Chapter 4.0 – Environmental Consequences

4.1 Environmental Consequences Related to Natural Resource Concerns

4.1.1 Alternative A: No Action

Marais des Cygnes NWR operations would continue to operate at the current level, entirely in the State of Kansas. The 7,500 acres of current holdings could be expanded by acquiring additional lands within the original approved acquisition boundary encompassing 9,300 acres. Management efforts would be directed toward achieving existing resource goals in Kansas.

The consequences of Alternative A are described for each of the following natural resource concerns and goals.

Protect and increase the diversity and abundance of migratory bird and waterfowl species dependent on bottomland hardwood and tallgrass prairie habitats.

Fescue grassland near Mulberry Creek.

Diversity of the proposed Addition area would likely decrease over time as native prairies are replaced by fescue, noxious weeds, and forest. Bottomland forest would continue to decrease as it is replaced with cropland or waterfowl hunting marshes. Whether future conversion of bottomland forests will largely be to cropland, or to hunting marshes, is difficult to determine. Many variables including waterfowl populations, the economy, weather patterns, and farm programs greatly influence land use patterns in the area.

Croplands do provide food for migrating waterfowl, especially for geese. Most of the year, however, croplands are of little value to wildlife. Waterfowl marshes in the region are used by waterfowl and other wetland birds when they are flooded. Waterfowl marshes are generally flooded from September through February and drained in March. Sometimes they are allowed to grow native marsh plants. Other times they are planted to crops. The values of waterfowl marshes to wildlife diversity varies greatly depending on how the marshes are managed.

While a few hunting marshes likely add to the wildlife diversity of the area, many such marshes, particularly if bottomland hardwood forest or wet prairie are eliminated to create them, would decrease wildlife diversity.

Forest sites that are not converted to other uses would likely be logged as trees become mature. Most grasslands would likely continue to be grazed season-long

and thus not provide a variety of plant species and vegetation heights. The continued sparsity of old mature timber and variety of grassland cover heights would likely prevent further increases in abundance and diversity of wildlife in the area.

Protect and restore Federally listed and State-listed Threatened and Endangered Species.
The number and abundance of endangered species would likely decrease over time. Impacts would vary greatly depending on the species. Bald eEagles, particularly wintering populations, would be less impacted while Mead's milkweed, a grassland plant, would be greatly impacted. The kinds of impacts to habitat that are likely to occur are the same as those discussed in the above section.

Conserve, manage, and restore the diversity and viability of native fish, wildlife and plant populations associated with bottomland hardwood and tallgrass prairie.
In general, the diversity and abundance of native, non-migratory wildlife would likely decrease over time for the same reasons as discussed in the above section about migratory bird and waterfowl species. Quail populations would likely continue to decline as upland brushland becomes forest and fescue continues to dominate grasslands. Some species, such as Turkey and white-tailed deer, would likely remain at current levels or even increase over time as upland forest habitat increases.

Fish and mussel abundance and diversity would decrease greatly if levees are constructed along the River and bottomland forests are replaced with cropland. Levees would prevent access of the floodplain to fish. The floodplain provides an important aquatic food resource and floodplain wetlands provide nursery habitat for many aquatic species including paddlefish.

Work in partnership with others, including private landowners, to restore or enhance bottomland hardwood forest, tallgrass prairie, and other unique plant communities.
Little effort would be made by Refuge staff to deliberately contact private landowners and encourage specific management practices. Landowners requesting assistance would be assisted, however.

Private lands biologists with the Fish and Wildlife Service and Missouri Department of Conservation as well as Natural Resource Conservation staff could provide assistance and information about specific conservation programs. These personnel have been providing assistance throughout the region for many years and will likely do so in the future as well.

Restore, enhance, and protect water quality and quantity that approaches natural hydrologic functions.
If levees are constructed, river hydrology would change greatly. Floodplain areas without levees would experience more severe flooding. The River would also scour the riverbed much more vigorously, which would remove some mussel beds and fish spawning beds and reduce the fine rock particles in others, making them of lesser quality.

If existing grassland and forest areas are converted to cropland, increased sediment would be deposited into the River. This sediment could negatively impact mussel beds and fish spawning beds.

