Chapter 5—Environmental Consequences

This chapter provides an analysis of the potential effects from carrying out the actions of each alternative on the physical, biological, socioeconomic, and cultural resources of Cokeville Meadows Refuge.

Management actions are prescribed in the alternatives as a means for achieving the vision and goals for the refuge, while responding to issues raised by our managers, the public, and our government partners. Because management would differ for each alternative, the environmental and social effects resulting from implementation would likely also differ.

5.1 Effects Common to All Alternatives

The effects related to the issues described below would be the same for all alternatives.

Environmental Justice

None of the alternatives considered would have a disproportionately high or adverse environmental effect on minority or low-income populations.

Public Health and Safety

Based on the nature of each alternative, the location of the refuge, and current land use, all alternatives are anticipated to have no significant negative effects on the quality of the human environment, including public health and safety.

Economic Benefits to Local and State Governments

We offer economic benefits to the local community in the form of agricultural activities like haying, grazing, and farming that are permitted on the refuge. If more access to the refuge is provided, the economic benefits from resultant recreational uses could increase, bringing in more money for local businesses and governments.

We will strive to maintain water control structures and ditches properly to restore natural hydrologic processes, which will allow economic benefits to continue. Restoration of recreational fisheries and riparian habitat, combined with wildlife-dependent and compatible public uses and compatible agricultural practices, should provide economic benefits.

Climate Change

The primary climate-related effect to be considered in this CCP process is carbon sequestration. Overall, there should be little or no net change in the amount of carbon sequestered at Cokeville Meadows Refuge.

The refuge would be managed to provide predominately native habitat conditions or to restore native vegetation and, to the extent possible, natural ecological functions. Native plant communities and natural ecological processes provide the most resilient habitats that are anticipated to provide the best possible conditions for plants and animals to adapt to stresses related to climate change.

Soils

Soil formation processes on refuge lands would see positive effects. Some disturbances to surface soils and topography would occur at those locations selected for (1) administrative, maintenance, and visitor facilities; (2) introduced and invasive species removal and eradication; and (3) restoration of native habitat.

Water Quality, Wetlands, and Floodplains

Water quality would be positively affected by anticipated ground water recharge protection, runoff prevention, sediment retention, and nonpoint source pollution minimization. There are no anticipated adverse effects on the area's wetlands and floodplains, pursuant to Executive Order 11990 and Executive Order 11988.

Pollution, temperature, and sedimentation are important issues that may potentially pose a threat to refuge resources. However, we have not had enough staff and resources to find out if this is the case and to what extent they may adversely affect them. We will try to find out if these threats exist and then seek partnerships to address them.

Air Quality

We do not check air quality but are concerned with air quality changes caused by other, outside sources such as the development of gas and oil in the area. We will work closely with groups and others that have the potential to affect air quality. We would seek to obtain baseline data, and adaptive management activities would be conducted when necessary.

Prescribed fires would have short-term effects on air quality. Prescribed fire operations are planned to reduce how ignitions will affect neighbors by moving smoke up and out of the vicinity quickly. Rapid mop up would be completed to reduce overnight effects on neighbors.

Sage-grouse Habitats

We have recently started to help WGFD watch sage-grouse leks. We are interested in improving habitat for sage-grouse and will look to incorporate habitat improvement actions when upland work is conducted. As more upland

habitat on the refuge is restored to native vegetation, the amount of healthy habitat that is available to sage-grouse and could increase and possibly increase this species' use of refuge habitats. We are interested in partnering with groups and individuals to improve habitat for this species across the greater landscape.

Species of Concern

Our staff, in cooperation with other conservation partners, would actively find the distribution, key habitat areas, and special needs of Bonneville cutthroat trout, bluehead sucker, leatherside chub, mountain sucker, and sage-grouse to develop management plans and conservation measures to enhance their populations. We will cooperate with WGFD and other conservation partners to restore, reintroduce, augment, or reestablish special status species and their habitats within the refuge and around the Bear River watershed.

Restoring the habitats of, and working on reestablishment activities for, special status species would likely contribute to the restoration of self-sustaining populations. Increasing the number and distribution of self-sustaining populations of special status species would contribute to their overall health throughout their ranges and could allow for their recovery without the need to list them under the ESA and similar designations under State natural resources conservation laws.

Invasive Species

Aggressive control activities using approved and proven treatments has vastly reduced invasive plant species on refuge lands. The continual monitoring and treatment of invasive plants will be important to keep habitats healthy and productive in the future. Restoring natural hydrology could also reduce the amount of creeping meadow foxtail and allow native grasses, rushes, and sedges to become more abundant and, thus. increase vegetative diversity.

Aquatic invasive species such as zebra and qwagga mussels and carp are a concern just like other invasive species that threaten refuge habitats. We are taking steps to check for invasive species in aquatic habitats, but more work, partnerships, and protocols need to be developed. We will work with WGFD to address issues and concerns dealing with aquatic invasive species throughout the Bear River watershed and will support nonnative control programs. Carrying out this cooperative work with partners will improve the detection of new aquatic invasive species along the Bear River watershed and quicken contingency plans and actions to end or contain their spread, which will make it more likely that native aquatic resources can be protected.

Integrated Pest Management

The refuge does not have an IPM plan, but we will develop one sometime soon after the CCP is completed. An IPM plan will help guide the refuge on issues about grasshopper, cricket, and mosquito control. The plan should include thresholds and guidance on what types of treatments are feasible.

We issued a draft policy on dealing with mosquito abatement and control and will need to work with local and county officials to develop monitoring protocols and to set thresholds that will trigger treatments on the refuge and to decide what the proper treatments will be.

An overabundance of grasshoppers, crickets, and mosquitoes can become a hazard to human and animal health and may be detrimental to commercial crops and to public or private property. Effective control of these insects would protect human beings and animals from diseases and public and private property from damage.

Law Enforcement

Law enforcement to protect refuge resources and to provide for public safety is the most basic activity we conduct on the units of the Refuge System. In the recent past, Cokeville Meadows Refuge had an assistant manager who was trained as a law enforcement officer with the ability to enforce all the laws associated with the Refuge System, the Migratory Bird Treaty Act and many other laws associated with the protection of natural resources. There is another full-time law enforcement officer located at Seedskadee National Wildlife Refuge Complex who will now assume these duties at Cokeville Meadows Refuge until the refuge employs someone in that position.

This law enforcement presence on both refuges will help to make sure that Seedskadee National Wildlife Refuge Complex's resources and wildlife are protected and that the visiting public will have safe and enjoyable experiences. Without the presence of adequate and proper law enforcement officers on the refuge, it would not be possible to allow certain public uses on refuge lands, such as hunting and fishing.

Equipment

Cokeville Meadows Refuge relies on Seedskadee National Wildlife Refuge to provide equipment and fleet support for operations. Our refuge staff has some equipment on hand, but do not always have what they need to complete priority projects. There is no need to have an overabundance; however, the refuge needs access to maintenance equipment to conduct its day-to-day activities. Without that access, habitat quality and wildlife diversity would suffer.

Pixley and BQ Dams

The Pixley and BQ Dams are instream diversion dams that divert water from the river into meadow areas. These dams are old and in need of repairs and upgrades. The Pixley Dam is in need of replacement, and we are working with local landowners who have water rights associated with it to get it replaced. The dam, constructed in 1903, is near the end of its ability to divert water effectively. Fish passage on both of these dams is a major issue, as they do not allow for upstream or downstream fish movement. The most recent fish survey by WGFD found that the area between the two dams was low in native species diversity and overrun by carp.

If these dams are not repaired and upgraded with fish-passage structures or replaced, fish diversity and habitats will not improve and the restoration of aquatic species of concern will not be achieved. Furthermore, not repairing or replacing these dams could lead to dam failure, which would end our ability to divert water that provides sustenance to many of the wet meadows and wetlands on refuge lands. If we are unable to irrigate existing wet meadows, it could lead to changes in the hydrology and vegetative cover of these habitats and, consequently, to a change in wildlife diversity and use.

Junk and Debris Removal

Our refuge staff has spent several years cleaning up junk and debris piles, and removing unwanted property that posed risks to human and wildlife safety and health. Removal of junk and debris piles also improved the aesthetics along highway areas where people could view the refuge. There is a need for more staff and money to finish cleaning up the refuge. The presence of junk and debris piles will continue to pose a hazard to people and wildlife until the piles have been properly removed.

Water Rights

The refuge has several surface and ground water rights that are used to support and improve habitats for wildlife. We will continue to exercise these rights and keep them in good standing with the State Engineer's Office. We are interested in working with the State Engineer's Office to find new ways to use water rights for us and our partners to restore and protect vital habitats for at-risk wildlife species within the watershed. Our proper use and maintenance of existing water rights will support refuge habitats that depend on Bear River water as well as migratory birds and resident wildlife.

Bear River Watershed Conservation Efforts

There are some efforts to protect important wildlife habitat within the Bear River watershed. The recently approved Bear River Watershed Conservation Area involves conservation easements that would seek to protect wildlife habitat and keep ranches and ranching on the ground. We will seek to coordinate with the BLM on local projects. The continuation and expansion of these conservation efforts throughout the Bear River watershed should protect the rural way of life of residents within the watershed as well as habitats that sustain the life cycles of migratory and resident wildlife within and, possibly, downstream from the Bear River watershed in Wyoming.

Urban Encroachment

We view urban encroachment as a real threat to refuge resource protection. Private lands outside of the refuge acquisition boundary are being developed into housing projects. It is anticipated that, in the short term, some private land within the acquisition boundary will also start to be developed.

We are working with partners and local governments to prevent this development by attempting to acquire lands in fee title or conservation easements to reduce the threat of urban encroachment. We believe that there are opportunities to help landowners with conservation efforts that will allow them run their ranches as they always have while also keeping essential wildlife habitat intact.

