Draft EA Chapter 4—Environmental Consequences

Black-necked stilts are migratory shorebirds that frequent the Bear River watershed.

This chapter assesses the environmental impacts that are expected to occur from the implementation of alternatives A and B, as described in chapter 2. Environmental impacts are analyzed by issues for each alternative and appear in the same order as discussed in chapter 2. Several aspects of environmental effects are evaluated including whether the effects are negative or beneficial, direct, indirect, or cumulative with actions independent of the proposed action. The duration of the effect, whether it is a short-term or a long-term effect, is also used in the evaluation of the environmental consequences.

The intensity and timing of effects from alternative A, the no-action alternative, would vary by the location within the watershed. For example, the intensity of development would be much greater, and would occur sooner in the Cache Valley than in the more rural areas.

The level of impact from alternative B would be greatly dependent on the degree completeness the program achieves. If only a small acreage is conserved through the easement program, the long-term effects would be negligible. The rate of implementation would depend on the availability of funding and the level of landowner interest. Alternative B would likely be a long-term process with incremental change.

Effects on the Physical Environment

The physical environment comprises the geology, soils, hydrology, and climate of the Bear River watershed. In addition, climate change is discussed. Anticipated effects on these features are described for alternatives A and B. Some of the effects would be the same for either alternative.

Effects Common to Both Alternatives

Existing uses of the proposed lands would continue to have some negative effects on soils. On lands zoned for agriculture, soil problems such as compaction, trampling, and erosion caused by farming equipment, cattle grazing, and vehicle use on range lands would continue.

Water and Soil Resources—Alternative A (No Action)

The Bear River delivers an annual average of 1.2 million acre-feet of water into the Great Salt Lake, more than one-half of the total surface water flowing into the lake each year. Over the next 50 years, about one-fifth of this volume of water could be diverted to the Wasatch Front for municipal and industrial use by communities outside of the watershed (Utah State University Extension 2006).

Increased development and disturbance could reduce infiltration and ground-water recharge. Development can result in more wetland drainage, water diversion, and introduction of invasive species. Development could change drainage patterns and the rate of surface runoff, increasing soil erosion and nonpoint source pollution. Additional residential development in the proposed conservation area would have a negative effect on aquatic habitat because of sewage-derived nutrient additions to streams and lakes (Wernick et al. 1998). With projected development patterns (Toth et al. 2010), there would be more demand for ground water, potentially resulting in degradation of the hydrology of some wetland areas and negatively affecting the three refuges in the Bear River watershed.

This alternative could have a negative effect on local mitigation efforts by reducing options for conserving and storing carbon through land protection and habitat restoration.

Water and Soil Resources—Alternative B (Proposed Action)

Historical water rights would continue and the conservation easements would not allow any water rights to be sold or otherwise separated from the property. The easements would not allow change to or alteration of points of diversion, timing, or place of use for any water rights. Historical water use would be kept in accordance with current practices.

Water resources on up to 920,000 acres of conservation easements would result in some additional protection from increased nonpoint source pollution from residential subdivisions, commercial development, and draining of wetlands, all of which would be prohibited under the proposed easement program. A long-term commitment to maintenance of vegetative cover with minimal soil disturbance would help conserve local microclimate patterns and soil processes. By limiting development on some prime agricultural and wildlife habitat areas, communities would help to ensure future ground-water supplies, thus reducing the need to develop more water resources to meet growing demand (Toth 2010). The protection from conservation easements would improve water resources throughout the Bear River watershed, including for the three national wildlife refuges.

Effects on the Biological Environment

This section describes the anticipated effects on wildlife and habitat under alternatives A and B. The Bear River watershed's habitat ranges from river and the adjacent riparian areas to wetland, grassland, shrubland, and forest. This section also describes the wildlife and species of concern that use these habitats.

Habitat and Wildlife—Alternative A (No Action)

Under the no-action alternative, the Service would continue to work cooperatively with landowners to voluntarily improve habitat on private land through programs such as Partners for Fish and Wildlife. Private landowners would continue to be responsible for complying with Federal, State, county, and local invasive animal and plant control laws. Degradation of resources used by wildlife on some unprotected lands would continue as the need and demand for help and for easements exceed the capacity of existing programs. Intensification of agricultural processes combined with increasing residential and commercial development would result in the further decline of wildlife populations, such as migratory birds, native fish, resident wildlife, and species of special concern.

Under this alternative, predicted changes in the quantity and quality of water (Toth et al. 2010) combined with direct loss and fragmentation of habitat

and of migration corridors would negatively affect fish and wildlife over the long term.