4.1.2 Alternative B: Protect and Restore Habitat in the Marais des Cygnes Floodplain in Missouri through Land Acquisition

Purchase additional lands, fee title, only in the floodplain, in order to expand the Refuge capability to protect, restore and preserve floodplain habitat associated with the Marais des Cygnes River by extending the Refuge into the Marais des Cygnes/West Osage River Basin of Missouri.

The main difference between Alternative B and Alternative C (next section) is that Alternative B primarily targets the floodplain with restoration of wetlands and bottomland hardwoods as primary goals while Alternative C includes these goals as well as the protection and restoration of native prairie on the uplands adjacent to the floodplain.

The consequences of Alternative B are described for each of the following natural resource concerns and goals.

Protect and increase the diversity and abundance of migratory bird and waterfowl species dependent on bottomland hardwood and tallgrass prairie habitats.
Bottomland cropland and grassland sites would be planted to bottomland hardwood forest or restored to wetland. Fescue grassland sites that were wet prairie, according to the 1857 land survey, would be restored to wet prairie. Most of the bottomland was not historically wet prairie, therefore wet prairie restoration would be limited.

The forests of the bottomland would change from a fragmented landscape of many small forests of mostly young trees to a landscape of large tracts of forest with many mature trees. The forests would be interspersed with many shallow, depressional wetlands and deeper oxbow wetlands.

Wetlands would not be routinely filled in the fall and drained in the spring, as most duck marshes are, which would provide summer breeding habitat for many species of marsh birds.

Species requiring expansive tracts of bottomland forest and mature trees will increase, including rRed-shouldered Hawk and Cerulean Warbler. Many other species such as, broad-head skink, flat-floater mussel, Wood Duck, and Hooded Merganser would also benefit.

Protect and restore Federally listed and State-listed Threatened and Endangered Species.
Species that use wetlands and bottomland forest would benefit. Bald Eagles, both breeding and migratory birds, would have an increased number of wetlands available for feeding, even in the summer, when most duck marshes are dry. Large mature trees used for nesting and perching would be available near most feeding sites.

Populations of Piping Plover and Least Tern migrate through the area in the spring and fall. During dry periods, exposed areas along the River and adjacent to wetlands could provide a limited amount of habitat.

Western prairie fringed orchid may occur in wet prairie sites. Wet prairie sites that are hay meadows would likely be hayed less often and burned more often. Lands adjacent to the sites that are not currently wet prairie but were wet prairie historically would be restored. These restored lands would act as a buffer where forest and noxious weed invasion could be controlled with less impact to the native prairie.

The scale shell mussel may occur in mussel beds in the Marais des Cygnes River. Management activities that reduce silt loads and improve habitat for fish species used by the scale shell mussel for dispersal should help the species.

Conserve, manage, and restore the diversity and viability of native fish, wildlife and plant populations associated with bottomland hardwood and tallgrass prairie.
Resident forest and wetland species including Turkey, white-tailed deer, gray fox, otter, flat floater mussel, and broad head skink would increase as forest and wetland habitats become more available.

Increases in habitat for resident wildlife in the area would likely increase wildlife populations on adjacent private land, which currently provides limited types of cover needed by wildlife such as nesting, brood, escape, feeding, and winter cover.

Work in partnership with others, including private landowners, to restore or enhance bottomland hardwood, tallgrass prairie, and other unique plant communities.
Private landowners adjacent to and within an approved acquisition boundary would be encouraged to conduct restoration of bottomland hardwood forest, wetlands, and wet prairie. Efforts would especially concentrate on sites where restoration would create large tracts of forest.

Restore, enhance, and protect water quality and quantity that approaches natural hydrologic functions. Reduction of cropland and restoration of forests and wetlands would reduce local sediment loads into the Marais des Cygnes River. The blocking of drainage ditches and W-ditches, in addition to restoring wetlands, would also help to decrease sediment loads and slow run-off into streams and the River. These measures, as well as the installation of rock and/or concrete structures on small streams, could stop head-cutting of tributary streams. All of these actions would result in a much more wet floodplain, which would allow shallow marshes to hold water for longer periods of time and allow bottomland hardwood forest species to out compete upland forest species throughout more of the floodplain.

Removal of levees within the study area would make more floodplain habitat available for terrestrial and aquatic wildlife, lessen the scouring effect on river mussel and spawning beds, and decrease the duration and heights of floods immediately upstream of the levees.