If we at Cokeville Meadows Refuge, our neighbors, and our partners are able to maintain lands within, or immediately surrounding, the approved acquisition boundary of the refuge from undergoing urban development, the water, wildlife, and natural habitats and resources of the Bear River watershed should be protected and enjoyed by many generations of Americans to come. Conversely, the urbanization of indigenous natural habitats in this region could allow pollutants to affect refuge habitats; fragment natural landscapes, which would dramatically change the viewshed of the landscape; impede normal wildlife migrations; change the existing wildlife composition by favoring species that benefit from edge effect and displacing species that require large, contiguous tracts; and make it impossible to provide certain wildlife-dependent public uses, such as hunting, on portions of the refuge bordering urbanized areas.

Refuge Mineral Rights and Energy Development

We do not own the mineral estate of the lands we hold in fee title at Cokeville Meadows Refuge. Some mineral development is taking place within the approved acquisition boundary and some is taking place next to the refuge.

Mineral development poses threats to refuge lands and habitat within the Bear River watershed both on and off the refuge. Where proper, we will attempt to secure the subsurface mineral estate of bought lands when the opportunity arises, and we will work to reduce or mitigate changes brought on by such development.

Where we are successful in securing subsurface mineral rights, wildlife and the habitats on which they depend will be protected for the enjoyment of future generations. Where we are unable to secure subsurface mineral rights, wildlife and their habitats will be at risk of adverse effects, both temporary and permanent, from mineral development and transportation.

Requests for rights-of-way and surface disturbance would be considered on a case-by-case basis. First the use must be considered appropriate and then the proposed use would have to be found compatible.

Volunteers Programs and Friends Group

We are interested in developing and supporting volunteers programs, as this would help accomplish needed projects and other maintenance priorities, and we would like to form a Friends group at some point in the future to help us accomplish important goals for the refuge. Volunteers from the local community help us improve our relations with our neighbors and local governments because volunteers become advocates for the refuge and help to promote refuge values and ideas.

The successful creation of one or more volunteers programs and a Friends group would beneficially affect the refuge's reputation, habitats, wildlife, and other natural resources as many ongoing and proposed tasks and objectives would have a greater chance of being accomplished by persons other than the staff now based at Seedskadee National Wildlife Refuge Complex. Our inability to create and sustain effective volunteers programs and a Friends group would mean that many ongoing and future tasks and objectives will take longer to complete; our reputation and that of the refuge will improve at a slower pace; and refuge infrastructure, habitats, and associated wildlife could be solely dependent on the availability of the Seedskadee National Wildlife Refuge Complex staff for management and maintenance.

5.2 Description of Consequences by Alternative

Alternative A, No Action

Alternative A proposes no new management activities and serves as a baseline comparison for the other alternatives.

Habitat and Wildlife Management

This section describes the environmental consequences that affect proposed actions to control wildlife diseases, crop depredation, and private property damage as well as to enhance wet meadow, upland, and riparian and river habitats and their associated wildlife.

Wet Meadow Habitat

Actions for this habitat would affect a range of elements. It would support wet meadow and wetland areas conducive to a variety of migratory and resident wildlife but would keep relatively low vegetative and wildlife diversities, as creeping meadow foxtail would continue to outcompete other native plant species.

Water Management and Control Structures

Water management and the replacement of poorly functioning infrastructure to improve hydrologic functions within the wet meadow habitats would continue to take place and would help to improve wildlife habitats. However, with improvements and increased numbers of water control structures, there would be a greater demand on staff time to manage the movement of water throughout the refuge. It is expected that with improved water control, wet meadow habitats would become more productive requiring more active habitat management by staff and permittees to keep them healthy for wildlife.

Vegetative Community and Species Diversity

Flood irrigation practices favor particular species in the wet meadows at Cokeville Meadows Refuge. One particular species that is directly, though unintentionally, helped by these practices is creeping meadow foxtail grass. It can be found in all wet meadow areas of the refuge and tends to outcompete other native species. It does not appear to affect any wildlife species adversely, and it provides good cover for nesting birds. However, it might limit wildlife diversity on wet meadow habitats. A more desirable condition might be to promote a variety of vegetative species to encourage broader use by more wildlife species.

Haying and Grazing and Other Economic Uses

Economic uses such as haying and grazing have proven to be useful tools to support healthy habitats on the refuge. Haying and grazing are primarily instead of prescribed fire. Haying and grazing on the refuge has also been a major factor in controlling invasive plants on the refuge. It has been found that spring grazing changes refuge habitats in a negative way when the practice is used multiple years in a row, and we are working to phase out spring grazing, except in cases where a spring treatment would be beneficial to remove a vegetative overburden to improve management activities such as irrigation.

Nesting and Brood-rearing Habitat

With improved water management on the refuge, it appears that more nesting and rearing of broods is taking place. Improved habitat quality seems to be promoting species diversity.

Water Quality for Amphibians

The refuge is host to many species of amphibians, thus water quality is a concern. Although we do not conduct water quality studies, we work with partners to conduct surveys and watch populations. If such surveys and observations point to a decline in aquatic species populations or diversity then our staff will need to find ways to carry out water quality studies. Now it appears that water quality is not a limiting factor for amphibians and other aquatic species.

Salt Loads

Salt loads on the refuge have not been exactly figured out. Only casual observation has been made of areas where salt has precipitated from the soil or up the stalks of vegetation in the wet meadows. We are concerned that salt loads might be a problem, but we do not have the ability to verify the problem at this time. As a result, we might be fostering a situation that could limit plant and animal species diversity and population numbers. Without correct information about how salt loads are affecting the refuge's habitats and wildlife, we would be unable, if and when necessary, to seek corrective actions to safeguard and promote refuge resources.

Brood Rearing, Irrigation Timing, and the Flooding of Nests

We would irrigate the wet meadows in the same manner as adjacent private landowners. Refuge ownership is either at the end of the system, or in between different users who want water at the same time because of their agricultural practices. Water is diverted from the river between mid-March and mid-May. We are bound by a memorandum of understanding with the State Engineer's Office that states water use must follow historical practices

and laws on the refuge when lands are acquired. In many cases, water is diverted into the meadows after early nesters have already built nests and laid eggs. This causes nests to flood out, and renesting occurs. At the end of the irrigation season in mid-July, water is shut off and a draining of the meadows begins to prepare for haying activities. In this case, broods are stranded without water in some areas.

The refuge may not be able to address this until more land is acquired and the timing of irrigation can be modified to prevent nest loss and the stranding of broods. Persistence of this management regime on wet meadows will continue to affect migratory bird nesting attempts and success adversely and keep some migratory bird species populations from increasing.

Upland Habitat

Actions for this habitat would affect a range of elements. It would improve the condition of upland habitats, increase bird habitat, and increase wintering and nesting habitat for sage-grouse and other grassland and sage-dependent species.

Haying and Grazing and Other Economic Uses

Economic uses such as haying and grazing have proven to be useful tools to support healthy habitats on the refuge. Haying and grazing are primarily used instead of prescribed fire. Haying and grazing on the refuge have also been major factors in controlling invasive plants on the refuge. It has been found that spring grazing changes refuge habitats in a negative way when the practice is used multiple years in a row, and the refuge is working to phase out spring grazing, except in cases where a spring treatment would be beneficial to remove a vegetative overburden to improve management activities like irrigation.

Irrigated Croplands Conversion to Native Upland Habitats

The refuge has several areas that were converted to alfalfa from sagebrush habitat before we acquired them. These fields remain in alfalfa. We do not want to allow the conversion of more upland habitat and would prefer to start the process of reverting current alfalfa fields back to native vegetation. There are now 660 acres of alfalfa on the refuge that are being prepared for conversion to native vegetation. Conversion of alfalfa fields to native vegetation on refuge lands will restore their use by migratory and resident wildlife and decrease the need for irrigation once native habitat restoration has been fully accomplished.

Nesting and Brood-Rearing Habitat

We have not focused on upland habitats for nesting or brood rearing, but we recognize that such consideration will be needed. Our persistent lack of focus on upland nesting and brood-rearing habitat will likely perpetuate the current low production of upland-dependent migratory and resident birds as well as that of mammals and reptiles.

Riparian and River Habitats

Actions for this habitat would affect a range of elements. They would continue the loss of woody plant community structure and change some areas to grass-dominated communities, which would perpetuate a low diversity of neotropical migratory birds and remove shade necessary to support optimum river water temperatures. They would also keep sediment loads in Bear River water at undesirable levels.

Fisheries and Fish Habitat

We would continue to coordinate with WGFD to conduct aquatic species surveys and to make recommendations on which fisheries to study. We are not doing anything to improve the fishery within the refuge. The persistent lack of emphasis on improving fishery resources will likely perpetuate low fishery diversity and impede the restoration of fish species endemic to the Bear River watershed, including species of concern such as the Bonneville cutthroat trout, and diminish the experience of fishing, were it to be approved on the refuge.

Riparian Corridor Vegetation Condition and Diversity

The refuge's riparian corridor has low vegetative diversity, and its vegetation is not excluded from haying or grazing. Woody species are in decline and in great need of restoration. Streambanks are cut and vertical in most places because of the nature of stream flows and the lack of necessary root systems to keep soils in place. The lack of exclusion from herbivory is an overall problem throughout the refuge's riparian corridor. In general, the riparian habitat is in poor condition. Lack of attention would continue to perpetuate or even exacerbate the problem. Our coordination with WGFD and partners would improve riparian health.

Vegetation and Streambank Changes

Riparian vegetation and streambanks receive little to no rest from herbivory, haying, grazing, and trampling. Thus, there is no time for recovery from vegetation and streambank changes. Fencing would be needed to exclude activities such as grazing, and limits would need to be placed on haying to reduce changes and improve vegetative diversity within the riparian zone. Without these, the condition of the streambank and its associated vegetation will continue to be poor, or it is conceivable that these could deteriorate further and continue to affect the river's water quality and its aquatic species.

