTENANCE

Preferred Action: No Action

Implementation of the proposed actions would have no long-term negative environmental impacts, and some short-term negative impacts (dust, erosion) could result. Positive impacts would result from the control of noxious weeds, removal of fences and rehabilitation of roads and trails. Working with off-site land managers to cooperate in land maintenance activities would continue to be beneficial. As part of the Annual Vegetation Management Plan, prescribed burning and use of herbicides have been environmentally assessed in accordance with NEPA and a Finding of No Significant Impact was published.

Options Considered But Not Selected

Other options such as too widespread or too frequent use of fire, and no use of fire have the potential for negative environmental impacts in both the short term and long term. Cultural sites could be damaged. Special status and other sensitive species could be at risk and erosion could increase from the large areas impacted and/or the frequency of the burning. Increased herbicide use could cause ecological damage through the cumulative effects on non-target species. No use of fire would remove a very important tool proven to benefit prairie species from the land manager's available options.

5.8 SOCIOECONOMICS

Proposed Action

Based on the reception of primarily positive comments regarding the formation and expansion of Rock Creek Reserve, it is anticipated that the existence and management of Rock Creek Reserve is socially and economically acceptable to the surrounding communities. Rock Creek Reserve was created as a natural protected area to preserve valuable plant communities and wildlife, and although it is not open to unlimited public access, it serves many of the functions similar to surrounding open space areas, such as: viewshed values, buffer between developed areas and protection of environmental features. It has been shown through many public comments on proposed land developments, allocation of taxes for land purchases, and general uses of the open space land for recreation, that the general public places great value on preserving large tracts of land for those purposes.

No negative impacts to the socioeconomics of the area result from this Plan. Public access above the current level is not applicable for Rock Creek Reserve for the life of this Plan. Positive impacts will result from the initiation of an Access and Recreation Study and contaminants studies to ensure the future use of the land and public access will be integrated with environmental goals and consider public health. The Access and Recreation Study will be a compilation of data that will help make decisions in the future for the kinds of public access, frequency, best areas, etc. to better plan public access with ecological goals in mind. Access could range from none to full access depending on the location and use of the land at that time. Easement holders will not be affected by this Plan. Impacts from easements will not change since easement holders are required to adhere to DOE procedures and follow the limitations specified in each individual easement. It is the responsibility of the easement holder to comply with applicable federal, State and local laws.

Expansion of the boundary of Rock Creek Reserve will result in positive impacts as discussed in Section 5.1.

Options Considered But Not Selected

For the intended life of this Plan, there are no other options that are applicable. Continued need for a safety buffer zone by Rocky Flats requires continued limitation of public access until nuclear material is removed. In addition, the existence of a federally-listed, threatened species will continue to require protection of the habitat. If conditions warrant, or Congress mandates it, the area could become part of the

USFWS Refuge System. If refuge designation occurs, management direction may change to meet the needs of the Refuge program. These options cannot be analyzed at this time since the future use of the Site has not been decided, and current restrictions are in place. Public comments have mainly focused on hiking and horse trails through the site. These will be analyzed in the study to be initiated under the Proposed Action. “No action” would not allow for the study and planning of future public access to the Site and contaminants studies. This would not be conducive to good public access management decisions. Not expanding the boundaries of Rock Creek Reserve would not allow for good watershed management techniques since only part of the watershed would be included in the Rock Creek Reserve as described in Sections 1.3.2 and 5.1.

5.9 ENVIRONMENTAL JUSTICE

Executive Order 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low Income Populations, directs federal agencies to identify and address, as appropriate, disproportionately high and adverse human health or environmental impacts of their program, policies, and activities on minority or low-income populations in the surrounding community. This assessment has not identified any adverse or beneficial effects unique to minority or low-income populations in the affected area.

5.10 IRREVERSIBLE, IRRETRIEVABLE COMMITMENT OF RESOURCES

No irreversible or irretrievable commitment of resources is part of this Plan. The intent of this Plan is to conserve and protect natural resources to the fullest extent possible given Site mission considerations and funding levels.

5.11 CUMULATIVE IMPACTS

A cumulative impact is defined in 40 CFR Section 1508.7 as “the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (federal or non-federal) or person undertakes such other actions.” The location of the Rock Creek Reserve is discussed in detail in Section 2.1.1.

Surrounding land for the Reserve includes open space, highways, private mining activities, the National Wind Technology Center, Rocky Flats buffer zone, and the Rocky Flats industrial area. There are a variety of activities occurring on those lands with associated impacts to the environment. Implementation of this management plan is not expected to result in incremental impacts to these surrounding lands, or the Rock Creek Reserve; therefore the negative cumulative impacts will not be increased from the level currently existing.