4.1.3 Alternative C: Protect and Restore Floodplain and Adjacent Upland Habitat along Missouri Reaches of the Marais des Cygnes River by Acquiring Additional Lands (Preferred Alternative)

Purchase additional lands, fee title, in order to expand the Refuge capability to protect, restore and preserve bottomland, wetland, and native prairie habitat on lands adjacent to and nearby the Marais des Cygnes River in Marais des Cygnes/West Osage Basin of Missouri.

The main difference between Alternative C and Alternative B is that Alternative B primarily targets the floodplain with restoration of wetlands and bottomland hardwoods as primary goals while Alternative C includes these goals as well as the protection and restoration of native prairie on the uplands adjacent to the floodplain.

This alternative is preferred by the U.S. Fish and Wildlife Service because it provides the broadest and most permanent form of protection to natural resource values of the targeted reach of the Marais des Cygnes River in Missouri.

The consequences of Alternative C are described for each of the following natural resource concerns and goals. The consequences regarding the floodplain were described in Alternative B and are the same for Alternative C, therefore, only consequences regarding the uplands are discussed below.

Protect and increase the diversity and abundance of migratory bird and waterfowl species dependent on bottomland hardwood and tallgrass prairie habitats.
Fescue grasslands would be managed to lessen or remove fescue in favor of native prairie species. Management efforts could include short-term farming, early spring herbicide application, late spring burns, and intense spring-fall grazing. The types of management actions taken would largely depend on the plant and animal diversity present on the site.

Restored grasslands would likely be managed with a combination of grazing and prescribed fire. Grazing would likely be rest-rotational, which would allow a diversity of grassland heights and density and prevent individual species of native plants from being eliminated from an area due to grazing pressure. Haying would not be frequently employed.

Trees along fence rows and draws would be removed to reduce perches for avian predators and grassland fragmentation. Large patches of upland forest would not likely be removed but may be restored to savannah if species such as bur oak and post oak are present.

The increase in native plant diversity, diversity of grassland heights and density, and reduction of grassland fragmentation should greatly increase the abundance and diversity of grassland birds.

Some of the migratory bird species likely to be benefitted are: Barn Owl, Short-eared Owl, Northern Harrier, Swainson's Hawk, Loggerhead Shrike, Upland Sandpiper, Bell's Vireo, Henslow's Sparrow, Grasshopper Sparrow, Dickcissel, and Scissor-tailed Flycatcher.

Protect and restore Federal and State Threatened and Endangered Species.
Mead's milkweed likely occurs on some of the native prairie sites. The greatest threats to these populations are invasion by Sericea lespedeza, an aggressive noxious weed, and subsequent control with broadcast application of herbicide. Management efforts would strive to identify all Mead's milkweed populations and carefully spot-spray Sericea plants near the sites with an approved herbicide such as Garlon. Other threats to sites are herbicide drift from adjacent pastures or crop fields and invasion by forest. All Mead's milkweed sites would be protected with large buffers of restored prairie.

American burying beetle and running buffalo clover likely occurred in the area historically. No populations are known to exist in the area. Restoration of these species would be periodically evaluated as prairie restoration efforts advance.

Several state-listed threatened and endangered species occur in the area and would be benefitted by grassland restoration efforts. Many of these are migratory species identified in the previous section.

Conserve, manage, and restore the diversity and viability of native fish, wildlife and plant populations associated with bottomland hardwood and tallgrass prairie.
Black tailed jack rabbit, Greater Prairie Chicken, and Bobwhite Quail would be benefitted by grassland restoration efforts. All of these species are in serious decline in the region. Many factors are likely affecting population declines. However, the dominance of fescue grass, increased presence of trees and mature upland forest, and fragmentation of grasslands are likely major factors affecting these and other native grassland species.

Efforts to restore native prairie, reduce the presence of upland trees, and eliminate grassland fragmentation should help native grassland species.

Work in partnership with others, including private landowners, to restore or enhance bottomland hardwood, tallgrass prairie, and other unique plant communities.
Private landowners adjacent to and within an approved acquisition boundary would be encouraged to conduct restoration of native prairie. Efforts would especially concentrate on sites where restoration would create large tracts of grassland.

Restore, enhance, and protect water quality and quantity that approaches natural hydrologic functions.
Grasslands would be managed to leave more litter on the ground, which would lessen erosion. Crop fields would be planted to grass, which would further reduce erosion.