Streambank Stabilization

Projects to stabilize the streambank are necessary, but they would not be planned under this alternative. We see the value in such projects, but lack the resources required to attempt them. This situation, as described above, will perpetuate or even exacerbate the precarious conditions of the streambank, riparian vegetation, river water quality, and the fisheries and other aquatic organisms.

Streamflow Regime

Our refuge staff and neighboring landowners divert water using dams and dikes to irrigate wet meadows during the growing season. Dikes in the riparian areas prevent surface return flows to the river. In addition, ground water wells used for irrigation on and off the refuge are expected to reduce ground water contributions to the streamflows. We recognize that instream flow is needed to restore and support healthy river habitats and fisheries. However, we would not actively manage to support instream flows. We are coordinating with WGFD to figure out river health and diversity, but work has only just started. Many other issues about streamflow regime exist. This situation will continue to support degraded, poor fisheries resources.

Wildlife Diseases

In the absence of any regional or national disease monitoring program, such as for avian influenza surveillance, sponsored by us or WFGD, our refuge staff monitors for wildlife disease outbreaks as an adjunct activity to field work on the refuge. Sick or freshly dead wildlife are inspected, and specimens that did not obviously die as the result of predation or trauma, such as road kill, may be shipped to the USGS National Wildlife Health Laboratory in Madison, Wisconsin, for diagnosis. When there are several sick or dead bodies, the Region 6 Wildlife Health Office in Bozeman, Montana, is consulted for advice and a response. However, the lack of full-time refuge employees based at Cokeville Meadows Refuge could potentially cause a delay in noticing and reporting a wildlife disease outbreak, which would, in turn, cause a greater adverse effect to refuge and State wildlife resources.

The most significant public issue is the threat of transmission of brucellosis as a result of comingling wintering elk and cattle on neighboring ranches. We would continue to work closely with WGFD to aid efforts by the State to reduce the comingling of elk and cattle. Opening the refuge to elk hunting would allow hunters access to the refuge during the elk wintering period and would reduce the potential for it to serve as an elk sanctuary. The dispersal of elk by hunters will reduce the potential for comingling. Following the hunting season, we would cooperate with WGFD and allow the hazing of elk from the refuge by State employees or agents, as requested by WGFD.

Crop Depredation and Private Property Damage

The refuge would continue to work with private landowners and WGFD to reduce crop damage by migratory birds and large ungulates. Occasionally, small grain crops may be grown on the refuge to reduce damage by waterfowl on privately held lands, but we would not commit to this practice as an annual, long-term management option. We would plant small grain crops for several years to prepare sites for grassland restoration. Several years of small grain production would reduce the weed seed bank in restoration areas before the planting of native grass seed mixes. This should help with private crop damage issues, but it would only be a temporary fix.

National wildlife refuges, in general, have started to get away from planting bait crops to reduce depredation on private land and have started to focus on improving refuge habitats to provide required food sources that are abundant enough to reduce crop damage.

Wildland Fire Management

In the Bear River watershed, vegetation has evolved under periodic disturbance and defoliation from grazing animals, fire, and minor weather events. This kept the ecosystem diverse and healthy while supporting significant biodiversity for thousands of years. Historically, natural fire, including Native American ignitions, has played an important disturbance role in many ecosystems by removing fuel accumulations, decreasing the effects of insects and diseases, stimulating regeneration, cycling essential nutrients, and providing a variety of habitats for plant and animal species.

The continued prevention, suppression, and containment of wildfires to prevent damage to private and refuge property, coupled with a lack of fire management program, would deny refuge habitats and their associated wildlife the regenerative and biodiversity benefits derived from prescribed fires.

Visitor Services and Cultural Resources

This section describes the environmental consequences that affect visitor services and cultural resources.

Public Access

Access to the refuge is limited to the Netherly Slough visitor contact point and trail and the refuge headquarters. Access to the refuge has been an issue for many years. This has generated a negative attitude in the local community toward the refuge and the Service. In some cases, the lack of access and recreational opportunities has prevented the refuge from growing. Management of the refuge, however, would not change. So, most of the refuge would continue to be closed to most public access, which would perpetuate the negative public attitude, while wildlife would continue to benefit from being sheltered from visitors.

Visitor Safety

Public access to the refuge would continue to be limited to the existing visitor contact sites, where it can occur in a safe manner. Therefore, there would be little effect on visitor safety.

River Boating

River boating is not allowed, so there would be no negative effects to the environment. However, this situation will perpetuate a negative image of the Service and the refuge because the public is not able to enjoy this outdoor recreation activity on refuge lands.

Hunting

Hunting on the refuge would not be allowed. With limited staff, it would be difficult to manage hunting activities. This situation will perpetuate a negative image of the Service and the refuge because the public is not able to enjoy this outdoor recreation activity on refuge lands and will deny any possible local and State economic benefits.

By not allowing hunting, we would prolong the comingling issue between large ungulates and cattle, which could result in wildlife diseases passing on to cattle and result in economic loss for our neighbors.

Fishing

Fishing would not be allowed. The local community would like the opportunity to fish and to have greater access on the refuge. With a shortage of staff and lack of law enforcement, we would not be able to carry this out on the refuge. This situation will not negatively affect the environment, but it will help perpetuate an unfavorable image of the Service and the refuge because the public would not be able to enjoy this outdoor recreation activity on refuge lands and will deny any possible local and State economic benefits.

Trapping

Trapping for recreation or fur harvesting on the refuge would not be allowed, though requests to conduct this activity have been submitted by several people in the local area. Trapping represents a historical and current practice and is a recreational opportunity. This would be evaluated to decide if it could be allowed on a limited basis on the refuge. Until that happens, however, not allowing trapping would help perpetuate an unfavorable image of the Service and the refuge because the public is not able to enjoy this popular outdoor recreational activity on refuge lands.

Wildlife Observation and Photography

Wildlife observation and photography would be allowed on a limited basis at the Netherly Slough visitor contact point and trail. The local community would like to have greater access to the refuge to increase their opportunities to view a greater variety of wildlife and to photograph refuge resources; keeping the status quo is likely to preserve a level of dissatisfaction among visitors and neighbors and deny any possible local and State economic benefits.

Keeping current conditions, however, would also limit wildlife disturbance.

Environmental Education and Interpretation

Environmental education and interpretation would be allowed on a limited basis at the Netherly Slough visitor contact point and trail. The local community would like to see more widespread environmental education and interpretation activities and facilities; keeping the status quo would limit the benefits of these activities. It could also reduce volunteerism and opportunities to foster an appreciation for the natural environment, the work that we do in favor of our natural heritage, and experiences that could lead young Americans to choose careers in conservation.

Keeping current conditions, however, would also limit wildlife disturbance.

Public Information

Public information would be limited, but the local community would like more. We do not have an informational brochure about the refuge, but there is information at the visitor contact point and some can be found on the Internet. More information would be provided only if money and staff were increased.

This would likely limit the knowledge of, and interest in, wildlife and other resources on the refuge, the importance and types of conservation work our refuge staff and we carry out, and opportunities for the public to engage in outdoor recreation. It is not expected, however, that the lack of public information would have a negative effect on the environment.

Cultural Resources

Our refuge staff would comply with State and Federal laws and regulations that protect our cultural, historical, and archaeological resources. All necessary coordination, inventories and surveys required by laws and regulations would be carried out before engaging in any management activities on refuge lands that could potentially affect these resources.

The refuge does not now have the money or staff to carry out a comprehensive survey to find these types of resources or to provide for their interpretation. This situation would continue and would not be expected to change in the immediate future, but it is considered sufficient to protect them.

Partnerships

Supporting existing partnerships would provide resources to contain invasive species infestations, thus providing adequate habitat conditions for the refuge's wildlife. Existing partnerships would continue to prevent damage to public and private property from wildfires and could allow us to define wildlife use, population trends, and habitat conditions on refuge lands, which would allow us to manage refuge resources better.

Landscape Conservation

Our ability to take part in landscape conservation efforts outside of the refuge boundary, such as with the Bear River Watershed Conservation Area, would be reduced and would be less able to work with our partners in their efforts to reduce habitat fragmentation.

Refuge Development and Operations

This section describes the environmental consequences that affect refuge development and operations.

Staff

The refuge is unmanned and receives staff (permanent and seasonal) and financial support from Seedskadee National Wildlife Refuge Complex. The unmanned status of this refuge is not desirable, but would continue. Lack of permanent staff at Cokeville Meadows Refuge would complicate its management and would require us to keep the refuge closed to visitors for human health and safety reasons and to protect wildlife and resources.

Leaving the refuge unmanned would impede the management of infrastructure, leading to their damage or failure. It could also encourage trespassing on refuge lands, reduce the adequate and timely response to invasive species, delay responses to wildlife disease outbreaks, cause us to disregard refuge visitors, advance a negative image of the refuge and the Service among some local residents, and increase other negative effects to refuge resources.

Facilities

The replacement of irrigation infrastructure and adding a new shop has given the refuge the ability to manage resources better and to provide a more constant presence onsite.

Water Management

We would continue to place a high priority on water management to support habitats and to protect refuge water rights. Several infrastructure projects over the last several years have been completed, and we would move on to improve delivery systems. Projects thus far have been focused on irrigation, but our newer facilities will also help us to improve annual maintenance and operations.

Inventory, Monitoring, and Research

Inventory and monitoring on the refuge is done primarily by WGFD for wildlife species and by Lincoln County Weed and Pest for invasive plants. We recognize the need for more monitoring. However, because the refuge is not staffed, we have to rely on partners. There would be little time for the Seedskadee National Wildlife Refuge Complex staff to conduct added inventory and monitoring activities at the refuge, and they do not now have a full-time biologist who could conduct these activities.