Loss and Fragmentation

Subsurface, residential, and commercial development would negatively affect riverine, riparian, grassland, and shrubland habitat on which a wide variety of wildlife species depend. Besides direct habitat loss resulting from commercial and residential development, infrastructure associated with development would fragment wildlife habitat. Oil and gas development could lead to saltwater contamination and new road development. Increased levels of nonnative and invasive species resulting from disturbance would likely further fragment wildlife habitat.

Davies et al. (2011) found that exurban growth decreases native plant and animal diversity, increases the number of exotic species (including nonnative predators), and restricts the use of ecosystem management options, such as using fire to prevent conifer encroachment (Knight et al. 1995, Maestas et al. 2003, Hansen et al. 2005). Fire frequency and size are influenced by housing density and tend to be highest at intermediate levels of human actions (Syphard et al. 2007, 2009).

Riverine Area, Riparian Area, and Wetland Effects

Because the Bear River watershed is considered one of the last areas of Utah with a developable water supply, there is some concern that development pressure and demand for water would negatively affect sensitive refuge habitats and ecosystems (Toth et al. 2010). With much of the undeveloped water claimed by municipalities along the Wasatch Front, it has been estimated that one-fifth of the current Bear River flows could be diverted within the next 50 years (Utah State University Extension 2006).

Under the no-action alternative, the likely increase in development in riparian areas would remove corridors of connectivity between wetland and upland habitat types. In addition, stream quality could become degraded from development, which would negatively affect the Bonneville cutthroat trout; leatherside chub; mountain whitefish; mottled and Paiute sculpin; longnose and speckled dace; redside shiner; and Utah, bluehead, and mountain suckers. With increasing development, more barriers to fish passage are likely to be constructed.

USFWS

White-faced ibis colony a-wing.

Upland Effects

Wildlife habitat would be fragmented by increased levels of nonnative and invasive species that result from disturbance. Vertical structures such as wind towers and oil and gas infrastructure could result in large tracts of otherwise suitable habitat being avoided by some species, such as greater sage-grouse, sage thrasher, sage sparrow, pronghorn, mule deer, and other sage-dependent species. Besides the direct impacts of habitat loss and increased wildlife mortality from vehicle collisions, roads associated with development would lead to increased soil erosion, wetland degradation, spreading of invasive weeds, and habitat fragmentation.

Because it would increase the number of human-caused fires, exurban development in sagebrush communities could create and keep plant systems dominated by exotic plants and start a positive feedback loop between exotic grass invasion and increased fire frequency (D'Antonio and Vitousek 1992).

The loss of sagebrush communities is a concern in part because these plant communities provide crucial habitat for sagebrush-dependent wildlife species. Long-term monitoring of sage-grouse populations has shown a steady decline across their range since the 1960s (Connelly and Braun 1997, Connelly et al. 2004). Aldridge et al. (2008) suggested that the loss of sagebrush habitat was the main factor in the extirpation of local sage-grouse populations.

Species of Special Concern Effects

The Idaho, Utah, and Wyoming State conservation strategies include at least 70 bird, 7 amphibian, 15 reptile, and 8 fish "Species of Greatest Conservation Need" (Idaho Department of Fish and Game 2005, Utah Division of Wildlife Resources 2005b, Wyoming Game and Fish Department 2005).

Although there are many species on the State lists of concern, only 10 species within the Bear River watershed are federally listed. The no-action alternative would increase the level of threat to endangered, threatened, and candidate species through habitat loss, degradation, and fragmentation, among other factors. More land conservation and protection measures are the primary actions identified in the recovery plans for most such species, as well as for species on the State lists.

Without more habitat protection measures in the watershed, there would be an increased likelihood that more species would be added to the State lists of conservation concern or to the Federal threatened and endangered species lists.

Habitat and Wildlife—Alternative B (Proposed Action)

Loss and Fragmentation

The availability of large, intact areas of diverse habitat types is important to provide for the various needs of wildlife species. Habitat connectivity provides a migration corridor for neotropical birds; between winter and summer ranges for mule deer, pronghorn, and elk; and between breeding, nesting, and brood-rearing areas for birds. It also provides access to spawning grounds for native fish. Connectivity increases the resiliency of wildlife populations by allowing movement to new areas during environmental challenges such as drought or flooding, and provides for genetic diversity by allowing an exchange of individuals from different subpopulations. Privately owned lands adjacent to the Bear Lake (and Oxford Slough Waterfowl Production Area), Bear River, and Cokeville Meadow Refuges provide connectivity between the refuges and other Federal lands, thus creating a larger block of permanently protected wildlife habitat. Through protection of important migration corridors and habitats, the proposed action would have long-term beneficial effects on fish and wildlife populations.