4.1.4 Alternative D: Protect and Restore Additional Floodplain and Adjacent Uplands through Long-term Easements and Private Land Programs

Expand the Refuge's capability to protect and restore floodplain and upland habitat on private lands entirely through easements and agreements with land owners.

The consequences of Alternative D are described below for each of the following natural resource concerns and goals. However, a short discussion regarding easements precedes these descriptions.

The Wetland Reserve Program (WRP) and Conservation Reserve Program (CRP) are two programs administered by the Natural Resource Conservation Service (NRCS), U.S. Dept. of Agriculture, which benefit wildlife. Both WRP and CRP sites exist in the study area

Wetland Reserve Program agreements are long-term easements that occur only in the floodplain and result in areas being restored to wetland and planted to wet prairie and bottomland forest. The program provides excellent habitat for bottomland wildlife. However, a number of factors make the program unattractive to many landowners. Draw-down or discing of wetlands for waterfowl management purposes requires written permission, which is sometimes difficult or not possible to obtain. Harvest of pecans and firewood is prohibited. Future construction of roads and buildings is prohibited. The purchase of these easements is little different than outright purchase of the land in that the cost of the easements is often very close to the appraised value of the property and nearly all property rights are owned by the government other than public access.

The CRP program involves short-term easements, generally 10 years in length, which mostly occur on uplands. Most often, uplands are planted to native grasses and forbs. The program has been a boon to grassland wildlife, especially species requiring dense grassland cover. However, no grazing is allowed on CRP sites and many are not burned, which results in serious invasion by trees on some sites. In areas where CRP sites are prevalent, the landscape is more diverse, however, grasslands are generally dominated by either very short grass or very tall rank grass with little in between in regards to density or heights, limiting the ability of the grassland landscape to increase wildlife diversity.

Other easement options could be developed by the Service to complement WRP and CRP. While these options may be more attractive to some landowners, there will always be landowners who don't want to be encumbered by easements and would simply prefer to sell their land.

While easements offer a tremendous opportunity to improve wildlife habitat across broad landscapes, they are of much less value when targeting a specific area where many tracts of land must be similarly managed to create landscape goals such as reduction in habitat fragmentation. Also, most easements with habitat goals do not provide access to the public.

Protect and increase the diversity and abundance of migratory bird and waterfowl species dependent on bottomland hardwood and tallgrass prairie habitats.

Easements would increase wetland and grassland restoration throughout the area and thus increase the abundance of migratory bird and waterfowl species. Specific management practices such as timing and application method of herbicides in controlling weeds and trees and timing and frequency of burning would vary greatly depending on landowner interest and funding. These differences would affect the diversity and abundance of wildlife on a given site. Ways to encourage rest-rotational grazing to provide a diversity of grassland heights and density would be the most difficult obstacle to overcome.

Protect and restore federally and state-listed threatened and endangered species.
Many landowners are very uncomfortable about having endangered species on their property and are unlikely to favor restoration or re-introductions on their property for fear of government interference in their management of the land or outright condemnation of their property.

Conserve, manage, and restore the diversity and viability of native fish, wildlife and plant populations associated with bottomland hardwood and tallgrass prairie.
The consequences to native wildlife would be much the same as those discussed in the above section regarding migratory birds and waterfowl.

Work in partnership with others, including private landowners, to restore or enhance bottomland hardwood, tallgrass prairie, and other unique plant communities.
Vigorous effort would be made to encourage landowners to restore grassland and bottomland hardwood forest, and available habitat restoration programs would be thoroughly explained. However, only one-third of the landowners in the proposed Addition area reside in Bates County. Nearly half of the landowners do not reside in Missouri. Because of the high number of absentee landowners, the ability or interest of landowners to more aggressively manage their land to benefit wildlife will naturally be limited. In many cases a tenant makes most of the land management decisions. Tenants who graze or farm generally have little interest in taking cropland out of production, reducing grazing levels, or spot spraying rather than broadcast spraying noxious weeds.

Restore, enhance, and protect water quality and quantity that approaches natural hydrologic functions.
Water quality would likely improve but would be limited by the interest in landowners to take cropland out of production, reduce grazing levels, and restore wetlands, prairie, and bottomland forest.

4.2 Consequences of Alternatives Related to the Socioeconomic Environment

This section examines the alternatives regarding their respective ability to address the following social goals:

1) Provide for compatible wildlife-dependent recreational uses by the public.