Without a methodical and broad monitoring program, we would lack the most correct and timely information needed to avoid adverse effects or to better address the needs of habitats, wildlife, and species of concern.

General third-party, wildlife-dependent research would continue to take place on the refuge when there is a request and when it is found to be compatible. It is important to host this type research so that it may help us make sound management decisions based on science, but the inconstant and opportunistic nature of the research that takes place at the refuge would make it difficult for us to get important information that could help us optimize habitat management activities for the benefit of wildlife.

Nuisance Animal and Predator Control

Control of these animals should not have an adverse effect on the environment. No control measures for nuisance animals or predators would be authorized for the public. In response to landowners' concerns, however, Region 6's division of refuges issued a general guidance memorandum to all of its units in the Refuge System on December 2011 to explain how to deal with predator control issues (appendix H). The Seedskadee National Wildlife Refuge Complex project leader, who administers Cokeville Meadows Refuge, would follow this guidance when determining what predator control measures will be allowed on the refuge.

Controlling predators and nuisance animals on refuge lands in accordance with our regional guidance would provide the means to address this issue in a ecological and sensible way and help alleviate the negative perception of some in the local community have about the Service and the refuge.

Alternative B, Maximum Restoration

Under alternative B, management of the refuge would seek to restore habitats that closely resemble presettlement conditions.

Habitat and Wildlife Management

This section describes the environmental consequences that affect proposed actions to enhance wet meadow, upland, and riparian and river habitats and their associated wildlife as well as to control wildlife diseases, crop depredation, and private property damage.

Wet Meadow Habitat

Actions for this habitat would affect a range of elements. They could decrease the extent of wet meadow habitats and their types and availability, which would change the use by, and variety of, aquatic, resident, and migratory bird species. They would also change vegetative compositions, most likely increasing the number and variety of native plant species and displacing some introduced species.

Water Management and Control Structures

We would remove many of the water management structures, including dikes, ditch plugs, and control structures, and allow water to naturally flood out of the banks to irrigate wet meadows. This would drastically reduce irrigation and water management workloads for our staff. It could also affect refuge water rights and give the impression that refuge lands are not being managed properly.

Vegetative Community and Species Diversity

Effects would be similar to alternative A, plus reducing the extent of flooding by removing irrigation infrastructure would change the vegetative dynamics and diversity of the refuge in the wet meadows. With less water in the meadows, some areas could begin to resemble upland areas and certain species may not be able to compete as well.

Haying and Grazing and Other Economic Uses

With the removal of irrigation infrastructure, there could be less haying of meadow areas because there would be less quality vegetation to hay. Grazing, however, may increase. It is not known if economic activities would increase or decrease, but it is expected that they would be modified.

Nesting and Brood-rearing Habitat

Natural flooding from the river into sloughs and other low areas would provide areas for nesting and brood rearing. This area would be drastically smaller than under alternative A. Fewer broods may be produced, and a lower diversity of birds may exist.

Water Quality for Amphibians

We would attempt to check water quality in the river and wet meadow areas and work with local landowners to improve water quality and to reduce sedimentation for amphibians. With less wet meadow habitat under this alternative, there may be fewer amphibians on the refuge. With fewer amphibians there would be a smaller food base for wildlife that prey on amphibians, such as American bitterns, great blue herons, and egrets.

Salt Loads

Salt loads in the refuge have not been figured out. Only casual observation has been made of areas where salt has precipitated from the soil or up the stalks of vegetation in the wet meadows. We are concerned that salt loads might be a problem, but we do not have the ability to verify this.

We would work with partners to develop monitoring programs to help us figure out if salt loading is an issue on the refuge. With less flood irrigation on the refuge, however, there may be fewer salt loading issues.

Brood Rearing, Irrigation Timing, and the Flooding of Nests

The removal of irrigation infrastructure would reduce the risk of flooding out early nesters on the refuge. Allowing natural flood events into low areas and sloughs along the river would leave many nesting areas undisturbed. Natural flows from the river would also be unlikely to damage nests, as these flows tend to come later in the spring. However, broods may have to move to the river, as fewer wet areas to forage and find cover would exist later in the year.

Upland Habitat

Actions for this habitat would affect a range of elements, similar to alternative A. In addition, native species composition would increase and benefit sage-steppe-obligate species. They would also make more acres of native upland habitats available to wildlife.

Haying and Grazing and Other Economic Uses

Economic uses such as haying and grazing have proven to be useful tools to support healthy habitats on the refuge. Haying and grazing are used primarily in lieu of prescribed fire. These have also been a major factor in controlling invasive plants. It has been found that spring grazing affects refuge habitats in a negative way when the practice is used multiple years in a row, and the refuge is working to phase it out except in cases where a spring treatment would be beneficial to remove a vegetative overburden to improve management activities such as irrigation.

Haying and grazing activities may change because there would be less meadow habitat to hay. Grazing may be of greater value to the refuge for habitat treatments. To manage upland habitats effectively, a grazing management plan would be needed.

Irrigated Croplands Conversion to Native Upland Habitats

The refuge has several areas that were converted to alfalfa from sagebrush habitat before we acquired them. These fields remain in alfalfa. We do not want to allow the conversion of more upland habitat and would prefer to revert

current alfalfa to native vegetation. There are now 660 acres of alfalfa on the refuge that are being prepared for conversion to native vegetation.

The conversion of alfalfa fields to native vegetation on refuge lands would restore their use by migratory and resident wildlife and decrease the need for irrigation after restoration is complete. Agricultural crops such as alfalfa and small grains would no longer be grown on the refuge. Areas restored back to native grasses would eventually fill in with sagebrush. Prescriptive grazing would be used to keep these habitats in good health. Native species composition would be increased, helping the obligate species of the shrub–steppe. More acres of native upland habitats would be available to wildlife.

Nesting and Brood-rearing Habitat

We have not focused on upland habitat for nesting or brood rearing but recognize that we need to consider wildlife use in this area.

There would be more upland areas for nesting, and management to improve nesting here would become an important issue. There could be a shift in the types of birds that use the refuge from wetland-dependent birds to upland nesting birds.

Riparian and River Habitats

Actions for this habitat would affect a range of elements. They would help recover and restore native vegetation, especially woody species. They would greatly help migratory bird populations, especially neotropical species that depend on native riparian vegetation to complete their life cycles. They would also likely create greater bird diversity and population numbers and would better shade the river, decreasing water temperatures and increasing oxygen content to help all forms of aquatic animal species.

Fisheries and Fish Habitat

The refuge would continue to coordinate with WGFD to conduct species surveys and make recommendations on areas to approach. There is no work being done by the refuge to improve the fishery within the refuge. There could be more water in the river to provide more and better habitat and connectivity for fish populations.

Riparian Corridor Vegetation Condition and Diversity

In general, the riparian habitat is in poor condition and lack of attention would perpetuate the problem. The riparian corridor has low diversity and is not excluded from haying or grazing. Woody species are in decline and require restoration. Streambanks are cut and vertical in most places. That herbivory is not excluded is an overall problem.

Coordination with WGFD and partners, however, would improve riparian health. Targeted projects to improve riparian condition would include wildlife-friendly fencing, the improved management of haying and grazing to reduce herbivory within the riparian corridor, and the planting of woody vegetation such as different willow species.

Restoring the woody part of the riparian corridor would increase shade on the river and decrease water temperatures that would, in turn, increase the oxygen content and help all forms of aquatic animal species. Protecting and restoring native vegetation would greatly help migratory bird populations, especially neotropical species that depend on native riparian vegetation to complete their life cycles. A restored riparian corridor would also likely lead to a greater bird diversity and population numbers.

Vegetation and Streambank Changes

Riparian streambanks and vegetation receive little to no rest from herbivory, haying, grazing, and trampling. Thus, there is no time to recover from such effects. Fencing would be needed to exclude activities such as grazing, and limits would need to be placed on haying to reduce effects and to improve the vegetative diversity within the riparian zone.

Hunting used to reduce the effects of large native ungulates on riparian areas would be emphasized. Protecting riparian and river habitats from excessive browsing and trampling from ungulates would help recover and restore native vegetation, especially woody species.

Streambank Stabilization

We would collaborate with other groups to evaluate, plan, and conduct projects that would improve streambank stability and riparian and river health. These are necessary and would be emphasized, but we lack the resources to conduct them ourselves.

We would help the river to migrate through natural patterns via streambank enhancement, restoration, and other activities to provide new substrates and sedimentation that is conducive to willow and cottonwood regeneration. We would also fence out ungulates to reduce herbivory and to help with woody vegetation reestablish itself.

Streamflow Regime

Where feasible and without changing our or our neighbors' water rights, we would remove and manage the refuge's irrigation infrastructure to help restore a natural streamflow regime.

We recognize that instream flows are essential for healthy river habitats, but we do not actively seek to keep them. We are working with WGFD to understand river health and diversity, but this has just begun. There are also many other issues about streamflow regime to consider.

By removing irrigation infrastructure and allowing the river to flood from its banks, streamflows should improve and provide more habitat for fish.

Wildlife Diseases

Same as alternative A

Crop Depredation and Private Property Damage

Same as alternative A

Wildland Fire Management

Because the refuge FMP would be revised to allow the use of prescribed fire as a refuge habitat management tool, fire would once again be able to promote healthy vegetation and wildlife habitat in most ecosystems, including grasslands, wetlands, woodlands, and forests. When integrated back into an ecosystem, fire can help restore and support its health systems and reduce the risk of future wildfires. Reintroducing fire to the Bear River Basin could:

- improve or support wildlife habitat by reducing the density or changing species composition;
- help to sustain biological diversity and restore natural conditions;
- improve access in upland, wetland, and riparian habitats;
- enhance soil ph and increase soil nutrients;
- create barriers for protecting high-value areas such as private property or administrative sites;
- reduce susceptibility of plants to insects and disease outbreaks;
- reduce accumulated vegetation;
- help in the control of non-endemic and invasive plants.