Riverine Area, Riparian Area, and Wetland Effects

The Bear River is the lifeblood of the three national wildlife refuges located along its course. Large populations of waterfowl, shorebirds, and native fishes depend on the refuges and adjacent habitat areas to meet their breeding, migration, and feeding needs. The proposed action would protect privately owned wetlands, irrigated meadows, and fields that now provide important wildlife habitat.

The proposed action would help maintain healthy riparian areas that recharge aquifers, reduce soil erosion, filter chemical wastes, moderate stream temperatures, and help buffer water loss from upland drainages.

Retaining the role of riparian habitats in providing travel corridors for wildlife would become an increasingly important part of effective mitigation plans for human development as well as climate change (Wyoming Game and Fish Department 2010). Conservation of riparian areas would benefit a variety of species of special conservation concern that depend on riparian habitat, such as Lewis's woodpecker and many neotropical migratory birds. Additionally, connectivity between different riverine habitat types is important for fish access to suitable spawning and rearing

grounds while providing adequate habitat for adult growth and survival.

Upland Effects

The proposed action would provide the ability to conserve large patches of sagebrush that occur on acquired easements.

Maintaining and restoring large patches of sagebrush would create a mosaic of sagebrush habitats that would be an important step toward reversing the population declines of sage-grouse and other sagebrush-dependent species, such as sage sparrow, sage thrasher, and Brewer's sparrow (Hanser and Knick 2011).

Species of Special Concern Effects

With the additional habitat protection measures in the watershed under the proposed action, there would be a greater likelihood that common species can remain common. There are relatively few species with Federal status in the Bear River watershed. There would be a reduced need for more species to be added to the State lists of conservation concern or to be federally listed as threatened or endangered.

The effects of the proposed Bear River Watershed Conservation Area on endangered, threatened, and candidate species would vary by the area under consideration. The differences in the effects would be due to differences in species' ranges, habitat affinities and restrictions, and elevations.

Climate—Alternative A (No Action)

Carbon sequestration capabilities would be reduced with the increased development and disturbance of native vegetation likely to occur under the no-action alternative. There would be negative effects on the resiliency of the watershed and the ability of ecosystems to adapt to a changing climate and changing land uses. This alternative could also negatively affect local mitigation efforts by reducing options for conserving and storing carbon through land protection and habitat restoration.

Climate—Alternative B (Proposed Action)

By protecting habitat, reducing habitat fragmentation, and increasing connectivity between habitats, the proposed action would help keep the ability of native species and ecosystems to adapt to a changing climate. Climate change mitigation efforts would be positively affected by this alternative because carbon sequestration now provided by native vegetation would be conserved.

Effects on the Socioeconomic Environment

This section describes the anticipated effects of alternatives A and B on landownership, land use, public use, development (including oil and gas, wind energy, and residential), and intact ecosystem values.

Landownership and Land Use—Alternative A (No Action)

Landownership would not be affected by the no-action alternative. Acquisition of wetland and upland easements would continue under current Federal and private programs and funding sources. More than 2.53 million acres of the Bear River watershed would remain in private ownership, with no additional protections by the Service through conservation easements.

With future predicted development trends (Toth et al. 2010), landowners would lose some open space as well as the agricultural and ranching heritage and natural aesthetics of the Bear River watershed.

Ranching and agricultural opportunities would be reduced if landowners begin to split tracts into smaller lots for residential and commercial development. Landowners who subdivide could increase their revenue by developing recreational homesites. Subdivided tracts could maintain wildlife values if there were a desire to cluster housing or to keep open space.

Landownership and Land Use—Alternative B (Proposed Action)

The proposed action would only affect lands where the Service has acquired a conservation easement. The location, distribution, and sale of development rights by landowners on adjacent lands without Service easements would not be affected. Traditional agricultural uses such as ranching, grazing, and haying would be allowed to continue on easement lands.

Because this alternative would maintain open space on a large scale, it would preserve a rural

lifestyle and associated tourism and economic activities. The purchase of an easement would not result in a transfer of land title, so private landowners would continue to pay property taxes. In all three States, property taxes for agricultural land are assessed based on the productive value of the land. Most properties that enter into conservation easement agreements with the Service are classified as agricultural land; therefore, there would be little or no effect on the current property tax base for the 14-county area.

Because the sale of conservation easements provides landowners with more revenue, easement purchases could inject new money into local economies. Landowners could spend some percentage of this money on such items as purchasing new real estate, consumer goods, or local services. This spending activity would directly affect local industries such as construction and various service sectors.