2) Emphasize increased public understanding of bottomland hardwood forest and tallgrass prairie ecosystems and the mission of the National Wildlife Refuge System.

This section also examines the potential effects on some key issues, including tax revenue and the local economy, that may result from the acquisition, operation, and maintenance of a national wildlife refuge in the study area.

Alternatives B and C require land acquisition and Alternatives B, C, and D require the need for Refuge administration. For this reason, all of the alternatives are addressed together within this section. Alternative A, No Action implies, with a few noted exceptions, that the local economy and taxes will follow current trends.

4.2.1 Recreational Opportunities

Alternatives A and D do not require land acquisition. Under these alternatives public use within the Addition area would likely be quite limited. Permission from private landowners would be required to hunt, fish, and visit lands within the area. Granting of permission would likely be highly variable depending on the type of desired use, time of year, and the individual landowners' tolerance of public visitors.

Alternatives B and C require land acquisition. Under these alternatives much of the land within the Addition area, following purchase by the Service, would likely be available for wildlife-dependent recreation and interpretation. Alternative C, which includes both bottomland and upland areas, would provide more opportunities than Alternative B, which only includes bottomlands, as there are few roads into the bottoms, roads are generally poor, and the bottoms often flood during the spring and fall, which is when most people wish to visit the area.

The opportunity for wildlife-dependent public recreational uses would increase under alternatives B and C. The Refuge Improvement Act of 1997 identifies six priority uses as wildlife-dependent recreational activities: hunting, fishing, wildlife observation, photography, environmental education, and interpretation. These uses are encouraged on refuges when they are compatible with the purposes of the refuge. All lands acquired for refuges are closed to all public uses unless specifically opened. Prior to, or soon after lands are purchased of sufficient size and location to allow public uses, appropriate management plans and the Refuge Comprehensive Conservation Plan will be amended to include the Addition area. It is anticipated that all six priority uses will be allowed as soon as a sufficient land base is acquired within the Addition area. Public recreational uses are currently permitted on Marais des Cygnes National Wildlife Refuge in Kansas.

4.2.2 Taxes

Alternative D proposes to expand the Refuge's capability to protect and restore floodplain and upland habitat on private lands through the Private Lands Program, and would therefore have no impact on local taxes. Land acquisition under Alternatives A, B and C would likely occur over 20 years or more. The extent of fee ownership by the Service is difficult to predict as it depends on the landowner's desire to sell land and whether buildings are included. It is also difficult to predict future tax assessments over such a long period. Any lands acquired in fee/full title by the Service will no longer be on the local taxing jurisdiction's property tax rolls. However, Refuge Revenue Sharing, which is further explained in Section 4.3.3, should provide tax revenues equal or greater than current revenues.

The Refuge Revenue Sharing Act authorizes payments based on the greatest return to the county and is calculated under one of three formulas: 1) 75 cents

per acre; 2) 25 percent of the net revenue from sales of local Refuge products; or 3) three-quarters of 1 percent of the appraised value of the property. Appraised value is evaluated on the type of land use at the time of purchase by the Service and is re-evaluated every 5 years. If the land was being hayed or grazed at the time of purchase it will always be re-evaluated as that land use, regardless of the use the Service makes of the land.

Recent Revenue Sharing payments made to counties on Service lands at Big Muddy National Wildlife Refuge near Columbia, Missouri, consistently presented payments greater than what was previously received when the land was in private ownership, even on leveed crop fields (Tom Bell, Refuge Manager).

The conversion of existing agricultural lands to native wetlands and prairie will require little or no new local government services. The tax burden for road construction or repair may be reduced by the presence of a wildlife refuge and could help eliminate any future tax shortfall.

4.2.3 The Local Economy

Alternatives A and D would likely have little or no impact on the local economy. Under Alternative A, the Refuge would be authorized to purchase approximately 2,200 acres to the original boundary of 9,300 acres. Because the land purchased would be minimal and would occur over time as people decided to sell property, any change to the economy would be minimal. Alternative D focuses on the Service's Private Lands Program, with no impacts to the local economy anticipated.

The local economy can experience some changes during the formation of a new national wildlife refuge. Under Alternative B and Alternative C, the proposed Addition would likely create increased spending in the area by visitors to the Refuge, reduced agricultural production comparable to the Conservation Reserve Program, and increased expenditures by the Service to build and maintain Refuge facilities. In addition, the new Addition would likely require additional staff, equipment, and facilities.