Prescribed fire during bird nesting seasons could lead to nest destruction or increased nest predation. Usually this is not only because of the burning of nests but because islands of unburned areas may also be targeted by nest predators like the coyote, skunk, and raccoon. However, birds will typically renest if the initial nest is destroyed, though renests usually contain fewer eggs. The initial loss of nests and the potential reduction in bird numbers would eventually be offset by improved habitat conditions that could lead to better nesting conditions and numbers.

Prescribed fires could also cause the direct mortality of wildlife species. Most large mammals can move away from a prescribed fire, and smaller mammals, like mice, are well adapted to most prescribed fires as they retreat to their underground burrows or use their high reproductive rates to recolonize. Reptiles and amphibians tend to be more at risk from prescribed fires, as they are cold blooded and move slower. Ignition techniques can help reduce the potential for wildlife mortality in prescribed fires.

A prescribed fire's effects on vegetation would depend on the heat of the fire and the climate-induced state of the vegetation. Grass fires conducted late in the spring generally help warm-season grasses while decreasing native forbs and cool-season grasses. Late summer burns can reduce woody encroachment and generally help cool-season grasses. Fire has little effect on wetland vegetation other than to remove residual cover, as these areas are driven by hydrology. However, if wetland soils are dry, fire can burn down into organic layers and kill cattail and phragmites. This can lead to an increase in carbon dioxide emissions because this is material that may not normally burn. Fires during drought conditions may lead to an increase in soil erosion because of the lack of regrowth.

Depending on the sagebrush species, fire can negatively affect sagebrush–steppe habitats. While some sagebrush species resprout following a fire, others have to recolonize the burned area from nearby unburned areas. Recent work by Baker (2006) seems to show that fire was much less prevalent in sagebrush communities than what was thought before. In addition, cheatgrass may invade these habitats after a fire. Cheatgrass is an introduced annual that is dramatically changing fire regimes throughout the Great Basin.

The reintroduction of fire could also reduce areas available for grazing or haying for a year or two. However, prescribed fire would not replace grazing or haying on refuge lands. Prescribed fire would be another tool for management to use for habitat and fuels management.

Fire can negatively affect air quality. Smoke from prescribed fires contains particulate matter, carbon monoxide, carbon dioxide, and other chemicals that can cause adverse health effects, especially to children, the elderly, and people with asthma. Conducting prescribed burns during favorable atmospheric conditions would allow the smoke to go higher into the atmosphere and reduce effects to smoke-sensitive areas.

Visitor Services and Cultural Resources

This section describes the environmental consequences that affect visitor services and cultural resources.

Public Access

We would open portions of the refuge to compatible, wildlife-dependent recreation via walk in-only access from at least one point on the east and west sides of the refuge. We feel that it is important to provide more recreational opportunities; however, it would take some time to improve areas for recreation. Initially, there would be few facilities for visitors because the removal of infrastructure would limit access, and there would likely be no vehicle access developed for an auto tour route.

A plan to allow, and manage, visitors would have to be developed with the help of our Region 6 visitor services staff to address issues such as travel management, the infrastructure development, and needed staff.

Limited public access would shield wildlife and habitats from disturbance but would also perpetuate negative attitudes about the Service and the refuge held by refuge neighbors and visitors because they would not be able to enjoy many of the wildlife-dependent public uses that other refuges provide.

Visitor Safety

With increased public access, our staff would have to find ways to ensure visitor safety. Public access to the refuge would continue to be limited to the existing sites, where it can occur in a safe manner, so there would be little effect on visitor safety.

We are studying sites and ways in which to allow public access to refuge lands to engage in compatible, wildlife-dependent recreational opportunities, such as hunting, fishing and bird observation. One of the main visitor safety concerns is the presence of a railroad track. We will only allow public access to the refuge when there is adequate infrastructure and other safeguards installed, which would take time. Railroad crossings will have to be outfitted with safety equipment to warn of oncoming train traffic and to prevent visitors from crossing the tracks when trains are approaching.

We would need help from local governments and individuals to find ways to provide, and support, facilities. We would also need to increase staff for the increased workload to come as more visitors take part in recreational opportunities.

Ensuring the safety of visitors on the refuge may negatively affect refuge habitats because of the development of access points, infrastructure, roads, signals, fences, and parking lots.

River Boating

We would be interested in opening the refuge to noncommercial recreational boating on the Bear River using nonmotorized watercraft to facilitate priority wildlife-dependent public uses. There are areas that would allow access to the river, but getting over, or around, the BQ and Pixley Dams is one of several safety concerns. There are also private property issues along the river in many areas that would have to be addressed. Tubing and rubber rafts would not be considered appropriate forms of boating.

Finding ways to allow river boating would go a long way toward improving the public's perception of the Service and the refuge. Using nonmotorized boats, according to our and State regulations, would not have an adverse effect on the refuge's habitats and aesthetics and would cause a minimal amount of disturbance to the refuge's wildlife and plants.

Hunting

The refuge would seek to open portions of the refuge for big game, small game, upland game (except sage-grouse), and migratory bird hunting. Where possible, refuge hunting regulations would be consistent with regulations established by WGFD. A hunt plan is being developed and would need to be approved before any hunting takes place. We believe that it is important to allow hunting because this is a priority wildlife-dependent public use on national wildlife refuges.

A hunt program would have a minimal effect on wildlife populations and refuge habitats, mostly because of the moderate foot trampling of outdoor enthusiasts. It would also greatly alleviate the negative perception the public has of the refuge and the Service and could improve local and State economies while also reducing the comingling of domestic cattle and wildlife, which would reduce the risk of wildlife disease to cattle.

It is expected that a hunt program on the refuge would not adversely affect the environment.

Fishing

We would seek to open portions of the refuge to fishing opportunities. Where possible, refuge fishing regulations would be consistent with regulations established by WGFD. A fishing access plan would need to be developed to provide visitors with information about special refuge regulations, areas to fish, and issues about private property. We believe that it is important to allow fishing because this is a priority wildlife-dependent public use on national wildlife refuges.

A fishing program would have a minimal effect on existing fish populations and refuge habitats because of moderate foot trampling and other activities conducted by outdoor enthusiasts. It would also greatly alleviate the negative perception the public has of the refuge and the Service and help local and State economies.

It is expected that a fishing program on this refuge would not adversely affect the environment.

Trapping

Trapping for recreation and fur harvesting is a historical and cultural practice within the local area. Limited opportunities might exist for the recreational harvest of furbearing animals on the refuge under the right conditions and given management needs.

A limited trapping program would have a minimal effect on wildlife populations and refuge habitats because of moderate foot trampling by outdoor enthusiasts. It would also greatly alleviate the negative perception the public has of the refuge and the Service.

Wildlife Observation and Photography

Wildlife observation would be allowed on a limited basis, but would need to be expanded to allow self-guided opportunities on the refuge. Photography is now allowed on a limited basis, but would need to be expanded to allow self-guided opportunities on the refuge.

Limited wildlife observation and photography programs would have a minimal effect on wildlife populations and refuge habitats because of moderate foot trampling by outdoor enthusiasts. They would also greatly alleviate the negative perception the public has of the refuge and the Service.

It is expected that limited wildlife observation and photography programs would not adversely affect the environment.

Environmental Education and Interpretation

Environmental education would be conducted on a limited basis, but would need to be expanded to allow for self-guided interpretive opportunities. As staff increases, there would be more opportunity to include staff- or volunteer-guided activities for school groups or special interest groups.

Limited environmental education and interpretation programs would have a minimal effect on wildlife populations and refuge habitats because of moderate foot trampling by outdoor enthusiasts and because of the installation of interpretation facilities. They would, however, greatly alleviate the negative perception the public has of the refuge and the Service and increase support for our mission and that of the Refuge System, the goals of this CCP, and the purposes of the refuge would increase. Interest in natural resources, conservation efforts, and related careers among refuge visitors would also increase.

Public Information

The availability of more information for the public, be it verbal or printed, would have a neutral effect on the environment. It would, however, create a more inviting atmosphere for visitors and increase public awareness and interest in wildlife and habitat needs, which may result in increased revenues for local and State economies

Cultural Resources

Same as alternative A.

Partnerships

Same as alternative A.

Landscape Conservation

Same as alternative A.

Refuge Development and Operations

This section describes the environmental consequences that affect refuge development and operations.

Staff

While water management responsibilities would be reduced, other priorities would increase. Thus, we would need to add one full-time, on site, wildlife refuge specialist, one full-time biological technician, and one career seasonal (six month) biological technician. These additions would allow us to improve management within the refuge boundary.

Facilities

The removal of the refuge's water delivery infrastructure would subject wet meadow and wetland habitats to more cyclical water regimes that would mimic those found at the refuge before the area was settled. This could help native vegetation better compete against nonnatives.

New access points and boat and canoe launch sites would increase public enjoyment as well as disturbances to wildlife.

Water Management

Water management would be reduced, providing opportunities to shift work to other activities such as public use. We would remove dikes and structures, thus reducing the level of water management required on the refuge. However, this could put water rights held by the refuge in jeopardy because of the real, or perceived, lack of water management. A change of use for refuge water rights might have to be applied.

The removal of the refuge's water delivery infrastructure would subject wet meadow and wetland habitats to more cyclical water regimes mimicking those found at the refuge before the area was settled. This may help native vegetation better compete against nonnatives.

Inventory, Monitoring, and Research

Developing a habitat management plan and an inventory and monitoring plan, coupled with the more refuge staff and with existing cooperative work with WGFD for wildlife species and with Lincoln County Weed and Pest monitors for invasive plants, would greatly increase our knowledge of the refuge's habitat and wildlife resources. In turn, this would give us more correct and timely information to help us avoid adverse effect s to, or to better address the needs of, habitats, wildlife, and species of concern.