Conservation easements could help keep the regional character by protecting working landscapes and a traditional agricultural way of life. Land with historical commercial use, such as ranching, forestry, and farming, is often compatible with or beneficial to wildlife refuge objectives (Jordan et al. 2007, Rissman et al. 2007). Conservation easements provide financial benefits for landowners that enable them to preserve the natural and historic value of their farms, ranches, and open space lands, and to pass this legacy on to their children and grandchildren.

The easement program would have no effect on tribal jurisdiction or tribal rights, because it is outside of reservation lands and would affect only private landowners who are willing to sell easements.

Public Use—Alternative A (No Action)

Under the no-action alternative, the Service would not buy conservation easements. Private landowners would continue to manage public use and access of their lands.

With increased development levels, opportunities for wildlife-dependent recreational activities such as hunting, fishing, and wildlife observation would likely decline, resulting in diminished associated economic benefits to local communities. Negative economic effects to landowners could occur from diminished public wildlife viewing, tourism, fishing, and hunting opportunities.

Public Use—Alternative B (Proposed Action)

Conservation easements bought on private tracts would not change landowners' rights to manage public access to and use of their property. Under the proposed easement program, landowners would retain full private property rights, including control of hunting and fishing on their lands. Under the proposed action, wildlife-dependent recreational opportunities such as hunting, fishing, and wildlife observation would not be diminished because of declining wildlife populations. According to the "2006 National Survey of Fishing, Hunting, and Wildlife-Associated Recreation," approximately 2.9 million residents took part in wildlife-associated recreation activities in Idaho, Utah, and Wyoming in 2006. It was estimated that residents and visitors spent $3.3 billion on wildlife-associated recreation activities in the three States combined (USFWS 2008a).

Development—Alternative A (No Action)

More than 2.53 million acres would remain in private ownership, with no additional restrictions from conservation easements. Farming and ranching opportunities could be reduced if landowners begin to split tracts into smaller lots for residential and commercial development.

Over time, the land development that is forecast (Toth et al. 2010) would result in population declines of many wildlife species. The Utah Governor's Office of Planning and Budget (2008) projects that the population in Utah will increase by more than 250 percent between 2008 and 2060, from 2.7 million to 6.84 million people, with Cache and Box Elder Counties accommodating an increasing share of the State's population. To accommodate this growth, 32,000 new households are expected to be built statewide every year, resulting in a 75 percent increase in developed land and a 7.3 percent loss of agricultural land by 2030 (Utah Governor's Office of Planning and Budget 2008). As a result, the communities within the Bear River watershed would lose open space, agricultural lands, and scenic values.

Subsurface Development

Mining and oil and gas development would continue to occur on private lands in the Bear River watershed. Stipulations to protect the surface estate would be governed by existing State regulations.

Commercial and Residential Development

Development rights would remain in private ownership, with none of the restrictions that would accompany conservation easements.

Residential development and subdivisions generally increase costs to the county governments that provide services to rural areas. Rural residences tend to have higher costs for county governments and school districts than urban residences. On average, the cost to provide community services to new residential developments is $1.15 for every $1.00 of revenue created by those developments (American Farmland Trust 2001, Coupal et al. 2002). In Wyoming, community service costs averaged $2.01 for every $1.00 of revenue for rural residential lands; in contrast, the average cost to provide services for lands under agricultural production averaged $0.54 for every $1.00 of revenue (Taylor and Coupal 2000).

Development—Alternative B (Proposed Action)

The proposed action would protect up to 920,000 acres of wetland, riparian, grassland, and shrubland wildlife habitat from more fragmentation and loss by precluding surface occupancy and infrastructure development.

Subsurface Development

Conservation easements typically do not affect subsurface estates (mineral, oil, and gas deposits) because the Service only acquires rights associated with surface ownership. The proposed easement program would preclude mining and oil and gas exploration or development requiring surface occupancy on easement land only when the landowner owns the subsurface rights. In many places, including the Bear River watershed, the subsurface estate has been severed from surface ownership, and the landowner does not own the subsurface rights. In these cases, the easement that the Service acquires from the landowner is junior to the subsurface rights.

For easements that have been put in place on land where the owner has not sold or leased the mineral or subsurface estates, the Service easement would be senior to any subsurface interests later acquired by a developer. Because development of the mineral estate could significantly damage the resources that the Service is attempting to protect, the Service would require that a developer access minerals from offsite as a term of the easement.

Commercial and Residential Development

The Service's easement program would enhance the protection of wildlife species that depend on unfragmented upland habitat through prohibiting surface disturbance or development of infrastructure. This program would also provide financial compensation to landowners through the sale of easements to offset potential revenue loss from the sale of development rights or leases.