Past practices both on-site and off-site have contributed to noxious weed invasions and introductions of non-native fish species. Positive cumulative impacts should result over time from implementation of the Plan. Noxious weed control efforts using increased biological and other non-chemical means should help control weeds with less dependence on herbicides. The spread of increased numbers and species of biological control agents will benefit the entire region. Introductions of native species will help restore the

biodiversity of those ecosystems. Preble’s meadow jumping mouse continued conservation and habitat protection could have positive cumulative impacts by contributing to the recovery efforts that could lead to possible de-listing of the mouse in the future.

The management of Rock Creek Reserve’s natural resources now will help ensure the future quality of these lands, and cumulatively maintaining the availability of high quality natural resources for the Front Range. This management will produce a positive cumulative impact.

SUMMARY OF IMPACTS

Figure: 11

Section	Negative Impacts	Positive Impacts
Boundary Expansion	None	<ul style="list-style-type: none"> • Provide a more definable unit (watershed) for an ecosystem management approach.
Topography, Physiographic, Geology, and Soils	<ul style="list-style-type: none"> • Minimal short-term erosion from road maintenance activities. 	<ul style="list-style-type: none"> • Use of water bars, etc. to control water flows on, or across, roads will reduce associated soil erosion. • Re-seeding with native grass species along roads where maintenance has exposed bare soils will reduce soil erosion. • Implementation of vegetation management (fire, herbicides) as analyzed in the Vegetation Management Environmental Assessment will provide long-term

		benefits.
Water Resources	<ul style="list-style-type: none"> • Short-term impacts may occur from vehicle access to monitoring well sites if soil erosion occurs or gasoline spills occur and enter the stream channels. 	<ul style="list-style-type: none"> • Selected increased monitoring of surface and groundwater will assist in earlier detection of impacts from adjacent activities. • Monitoring of seep and spring flows will assist in early detection of flow reduction which could impact vegetation and fauna species. • Determination of minimum flows necessary to support the habitat will provide positive affects on habitat management planning activities.
Air Quality	<ul style="list-style-type: none"> • Soils bared by road maintenance activities could produce short-term impacts from wind erosion until reclamation is completed. • Short-term impacts could occur from prescribed burning activities, however these have been analyzed in the Vegetation Management Environmental Assessment which would apply to the Rock Creek Reserve. 	<ul style="list-style-type: none"> • Reclamation of bare soil areas and implementation of activities analyzed in the Vegetation Management Environmental Assessment (prescribed burning, herbicide application) will provide long-term benefits through maintenance of a robust native vegetation cover.
Biological Resources	<ul style="list-style-type: none"> • Short-term impacts 	<ul style="list-style-type: none"> • Long-term positive

	<p>would occur with the removal of bass from Lindsay Pond, however introduction of native species such as the northern Redbelly Dace will be a positive long-term benefit to the ecosystem.</p>	<p>effects occur from maintaining a current Vegetation inventory and library so species composition changes can be noted as a reflection of the ecosystem health.</p> <ul style="list-style-type: none"> • Continuation of periodic specific surveys for Ute Ladies Tresses Orchid and Butterfly Weed will provide a benefit of early detection if they do naturally occur. • Long-term benefits, as analyzed in the Vegetation Management Environmental Assessment, for the native vegetation & fauna arise from aggressive noxious weed control. • Long and short-term benefits occur from selective use of prescribed burning on the vigor of native plant communities and uncontrolled fire hazard situations. • Removal of unnecessary roads and fences will be a long-term benefit as it lessens the fragmentation of the grasslands. It
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		<p>reduces the amount of bare soils where erosion can occur and noxious weeds become established.</p> <ul style="list-style-type: none"> • Increased use of approved biological controls on selected weed species in conjunction with other, more short-term control efforts, will have a long-term positive effect on the plant communities. • Installation of bat houses will be a benefit to assist in establishing a stable regional population of bats. • Installation of nesting boxes for blue birds will benefit the region-wide stabilization of those bird populations. • Monitoring and maintenance of water and vegetation resources will provide long-term protection for the federally listed Preble's Meadow Jumping Mouse. • Coordination with the Colorado DOW for introduction of species such as the Plains Sharp-tailed grouse could broaden the existing range of
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		these species and provide greater population stability.
Cultural Resources	<ul style="list-style-type: none"> • Short-term impacts may occur from stabilization processes involving the Lindsay Ranch (vehicle and foot traffic, construction material storage, etc.) 	<ul style="list-style-type: none"> • A long-term benefit may result from possible stabilization of Lindsay Ranch structures through coordination with interested stakeholders.
Lands & Infrastructure Maintenance	None	<ul style="list-style-type: none"> • Noxious weed control, road maintenance, fence and road removal will provide positive benefits to the natural resources.
Socioeconomics	None	<ul style="list-style-type: none"> • Initiation of an Access and Recreation Study, coordinated with local groups and governments, will result in public trail routes and options available on a regional basis to facilitate public use. In addition, it will define access needs for easement holders such as, water ditches and power lines.
Environmental Justice	None	None