The Addition area would likely be developed over the course of 20 years or more. During that time, funds would be needed for engineering and construction. Several hundred thousand dollars would be expended returning the lands to wetlands, bottomland hardwood forest, and native prairie. This money would be expended locally for items such as native grass seed, fuel, and contracts with heavy equipment operators for wetland restorations.

National wildlife refuges are recognized by many wildlife recreationists, including hunters and bird watchers, as desirable destinations and many go out of their way to visit refuges. Under Alternative A and Alternative B, such nonresident and regional visitors to the Addition area will contribute a positive level of spending to the local economy. The communities of Amoret and Butler, Missouri, would very likely see an increase in visitors seeking food and lodging accommodations.

The Addition area is within 45 miles of the southern edge of the Kansas City metropolitan area, which has a population of 1.6 million people. It is also within

10 miles of two major north-south U.S. highways, U.S. 69 located 4 miles to the west and U.S. 71 located 10 miles to the east. U.S. 71 is a four-lane freeway and U.S. 69 is scheduled to be a four-lane freeway by 2007. The proximity of both a major metropolitan area and major highways could encourage extremely high visitation levels. The amount of visitation to the area would likely need to be controlled to prevent over-use. Control activities could be by many means, including drawings for some hunts or limitations on access. The amount of visitation desired and ways to control visitation would be discussed in public meetings and outlined in appropriate management plans prior to any lands being opened for public use.

Approximately 60-80 percent of visitors to Marais des Cygnes National Wildlife Refuge in Kansas come from the Kansas City metropolitan area. Most visitors come to hunt and fish, however, development of Refuge trails and wildlife viewing areas is gradually encouraging many other kinds of visitors to come to the Refuge.

Most hunting and fishing visitors to the Refuge come from Kansas, largely due to the expense of out-of-state licenses. Most hunting and fishing visitors to the Addition area, for similar reasons, are expected to come from Missouri. Interest by the public in visiting the Addition area in Missouri is expected to be similar to that at the Refuge in Kansas.

Bates County has many retirees and city commuters who desire easy access to a major metropolitan area yet wish to live in a rural setting. The presence of the Addition area under Alternative A or Alternative B would likely encourage more movement of citizens into the county. Most new residents would likely live in nearby communities.

In summary, the Addition proposed to Marais des Cygnes National Wildlife Refuge under alternatives B and C would likely have a net positive effect on county-level economic activity and could generate considerable social benefits. No change in economic activity is expected with either Alternative A or Alternative D. The value of natural areas, such as wildlife refuges, to people and their quality of life is difficult to measure in conventional economic terms. National wildlife refuges enhance the regional, state and the nation's stock of natural assets and provide important, but less tangible, benefits to its citizens, including clean water, natural beauty and abundant wildlife, fish and plants. Nevertheless, the Service recognizes that potential changes in the local and regional economy are important considerations.

4.3 Consequences of Alternatives Related to Local Land Use Including Land Acquisition, Cultural Resources, Refuge Management and Administration

This section examines potential effects on landowners and local residents that may result from the acquisition, operation and maintenance of a national wildlife refuge in the study area. All of the alternatives, except the No Action Alterna-

tive, include the need for future refuge administration. For this reason, all of the alternatives are addressed together within this section. More detail can be found regarding management of purchased lands in Appendix A, the Interim Comprehensive Conservation Plan (ICCP). The ICCP provides general guidelines for the future management and administration of the proposed Addition.

4.3.1 Landowner Rights Adjacent to Refuge Lands

If an Addition to the Refuge is established, the Service would have no more authority over private land within or adjacent to the boundaries of the Refuge than any other landowner. Landowners within a project boundary retain all of the rights, privileges, and responsibilities of private land ownership. The presence of refuge lands does not afford the Service any authority to impose restrictions on any private lands. Control of access, land use practices, water management practices, hunting, fishing, and any other general use is limited to those lands in which the Service has purchased a real estate interest or rights.

Owning land adjacent to Service land does not change any regulations that currently apply and does not impose any new regulations on private property. Enforcement of regulations pertaining to pesticides, drainage, pollution, hunting, fishing, trapping, etc., on private land would continue to be enforced as they were prior to establishment of an Addition to the Refuge. The Service also abides by local regulations the same as any other landowner. In addition, land managed by the Service will be posted in order to avoid trespass on private land by Refuge visitors.