The proposed project would only affect lands on which the Service has acquired a conservation easement. Development on adjacent lands that do not have Service conservation easements would not be limited.

Land acreage with potential for wind energy development is relatively low in Idaho (1.67 percent) and Utah (1.19 percent). Wyoming, however, has a higher development potential at 43.58 percent (National Renewable Energy Laboratory 2011). Most land with potential for wind energy development in each State would still be available under the proposed action.

Designated open space and protected natural areas can increase surrounding property values (see McConnell and Walls 2005 for a comprehensive review). The value of open space on nearby property values would vary depending on landscape characteristics and location (for example, distance to the conserved area) (Kroger 2008). Permanence of the open space also influences property values. Typically, open space that is permanently protected—such as refuge lands and lands protected with perpetual conservation easements—would generate a higher enhancement value to local properties than land that has the potential for future development (Geoghegan et al. 2003). Location and demographic factors in the region can also influence the relative level of property enhancement value. For instance, open space could generate larger amenity premiums for property in more urbanized areas and where median incomes are higher (Netusil et al. 2000, Vrooman 1978, Phillips 2000, Crompton 2001, Thorsnes 2002). Private lands protected by conservation easements benefit residents through increased biodiversity, recreational quality, and hunting opportunities on adjacent publicly accessible wildlife refuges and on some private lands (Rissman et al. 2007).

Other Conservation Impacts—Alternative A (No Action)

Under the no-action alternative, the threat of habitat fragmentation would continue to increase. Landowners would continue to face economic

pressures to subdivide their land and sell their water rights. Ecosystem services such as nutrient cycling (see figure EA–8) that are now provided by a rural landscape would be diminished.

Conservation of wetland and upland habitats would continue under existing acquisition authorities. These conservation programs are not able to keep pace with current rates of wetland and upland loss.

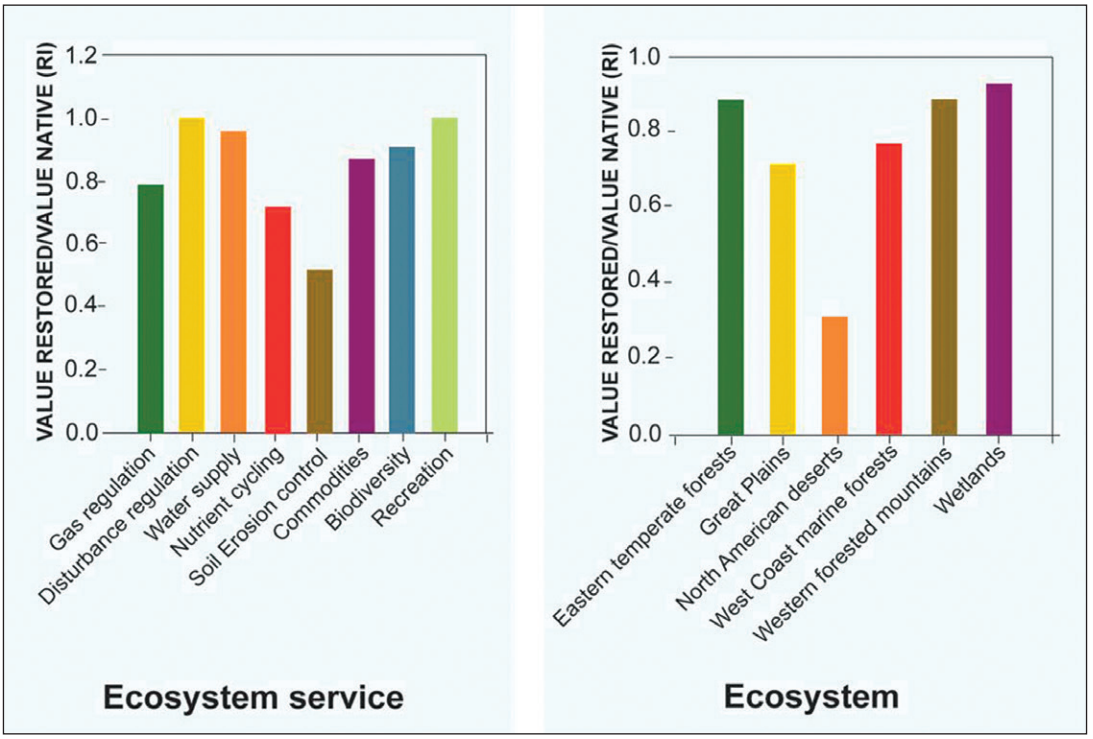

Figure EA–8. Chart of the relative native and restored benefits of ecosystem goods and services.
Source: Dodds et al. 2008.