Expanding the existing monitoring partnership with WGFD and Lincoln County to include aquatic species would give us the possibility of impeding, or at least slowing down, the infestation of refuge habitats by aquatic invasive species.

Nuisance Animal and Predator Control

When nuisance animals are identified as having caused damage to refuge wildlife and resources or to neighboring private property interests, we could take steps to reduce the damage or we could allow others to do it, such as an agency like Animal and Plant Health Inspection Services (APHIS). It is important to have the ability to correct problems that animals cause, such as livestock depredation (appendix H).

Effects, however, would be similar to those under alternative A.

Alternative C, Resource Enhancement

Under this alternative, we would find partners to work with us within the refuge acquisition boundary to enhance resources.

Habitat and Wildlife Management

This section describes the environmental consequences that affect proposed actions to enhance wet meadow, upland, and riparian and river habitats and their associated wildlife as well as to control wildlife diseases, crop depredation, and private property damage.

Wet Meadow Habitat

Actions for this habitat would affect a range of elements, similar to alternative A except for haying and grazing effects, which would be similar to alternative B. There could be greater vegetative communities and species diversity.

Water Management and Control Structures

Water management and the replacement of poorly functioning infrastructure would continue and would improve wildlife habitats. Existing and planned structure placement would be evaluated to increase productivity and diversity. We would also work closely with the Partners for Fish and Wildlife Program to coordinate with adjacent landowners for help with water management projects that would improve habitats and enhance operations on private lands.

With these improvements and an increased number of water control structures, there would be a greater demand on staff time to manage the movement of water through the refuge. It is expected that habitats would become more productive, which would require more active habitat management by staff and permittees. This, in turn, would lead to greater use by a wider variety of wildlife species.

Vegetative Community and Species Diversity

Effects would be similar to alternative A, but as the habitat would become more productive there would be greater vegetative community and species diversity.

Haying and Grazing and Other Economic Uses

Haying, grazing, and prescribed fire would help create a more diverse native vegetative community. A grazing management plan would be needed for effective management.

Effects on the environment would be similar to those in alternative B.

Nesting and Brood-Rearing Habitat

Natural flooding from the river into sloughs and other low areas would provide areas for nesting and brood rearing. This area would be similar to alternative A. More broods may be produced, and a greater variety of birds may exist. The refuge would be especially interested in working with local landowners to enhance habitats on their lands for nesting and brood rearing to increase wildlife abundance and diversity.

Effects on the environment would be similar to those in alternative A.

Water Quality for Amphibians

The refuge would check water quality in the river and wet meadow areas and work with local landowners to improve water quality and to reduce sedimentation for amphibians. An increased number of amphibians may be seen

with the proper management of water quality. With more amphibians, there would also be a larger food base for other wildlife, such as American bitterns, great blue herons, and egrets.

Salt Loads

Salt loads in the refuge have not been checked. Only casual observation has been made of areas where salt has precipitated from the soil or up the stalks of vegetation. We are concerned that salt loads might be a problem and would seek opportunities to conduct monitoring.

Effects on the environment would be similar to those in alternative A.

Brood Rearing, Irrigation Timing, and the Flooding of Nests

The refuge would continue to irrigate the wet meadows as under alternative A. As a result, we would use adaptive management techniques to decide if effects can be reduced in the short and long terms. We would see if effects to early nesters and late broods could be avoided by making simple changes in irrigation management.

Effects on the environment would be similar to those in alternative A.

Upland Habitat

Actions for this habitat would affect a range of elements, similar to alternative B. In addition, they would help other wildlife species that have similar life cycle needs to targeted species.

Haying and Grazing and Other Economic Uses

These have proven to be useful to support healthy habitats. Haying and grazing are used primarily in lieu of prescribed fire and have helped us control invasive plants. We found that spring grazing affects refuge habitats negatively when used several years in a row, so we are working to phase it out except in cases where a spring treatment would be beneficial for management activities like irrigation.

A grazing management plan would be needed to manage upland habitats effectively.

Environmental effect s would improve the habitat for targeted species, which would also help wildlife species that share similar life cycle needs and ecological parameters.

Upland Conversion to Irrigated Cropland

The refuge has several areas that were converted to alfalfa from sagebrush habitat before we acquired them. These fields remain in alfalfa. We do not want to allow the conversion of more upland habitat and would prefer to revert current alfalfa to native vegetation. There are now 660 acres of alfalfa on the refuge that are being prepared for conversion to native vegetation.

To phase out alfalfa, we would rotate small grain crops through proposed upland restoration sites to control weeds for 2 to 3 years and then convert them to native grass. We would also find 2–3 sites where small grain crops can be grown to offset depredation on private lands.

By restoring native vegetation to areas that are now being cropped, we would help migratory and resident upland birds, mammals, and reptiles to return and thrive for an overall positive effect on the environment.

Nesting and Brood-rearing Habitat

We would restore upland native habitats to provide for more nesting cover and brood rearing by rotating small grain crops through proposed upland restoration sites to control weeds for 2–3 years and then converting to native grass. We would also find 2–3 sites where small grain crops can be grown to offset depredation on private lands. This would phase out growing of alfalfa on the refuge.

By restoring native vegetation to areas that are now being cropped, we would help migratory and resident upland birds, mammals, and reptiles to return and thrive for an overall positive effect on the environment.

Riparian and River Habitats

Actions for this habitat would affect a range of elements, similar to alternative B.

Fisheries and Fish Habitat

There would be no work done by the refuge to improve the fishery within the refuge, but we would coordinate with WGFD to conduct species surveys and to make recommendations on areas to study. Special emphasis would be placed on Bonneville cutthroat trout populations and on increasing diversity within the refuge.

Environmental effect s would be decidedly positive as native fisheries could be restored and supported to improve overall ecological resiliency and provide sportfishing opportunities.

Riparian Corridor Vegetation Condition and Diversity

The riparian corridor has low diversity and is not excluded from haying or grazing. Woody species are in decline and require restoration. Streambanks are cut and vertical in most places. Lack of exclusion from herbivory is an overall problem. In general, the riparian habitat is in poor condition. Lack of attention would continue to perpetuate the problem. Coordination with WGFD and partners would improve riparian health.

The refuge would seek to manage riparian vegetation to optimize habitat for selected perching and other migratory birds that use riparian corridors for survival. Targeted projects to improve riparian condition would include wildlife-friendly fencing, improved management of haying and grazing to reduce herbivory within the riparian corridor, and the planting of woody vegetation such as different willow species.

Vegetation and Streambank Changes

These receive little to no rest from herbivory, haying, grazing, and trampling. Thus, they cannot recover from effects. Fencing would be needed to exclude activities like grazing, and limits would need to be placed on haying to reduce effects and improve vegetative diversity within the riparian zone.

Hunting would be emphasized to reduce the effects of large native ungulates on riparian areas.

We would emphasize reintroducing woody vegetation to the riparian zone to improve nesting habitat, water quality in the river, and streambank stability.

Streambank Stabilization

We would emphasize stabilizing the streambank, but we lack the resources to conduct needed projects. As a result, we would collaborate with other groups to evaluate, plan, and conduct projects to improve streambank stability and riparian and river health.

We would use the best scientific methods available to stabilize degraded sites. The Pixley and BQ Dams would be evaluated for replacement or repair, and fish passage would be created to improve connectivity and species diversity along the river.

Effects on the environment would be similar to those in alternative B, but improved habitats and the inclusion of fish-passage structures on water diversion facilities would greatly enhance the success of fisheries restoration.

Streamflow Regime

We would use adaptive management to decide where to change water diversion schemes and infrastructure to enhance wetlands and to optimize migratory bird habitats and production. Part of this would be accomplished by

cooperating with the State Engineer's Office, WGFD Water Management Staff, and local WGFD biologists to develop water management plans that consider the needs for irrigation, enhance floodplain and wetland habitat using flows, and define the timing necessary for healthy riparian and river habitats for native aquatic species within the refuge acquisition boundary. We would seek a balance of water use to enhance both wetland and riparian and river habitats and would develop a cooperative water monitoring and management plan with partners to achieve a mutually compatible balance of water uses.

We expect that this upgraded water management scheme will help both wet meadow and wetland habitats and the wildlife species that depend on them. Resultant waterfowl and waterbird nesting habitat improvements would lead to increased nesting success and production. Amphibians will also benefit and continue to thrive. Mammals, insects, and reptiles will also benefit. Thus, the effects on the environment are all expected to be positive.

Wildlife Diseases

Without staff at the refuge, we may be doing too little to prevent disease transmission. When staff is on the refuge, they will make casual observations for evidence of disease. They would also cooperate with WGFD and neighbors, when they are available, to define and reduce the risks of transmitting diseases such as brucellosis, avian botulism and cholera, whirling disease, rabies, West Nile, chronic wasting disease, and others.

WGFD would proactively check and sample for wildlife diseases. We might need to review and update the refuge disease contingency plan.

Leaving the refuge unmanned would heighten the threat of wildlife diseases because no one would be present to promptly acknowledge and contain outbreaks. Therefore, there would be potentially negative effects on the environment.

Crop Depredation and Private Property Damage

Our refuge staff worked with private landowners and WGFD in the past to reduce damage to private property by waterfowl and large ungulates. Occasionally, small grain crops would be grown on the refuge to reduce damage by waterfowl on privately held lands.

This method, however, is not a permanent solution to the problem. As a result, national wildlife refuges have started to move away from planting bait crops to reduce depredation on private land and have started to focus on improving their habitats to provide required food sources that are abundant enough to reduce crop damage. We would continue to restore native grasses on a large area of the refuge while also considering grain crops for a few years to control weeds before planting grass seed. This should also help with private crop damage issues.

We would also consider designating limited areas of cropland for small grains as a supplemental food source for sandhill cranes and other migratory birds to reduce depredation on neighboring lands and to provide enhanced wildlife observation opportunities.