Note: The relative value is determined as the ratio of estimated benefits derived from native and restored acreages per year.

Other Conservation Impacts—Alternative B (Proposed Action)

Wetland, riparian, grassland, and shrubland habitat would remain intact. Because the proposed action would keep intact wildlife habitat on working lands through conservation easements, ecosystem services would be available for local residents (Millennium Ecosystem Service Assessment 2005). Ecosystem services such as pollination, water purification, nutrient cycling, carbon sequestration, soil conservation, and control of pest insects by birds are often unrecognized or are considered "free." These services would not be provided in areas that have undergone residential or commercial development.

The proposed action would help protect valuable ecosystem services, as shown in figure EA–8 above. Furthermore, it would eliminate the need for expensive restoration of disturbed land and habitat.

Dodds et al. (2008) found that wetlands had the greatest value for each of the ecosystem services examined in both native and restored habitat. The most valuable ecosystem goods and services that wetlands provided were disturbance regulation and nutrient cycling. The greater value per area of wetlands did not translate to an equally large disparity in total value because the total area of wetlands is substantially less than that of terrestrial ecoregions within the United States.

Conservation easements on private lands would strengthen habitat resiliency and provide opportunities for wildlife movement and adaptation for years to come.

Public safety is an added benefit of conservation easements that limit development in wetlands and riparian areas. Some areas within the Bear River watershed have a moderate to high likelihood of a natural disaster that could cause harm to both the residents and structures in these areas. The major hazards that are located within the watershed include flooding, landslides, earthquakes, and soils that are susceptible to liquefaction (Toth 2010).

Effects on Cultural Resources

This section describes the anticipated effects of alternatives A and B on cultural resources.

Cultural Resources—Alternative A (No Action)

Cultural resources on the lands under consideration would remain subject to State and local regulation and permitting. Cultural resources could be negatively affected by differing land uses or development. Activities not requiring permits could contribute to the loss or damage of cultural resources, especially if resources have not been identified.

Cultural Resources—Alternative B (Proposed Action)

As a Federal agency, the Service is required to comply with many laws pertaining to cultural resources, including the National Historic Preservation Act (16 U.S.C. 470 et seq., Public Law 89–665, the Archaeological Resources Protection Act of 1979 (16 U.S.C. 470aa–470mm; Public Law 96–95), as amended, and the Native American Graves Protection and Repatriation Act of 1990 (25 U.S.C. 3001 et seq., Public Law 101–601). Although conservation easements would preclude or limit most forms of surface disturbance, these requirements would not apply to or be fully effective in protecting cultural resources on private lands with easements. However, the proposed action provides benefits to cultural resources when compared to the no-action alternative because easements would limit surface disturbance.

Unavoidable Adverse Impacts

Any adverse effects that could be unavoidable while carrying out alternatives A and B are described below.

Alternative A (No Action)

The adverse impacts of habitat degradation and fragmentation would be expected to be more widespread and prevalent in the proposed project area. Some habitat protection would continue through existing authorities and funding.

Alternative B (Proposed Action)

No direct or indirect, unavoidable, adverse impacts to the environment would result from the selection of alternative B. The easement program would not result in unavoidable adverse impacts on the physical or biological environment. The selection of an approved boundary would not, by itself, affect any aspect of landownership or values. Management of lands to protect wildlife habitat would benefit ranching operations, but would limit future development options for landowners.

More conservation easements acquired by the Service could have unavoidable minimal to moderate adverse effects on the local economy by precluding new mining oil, gas, wind, and residential development on easement lands. However, these impacts would be offset in part by protecting these areas from adverse impacts to watersheds, which are important to aquifer recharge and water quality, from further degradation or loss of native ecosystems, and from conversion of prime agricultural lands.

Irreversible and Irretrievable Commitments of Resources

Any commitments of resources that could be irreversible or irretrievable because of carrying out alternatives A and B are described below.

Alternative A (No Action)

There would be no added commitment of resources by the Service if no action were taken.

The likely introduction of new residential and commercial infrastructure in the Bear River watershed would be considered an irretrievable loss of habitat. The irretrievable loss of habitat caused by the development of new residential and commercial infrastructure in the Bear River watershed could eventually lead to an irreversible loss of both wildlife species and habitat.

The new infrastructure could effectively cause an irretrievable loss of habitat for certain wildlife species because of their avoidance of infrastructure. With the loss of habitat, some of these wildlife species could be pushed toward threatened or endangered status. Without other suitable habitat being available, there could be an irreversible loss to some of these species.

The connectivity between various habitat types and migration corridors between the three national wildlife refuges and other large areas of protected

lands would be reduced or possibly eliminated without more conservation of important wildlife areas.

In 2009, The Nature Conservancy conducted a Conservation Action Planning study in the Bear River watershed and found that residential development and water allocation policies are the greatest threats to wildlife conservation in the watershed (The Nature Conservancy 2010). Because the Bear River watershed is considered one of the last areas of Utah with a developable water supply, there is a concern that development pressure and demand for water will adversely affect sensitive refuge habitats and ecosystems (Toth et al. 2010). Without more measures such as wetland easements to keep some of the current water uses and applications, there could be irreversible impacts to wetlands and riparian ecosystems.

The connectivity between various habitat types and migration corridors between the three national wildlife refuges and large areas of protected lands would be reduced or possibly be maintained with added protection of important wildlife habitat with conservation easements.

Alternative B (Proposed Action)

There would not be any irreversible or irretrievable commitments of resources associated with establishing the conservation easement program; however, any easements that are acquired with Land and Water Conservation Funds would require an irretrievable and irreversible commitment of resources (such as expenditures for fuel and staff for monitoring) for the long-term administration of the easement provisions.

The introduction of new residential and commercial infrastructure to the Bear River watershed would be greatly restricted on conservation easement lands, so this alternative would reduce the likelihood of an irretrievable loss of habitat associated with development. The irretrievable loss of habitat caused by the development of new residential and commercial infrastructure in the Bear River watershed that would eventually lead to an irreversible loss of both species and habitat could be minimized under the proposed action.

With the protection measures provided by the wetland conservation easements, some of the current water uses and applications could be retained and irreversible impacts to wetlands and riparian ecosystems related to water loss could be reduced or avoided.

Short-Term Use versus Long-Term Productivity

This section describes the short-term effects versus long-term productivity under alternatives A and B.

Alternative A (No Action)

Wetlands and uplands are expected to continue to be lost at current, or in some areas, increasing rates of development, which would create long-term negative implications for the maintenance of the biological and ecological communities now found in the watershed. Although efforts to conserve these habitats would continue through ongoing efforts by existing agencies and organizations as well as funding, the ability to conserve large tracts of wetlands and uplands would be diminished and fragmentation of these habitats would continue.

Ranches and agricultural lands could be sold to developers for short-term gains, but the expected rates of development would have an adverse effect on the long-term biological and agricultural productivity of the area.

Over the long term, the costs to counties to sustain development in rural areas could be significant (see the "Landownership and Land Use" section above). Wind energy and oil and gas development would provide short-term income gains, but would have a long-term adverse impact on the wildlife habitats in the Bear River watershed and region.

Alternative B (Proposed Action)

The increased ability to acquire perpetual conservation easements under the proposed action would conserve important wetland and upland areas and reduce long-term loss and fragmentation of important habitats that a variety of wildlife species, including threatened and endangered species, depend on.

The proposed conservation easement program would maintain the Bear River watershed's long-term biological productivity, biological diversity, and habitat connectivity as well as migration corridors to other ecosystems and adjacent large blocks of protected lands.

The ability to sell conservation easements would provide an immediate economic benefit to participating landowners while maintaining the long-term agricultural heritage and productivity of the area.

The nation would gain the protection of these habitat types for the wildlife species that depend on them for future generations of Americans. The public

would retain long-term opportunities for wildlife-dependent recreational activities.

Cumulative Impacts

Cumulative impacts are defined by the National Environmental Policy Act as the impacts on the environment that result from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such actions (40 Code of Federal Regulations [CFR] § 1508.7).

This section describes the cumulative impacts on the environment that could result from the combination of reasonably foreseeable actions under alternatives A and B, with other biological and socioeconomic conditions, actions, events, and developments.

Past Actions

Previous land protection efforts within the Bear River watershed included the establishment of the three national wildlife refuges—Bear Lake National Wildlife Refuge (18,089 acres), Bear River Migratory Bird Refuge (74,421 acres), and Cokeville Meadows National Wildlife Refuge (9,259 acres)—the Thomas Fork Unit of Bear Lake National Wildlife Refuge (1,015 acres), and Oxford Slough Waterfowl Production Area (1,878 acres). Sagebrush Steppe Regional Land Trust, Wyoming Land Trust, and the Wyoming Stock Growers Agricultural Land Trust have worked with a variety of partners to acquire conservation easements in the watershed.