Effects on the environment would be neutral.

Wildland Fire Management

Same as alternative B.

Visitor Services and Cultural Resources

This section describes the environmental consequences that affect visitor services and cultural resources.

Public Access

Same as alternative B, but the development of new infrastructure would increase access. New access points and infrastructure and increased visitation would likely increase the level of disturbance to wildlife and habitats. However, the negative effect would be moderate, as it should not interfere with the life cycles of wildlife or the management

activities of the refuge. Increased access and wildlife-dependent recreation would help alleviate the negative perception some have of the Service and the refuge.

Visitor Safety

Same as alternative B.

River Boating

Same as alternative B.

Hunting

Same as alternative B.

Fishing

Same as alternative B.

Trapping

Same as alternative B.

Wildlife Observation and Photography

Same as alternative B.

Environmental Education and Interpretation

Same as alternative B.

Public Information

Same as alternative B.

Cultural Resources

Same as alternative A.

Partnerships

Same as alternative A.

Landscape Conservation

Same as alternative A.

Refuge Development and Operations

This section describes the environmental consequences that would affect refuge development and operations.

Staff

Same as alternative B.

Facilities

Same as alternative A, plus focusing on the needs of targeted species would allow us to help a greater variety of wildlife and plant species.

By increasing the number, variety, and distribution of infrastructure and access points into the refuge, we would also improve wildlife-dependent recreation.

Water Management

We have prioritized water management on the refuge to support habitats and protect our water rights, and we would continue to improve delivery system infrastructure.

Effects on the environment would be decidedly positive because an improved water delivery system and water management regime would allow us to achieve habitat management targets with greater accuracy and success. This, in turn, would create better habitat conditions for native plants and wildlife.

Improved habitat and wildlife would provide refuge visitors with a better outdoor recreational experience and foster our conservation message. Better outdoor recreational experiences could lead to greater visitation and result in greater expenditures on outdoor recreation gear and services, which would providing a boost to local and State economies.

Inventory, Monitoring, and Research

Same as alternative B.

Nuisance Animal and Predator Control

Same as alternative A.

Alternative D, Proposed Action: Landscape-level Management

Expanding on alternative C, we would find partners to work with us on a landscape scale rather than just within the refuge acquisition boundary. We recognize that there is a lot of great wildlife habitat outside of the refuge that is in private ownership or belongs to other government agencies.

We would reach out to private landowners who want to improve habitat for wildlife while still operating their farms and ranches as they see fit and provide them with help to improve their habitats. This alternative would broaden the scope of the refuge to work with partners throughout the Bear River watershed in Wyoming and seek greater improvement for wildlife.

Habitat and Wildlife Management

This section describes the environmental consequences that affect proposed actions to enhance wet meadow, upland, and riparian and river habitats and their associated wildlife as well as to control wildlife diseases, crop depredation, and private property damage.

Wet Meadow Habitat

Actions for this habitat would affect a range of elements, similar to alternative A. In addition, they would significantly help a large number of migratory and resident birds, waterfowl, and waterbirds, as well as large ungulates and aquatic species. They would also help to disperse wildlife.

Water Management and Control Structures

Water management and the replacement of poorly functioning infrastructure to improve hydrologic functions within the wet meadow habitats would continue to take place and help to improve wildlife habitats. Existing and planned structure placement should be evaluated to increase the productivity and diversity of wet meadow habitats. We would also work closely with the Partners for Fish and Wildlife Program to coordinate with landowners within the Bear River watershed to help in water management projects that would improve habitats on private lands as well as enhance their operations. However, with improvements and an increased number of water control structures, there would be a greater demand on staff time to manage the movement of water through the refuge. It is expected that, with improved water control, wet meadow habitats would become more productive, which would require more active habitat management by staff and permittees.

Vegetative Community and Species Diversity

Effects would be similar to alternative A plus reducing the extent of flooding by removing irrigation infrastructure, would change the vegetative dynamics and diversity of the refuge in the wet meadows. With less water in the meadows, some areas could begin to resemble upland areas and certain species may not be able to compete as well.

By using active water level management, haying, grazing, prescribed fire and other proper management activities in wet meadows and floodplain wetlands, it is expected that a more diverse native vegetative community would be encouraged.

We would seek to coordinate with private landowners within the Bear River watershed to work toward a vegetative community that is more diverse for wildlife but still helps their operations as farmers and ranchers.

Haying and Grazing and Other Economic Uses

A grazing management plan would be necessary to manage upland habitats effectively.

We would work with other agencies and partners to use grazing management as a tool to improve habitats across the landscape. The potential of rotational grazing among private, BLM, and refuge lands could be effective in improving habitat on essential winter range for migratory and resident wildlife.

Nesting and Brood-Rearing Habitat

Natural flooding from the river into sloughs and other low areas would provide areas for nesting and brood rearing. The area would be drastically smaller than under alternative A. Fewer broods may be produced, and a lower diversity of birds may exist.

We would be especially interested in working with local landowners to enhance habitats on their lands for nesting and brood rearing to increase wildlife abundance and diversity in the area of the refuge and across the watershed within Wyoming.

Water Quality for Amphibians

We would attempt to check water quality in the river and wet meadow areas and work with local landowners to improve water quality and to reduce sedimentation for amphibians. An increased number of amphibians may be seen because of the proper management of water quality. With more amphibians, there would also be a larger food base for other wildlife, such as American bitterns, great blue herons and egrets.

There would be potential to work with partners to improve water quality in many areas across the Bear River watershed in Wyoming to create, or improve, more areas of habitat for amphibians.

Salt Loads

Salt loads in the refuge have not been checked. Only casual observation has been made of areas where salt has precipitated from the soil or up the stalks of vegetation in the wet meadows. The refuge is concerned that salt loads might be a problem and would seek opportunities to conduct monitoring to decide if a problem exists.

If a problem on the refuge were identified, we would work with partners to decide if the problem is widespread throughout the basin or only in certain areas.

Effects to the environment would be similar to those in alternative A.

Brood Rearing, Irrigation Timing, and the Flooding of Nests

We would continue to irrigate the wet meadows as under alternative A.

As a result, we would need to do an evaluation of potential adaptive management techniques to decide if changes can be reduced in the short, and long, terms. An evaluation of the irrigation systems that provide water to the refuge would need to be conducted to see if changes to early nesters and late broods can be avoided by making simple changes in irrigation management.

In general, it is expected that the environmental effect s from these actions would be similar to those under alternative A. Additionally, enhancing and restoring naturally occurring wet meadow and wetland habitats within the Bear River watershed in Wyoming would have a significant positive benefit to a large number of migratory and resident birds, waterfowl, and waterbirds, as well as large ungulates and aquatic species. Restoring these types of habitats in and around the refuge would create wildlife migration corridors that would help disperse wildlife.

Upland Habitat

Actions for this habitat would affect a range of elements, similar to alternative B. In addition, they would cause less fragmentation and create more connectivity throughout the Bear River watershed in Wyoming, which would make better migration corridors and decrease wildlife crowding.

Haying and Grazing and Other Economic Uses

Economic uses such as haying and grazing have proven to be useful tools to support healthy habitats on the refuge. Haying and grazing are used primarily in lieu of prescribed fire. Haying and grazing on the refuge has also been a major factor in controlling invasive plants on the refuge. It has been found that spring grazing changes refuge habitats in a negative way when the practice is used multiple years in a row and the refuge is working to phase out spring grazing, except in cases where a spring treatment would be beneficial to remove a vegetative overburden to improve management activities such as irrigation.

We would work with other agencies and partners to use grazing management as a tool to improve habitats across the landscape. The potential of rotational grazing between private, BLM, and refuge lands could be effective in improving habitat on essential winter range for migratory and resident wildlife.

It is expected that the environmental effect s from these actions would be similar to those under alternative B. Additionally, there should be less fragmentation and more connectivity of upland habitats throughout the Bear River watershed in Wyoming. This would lead to better migration corridors for wildlife and decreased wildlife crowding.

Upland Conversion to Irrigated Cropland

The refuge has several areas that were converted to alfalfa from sagebrush habitat before we acquired them. These fields remain in alfalfa. We do not want to allow the conversion of more upland habitat and would prefer to revert current alfalfa to native vegetation. There are now 660 acres of alfalfa on the refuge that are being prepared for conversion to native vegetation.

We would develop a plan to rotate small grain crops through proposed upland restoration sites to control weeds for 2–3 years and then convert to native grass. The refuge would find 2–3 sites where small grain crops can be grown to offset depredation on private lands. This would phase out growing of alfalfa on refuge lands.

Effects to the environment would be similar to those in alternative B.

Nesting and Brood-rearing Habitat

We would restore upland native habitats on the refuge to provide more nesting cover and brood rearing and develop a plan to rotate small grain crops through proposed upland restoration sites to control weeds for 2–3 years and then convert to native grass. We would find 2–3 sites where small grain crops can be grown to offset depredation on private lands. This would phase out the growing of alfalfa on refuge lands.

Effects to the environment would be similar to those in alternative B.

Riparian and River Habitats

Actions for this habitat would affect a range of elements, similar to alternative B. In addition, they could increase river shading and decrease river temperatures and sediment loads upstream and downstream of the refuge, allowing the water to hold more dissolved oxygen and help native trout and other aquatic species. They would also decrease fragmentation and help wildlife move and migrate through the watershed, increasing opportunities for wildlife-dependent recreational opportunities.

Fisheries and Fish Habitat

We would continue to coordinate with WGFD to conduct species surveys and make recommendations on areas to approach for improvement. Special emphasis would be placed on Bonneville cutthroat trout populations. Cooperative efforts with partners throughout the Bear River Valley to improve habitats both on and off the refuge for all native aquatic species would further increase the probability that Federal listing of Bonneville cutthroat trout could be avoided.