Present Actions

The Service's proposed Bear River Watershed Conservation Area easement program, which would establish up to 920,000 acres of conservation easements in the Bear River watershed, is the only known action of this scope and scale for land protection in the region. Once approved, it would take several years for the program to begin to have a noticeable effect. Acquisition of easements would depend on available funding and willing sellers.

Reasonably Foreseeable Future Actions

Reasonably foreseeable actions are actions and activities that are independent of the proposed action but could result in cumulative or additive effects when combined with the proposed action. These actions are anticipated to occur regardless of which alternative is selected. Commercial oil and gas, mining, wind, and residential development; increased water demands; and future conservation efforts by a variety of organizations are the primary reasonably foreseeable actions occurring in the Bear River watershed.

Development

Overall, mining represents a relatively small percentage of total employment for many of the counties in the region, but has increased slightly since 1998 (U.S. Census Bureau 2011, Headwaters Economics 2011). In particular, employment in nonmetallic mineral mining increased by 124 percent, oil and gas extraction decreased by 64 percent, and metal ore mining decreased to zero by 2009 (U.S. Census Bureau 2011, Headwaters Economics 2011). One of the most economically significant nonmetallic mining activities during the past 50 years has been phosphate extraction, with roughly 40 percent of the United States' reserves located in southeastern Idaho (van Every 2004).

The acreage that has potential for wind energy development is relatively low in Idaho and Utah, with 1.67 percent and 1.19 percent of the State available for such development, respectively. Wyoming has a higher development potential at 43.58 percent (National Renewable Energy Laboratory 2011). Most of the land with potential for wind energy development would still be available under the proposed action.

Population growth is expected throughout much of the region, with most of the growth centered on the Cache Valley. Located in the western part of the Bear River watershed in Utah, the Cache Valley is the most populated area in the watershed. It has experienced a population increase of 64 percent since 2000, and it is anticipated to double in population by 2050 (Utah Division of Water Resources 2004).

Lincoln County, home to the Cokeville Meadows National Wildlife Refuge, has grown by 24 percent since 2000, making it the fastest growing county among the Wyoming counties in the proposed conservation area.

Bannock County has the largest population of the Idaho counties located within the watershed; it has grown by 10 percent since 2000. The populations of two other Idaho counties, Caribou County and Bear Lake County, have decreased by 5 percent and 7 percent, respectively.

Development—Alternative A (No Action). The incremental increases in infrastructure construction resulting from commercial and residential

development activities in the Bear River watershed would likely result in the fragmentation of wetland, riparian, grassland, and shrubland habitats now used by wildlife. Over the long term, the combined effect of these activities would likely result in the continuation, and possibly the acceleration, of the decline of many wildlife populations.

Development—Alternative B (Proposed Action). The proposed action would provide more long-term protection on up to 920,000 acres of wildlife habitat from the combined effects of various future development activities by precluding surface occupancy and the resultant habitat fragmentation and infrastructure.

Other Conservation Efforts

The USDA's Conservation, Grassland, and Wetland Reserve Programs provide ongoing programs in the watershed. Additionally, many nongovernmental organizations are active in the area, including Bridgerland Audubon, The Nature Conservancy, Ducks Unlimited, Trout Unlimited, and Wyoming Stock Growers Agricultural Land Trust. These organizations are expected to continue offering multiple programs to landowners. The proposed action would augment these current conservation efforts by collaborating with landowners to protect wildlife, fisheries, and working agricultural lands. The Service would continue to work with other agencies, organizations, and individuals to ensure conservation of migratory birds, threatened and endangered species, and species of special concern.

The Service's Partners for Fish and Wildlife program would likely continue to help landowners in the watershed under either alternative. With the proposed action, this program could increase its efforts in the watershed because of the increased Service interaction with local landowners and the added benefit of habitat restoration and enhancement on lands protected by perpetual conservation easements.

The conservation efforts of these groups would result in generally beneficial cumulative effect for the wildlife resources of the watershed.

Conservation Efforts—Alternative A (No Action). Current Service programs such as Partners for Fish and Wildlife would continue within the proposed conservation project area. The Service would continue to work cooperatively with landowners to voluntarily improve habitat on private land. Those landowners wishing to sell easements on their lands would have fewer options for selling them.

Conservation Efforts—Alternative B (Proposed Action). Through the proposed easement program, up to 920,000 acres of privately owned wetland, riparian, grassland, and shrubland habitats could be added to the 2.53 million acres within the proposed project area that already have some level of protection. This would have long-term positive impacts on wildlife habitat and would result in the long-term conservation of migratory birds, threatened and endangered species, resident wildlife species, native plants, and the overall biological diversity of the proposed Bear River Watershed Conservation Area.