It is expected that the environmental effect s from these actions would be similar to those under alternative B. However, the benefits of protecting and restoring the riparian corridors of the Bear River watershed in Wyoming could result in increased shading and decreased river water temperatures and sediment loads upstream and downstream of the refuge, which would allow water to hold more dissolved oxygen for the benefit of native trout and other aquatic species.

Riparian Corridor Vegetation Condition and Diversity

The riparian corridor has low diversity and is hayed or grazed. Woody species are in decline and require restoration. Streambanks are cut and vertical in most places. Herbivory is an overall problem. In general, the riparian habitat is in poor condition. Lack of attention would perpetuate the problem. Coordination with WGFD and partners would improve riparian health.

We would seek to manage riparian vegetation to optimize habitat for selected perching and other migratory birds. Targeted projects to improve riparian condition would include wildlife-friendly fencing, improved management of haying and grazing to reduce herbivory within the riparian corridor, and the planting of woody vegetation such as different willow species.

Restoring more sections of the riparian corridor in Wyoming would decrease fragmentation and help wildlife to move and migrate throughout the watershed, which would increase opportunities for wildlife-dependent recreational opportunities.

Vegetation and Streambank Changes

Riparian streambanks and vegetation receive little-to-no rest from herbivory, haying, grazing, or trampling. Thus, there is no time for recovery. Fencing would be needed to exclude activities such as grazing, and limits would need to be placed on haying to reduce effects and to improve vegetative diversity within the riparian zone.

The use of hunting to reduce how large native ungulates affect riparian areas would be emphasized.

We would place a greater emphasis on introducing woody vegetation back into the riparian zone to improve nesting habitat, water quality in the river, and streambank stability.

New, or expanded, partnerships would lead to an improved distribution of wildlife species and would greatly increase opportunities to meet landscape-level objectives within the Bear River watershed in Wyoming.

The effects of this action on the environment are similar to those under alternative C, however the positive environmental effect s would extend outside the refuge boundaries to the Bear River watershed in Wyoming.

Streambank Stabilization

Projects to stabilize the streambank are necessary, and would be emphasized. The refuge sees the value in such projects, but lacks the resources to conduct them. The refuge would seek to collaborate with other groups to evaluate, plan and conduct projects that would improve streambank stability and riparian and river health.

We would use the best scientific methods available to stabilize degraded sites. The Pixley and BQ Dams would be evaluated for replacement or repair, and fish passage would be created to improve connectivity and species diversity along the river. We would work with other cooperators to support these practices throughout the Bear River watershed.

The effects of this action on the environment are similar to those under alternative C, however the positive environmental effect s would extend outside the refuge boundaries to the Bear River watershed in Wyoming.

Streamflow Regime

We would use adaptive management to decide where to change water diversion schemes and infrastructure, if feasible, to enhance wetlands and to optimize migratory bird habitats and production. Part of this would be accomplished by working cooperatively with the State Engineer's Office, WGFD Water Management Staff, and local WGFD biologists to develop water management plans that balance the needs for irrigation, enhance floodplain and wetland habitat using flows, and define the timing necessary for healthy riparian and river habitats for native aquatic species within the refuge acquisition boundary. We would seek a balance of water use to enhance both wetland and riparian and river habitats and would work to develop a cooperative water monitoring and management plan with partners to achieve a mutually compatible balance of water uses.

The effects of this action on the environment are similar to those under alternative C, however the positive environmental effects would extend outside the refuge boundaries to the Bear River watershed in Wyoming. We would attempt to gain support for this process among other water users so that they may apply this same process across the watershed to improve many other areas of riparian and river habitat.

Wildlife Diseases

Our staff makes casual observations when they are on the refuge and we cooperate with WGFD and neighbors when they are available to find and reduce the risks of transmitting diseases such as brucellosis, avian botulism and cholera, whirling disease, rabies, West Nile, chronic wasting disease and others. Because we do not have staff stationed at Cokeville Meadows Refuge, there is a perception that we are doing little to prevent disease transmission. Under this alternative, WGFD would proactively check and sample for wildlife diseases. We would need to review and update the refuge disease contingency plan if necessary.

Effects to the environment would be similar to those in alternative B**.**

Crop Depredation and Private Property Damage

We work with private landowners and WGFD to reduce damage to private property by waterfowl and large ungulates. Occasionally, small grain crops are grown on the refuge to reduce damage by waterfowl on privately held lands, but this practice is not permanent.

We would continue to carry out native grass restoration on a large area of the refuge and would look to use grain crops to control weeds for a few years before planting grass seed. This should help with private crop damage issues, but it is only a temporary fix. National wildlife refuges, in general, have moved away from planting bait crops to reduce depredation on private lands and have started to focus on improving refuge habitats to provide required food sources that are abundant enough to reduce crop damage.

Effects to the environment would be similar to those in alternative B**.** We would consider designating limited areas of cropland for small grains as a supplemental food source for sandhill cranes and other migratory birds to reduce depredation on neighboring lands and to provide enhanced wildlife observation opportunities.

Wildland Fire Management

Same as alternative B. However, the benefits derived by humans, wildlife, and natural habitats from fuel reduction treatments and other elements of a prescribed fire program would be extended to other areas within the Bear River watershed in Wyoming and could help prevent catastrophic wildfire events.

Visitor Services and Cultural Resources

This section describes the environmental consequences that affect visitor services and cultural resources.

Public Access

Same as alternative C, though positive environmental effects would extend outside the refuge boundaries to the Bear River watershed in Wyoming.

Visitor Safety

Same as alternative B

River Boating

Same as alternative B.

Hunting

Same as alternative B, however the positive environmental effects would extend outside the refuge boundaries to the Bear River watershed in Wyoming.

Fishing

Same as alternative B**.**

Trapping

Same as alternative B.

Wildlife Observation and Photography

Same as alternative B.

Environmental Education and Interpretation

Same as alternative B, but with expanded support for the conservation of natural resources throughout southwest Wyoming.

Public Information

Same as alternative B.

Cultural Resources

Same as alternative A.

Partnerships

Same as alternative A, but expanding existing partnerships and developing new ones to include various areas in the Bear River watershed in Wyoming would provide new resources to contain invasive species infestations throughout the watershed to ensure healthy habitat conditions for many wildlife species.

Strengthening and expanding our existing wildfire containment partnerships would continue to prevent damage to public and private property and would encourage fire management strategies that would further protect human life and infrastructure and help habitats and wildlife throughout the watershed.

Finally, expanding the range, variety, and scope of existing partnerships to include the entire watershed would allow our staff and partners to find wildlife uses, population trends, and habitat conditions, which, in turn, would help WGFD staff better manage habitat and wildlife resources throughout the watershed and would help our staff better manage within the refuge boundary.

Landscape Conservation

More resources would be available for habitat enhancement and protection that would help wildlife and wildlife-related recreation. Coordinating with Bear River Watershed Conservation Area partners would enhance and preserving wildlife migration corridors and would increase the genetic exchange between wildlife populations and their access to adequate food sources which would improve their reproductive success and survival.

Refuge Development and Operations

This section describes the environmental consequences that affect refuge development and operations.

Staff

Same as alternative B, plus the addition of a full-time extension biologist would help us improve management throughout the Bear River watershed in Wyoming.

Facilities

Same as alternative C, however increased partnerships and more volunteers would have a greater positive effect on the environment and would allow us to expand our management and visitor services activities to the greater Bear River watershed in Wyoming.

Water Management

Same as alternative C, plus we would consider using the refuge's water rights to restore habitats watershed wide in Wyoming. We would seek to work with the State Engineer's Office to decide if water rights can be used in other places in the watershed to carry out important habitat projects for wildlife. For example, we would be interested in working on a project with a private landowner, or other agency to keep water in a stream for fish passage during important times of the year.

Same as alternative C, plus positive environmental effects would extend outside the refuge boundaries to the Bear River watershed in Wyoming.

Inventory, Monitoring, and Research

Same as alternative B, plus the cooperative work that we would carry out with existing and new partners throughout the Bear River watershed in Wyoming would expand the range of possibilities to better deal with existing, or prevent new infestations of invasive species. Furthermore, generating new information on the Bear River watershed's water quality could equip the staff and its partners with ways to resolve water quality issues and thus improve the habitats for aquatic and terrestrial plant and animal species, as well as the quality of the experience for outdoor recreation enthusiasts and other sportsmen or women.

Nuisance Animal and Predator Control

Same as alternative A.

5.3 Socioeconomic Impacts

Cokeville Meadows Refuge lies within Lincoln County, along the borders of Idaho and Utah, in rural southwestern Wyoming. In 2010 the population of this county was slightly more than 18,000, which is roughly 4.4 persons per square mile. In 2011 it was estimated that the unemployment rate for Lincoln County was approximately 6.6 percent. Industries that provide the most jobs for residents of Lincoln County include ranching, farming, mining, forestry, and services.

When the refuge was established, it was expected that the visitors would contribute to the local and State economies through buying local goods and services. However, the refuge is closed to most public uses except wildlife viewing, photography, and interpretation at the contact station and kiosk at Netherly Slough.

Alternative A proposes no change to management, which would keep the refuge closed to most public uses. Visitor contributions to the local and State economies would be small, and a negative image of the refuge and the Service may continue.

Alternatives B, C, and D, on the other hand, propose opening parts of the refuge to compatible, wildlife-dependent public uses—mainly hunting, fishing, wildlife observation, photography, environmental education, and interpretation—to varying degrees. This would be accomplished by designating and opening access points on the east and west sides of the refuge and developing the necessary infrastructure. We project that opening the refuge to these compatible public uses would increase visitation and local and State revenues, especially through outdoor recreational opportunities.

Among these three alternatives, D would have the greatest positive effect on the local and State economies because it calls for not only opening the refuge to compatible public uses but for the development of partnerships that could result in increased opportunities to enjoy outdoor recreational opportunities throughout the entire Bear River watershed in Wyoming.