4.3.2 Service Land Acquisition Policies

Service policy is to buy land only from willing sellers. No land or rights to land would be acquired without the willing participation of the individual or individuals owning land or rights to the land, including appropriate just-compensation for those rights. The Service is required to make purchase offers based on fair market value, which can be described as matching the price of comparable land in the same area.

It is also Service policy to seek the least amount of land ownership necessary to meet resource protection goals. Alternatives B and C would include primarily land acquisition. Alternative D includes voluntary land protection, stewardship, and other private conservation measures as options for landowners.

Condemnation of land is another frequent issue. The policy of the Fish and Wildlife Service is to purchase lands from willing sellers only. Condemnation has not been used to acquire any lands for the Marais des Cygnes National Wildlife Refuge in Kansas, which has been purchasing lands for 10 years.

4.3.3 Revenue Sharing Payments

The Refuge Revenue Sharing Act authorizes payments based on the greatest return to the county and is calculated under one of three formulas:

1) 75 cents per acre;

2) 25 percent of the net revenue from sales of local refuge products; or

3) Three-quarters of 1 percent of the appraised value of the property. Appraised value is evaluated on the type of land use at the time of purchase by the Service and is re-evaluated every 5 years.

Funding for these payments comes from two sources: (1) net receipts from the sale of products from National Wildlife Refuge System lands (oil and gas leases, timber sales, grazing fees, etc.) and (2) annual Congressional appropriations.

The amount of a Revenue Sharing payment is directly tied to the appraised market value of a property. In some cases, annual payments to local governments exceed what the local tax, based on assessed value, would have been if the land was still in private ownership. In other cases, Revenue Sharing payments and supplemental Congressional appropriations fall short of the local assessed property tax revenue. Some members of Congress have recognized this fact and have introduced various bills to remedy the situation. These bills have contained provisions for full funding of the Refuge Revenue Sharing Act. The proposed source of funds would be federal offshore oil and gas lease revenues. However, to date none of these bills have been passed into law.

4.3.4 Relocation Benefits Policies

The Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970 (Uniform Act), as amended, provides for certain relocation benefits to home owners, businesses, and farm operators who are displaced as a result of Federal acquisition. The law provides for benefits to eligible owners and tenants in the following areas:

- Reimbursement of reasonable moving and related expenses
- Replacement housing payments under certain conditions
- Relocation assistance services to help locate replacement housing, farm, or business properties
- Reimbursement of certain necessary and reasonable expenses incurred in selling real property to the government.

4.3.5 Cultural Resources

Refuge establishment and subsequent land acquisition proposed under Alternative A, Alternative B and Alternative C generally will have no effect on archeological resources. Traditional cultural properties and sacred sites of concern to Indian tribes and other ethnic and cultural groups receive increased protection to the extent the Service can obtain information about them. However, in some cases buildings and other structures may not receive increased attention under Service versus private ownership. The high cost of maintaining and preserving some buildings may prohibit acquisition or future use of some building sites. In general however, cultural resources receive increased protection from loss because of the several Federal laws that apply to property owned and administered by the Federal government. Alternative D would not increase the potential for archeological resources to be lost or damaged, however there would be no increased federal protection because lands would remain in private hands.

The Service might affect some cultural resources when it develops Refuge land for wildlife habitat, administrative facilities or public use areas. The potential for Refuge activities to affect prehistoric and historic resources, Native American

human remains and cultural objects, and traditional and sacred sites will be determined early in project planning. The Refuge manager, with the assistance of the Regional Historic Preservation Officer, will review all proposed projects and conduct surveys prior to any construction activities, if such actions are deemed necessary. The requirements of several cultural resources laws, executive orders, Federal regulations, policies and standards specified in the Fish and Wildlife Service Manual 614 FW 1-5 apply in all cases.

Archeological investigations and collecting are performed only in the public interest by qualified archeologists working under an Archaeological Resources Protection Act or Antiquities Act permit issued by the Regional Director. Refuge personnel take steps to prevent unauthorized collecting by the public, contractors, and Refuge personnel. Violations are reported to the Regional Historic Preservation Officer.

A number of historic family cemeteries likely occur in the Addition area. Access to these cemeteries would not change with the purchase of lands surrounding these cemeteries.

4.3.6 Effects on Current Drainage Patterns

The Service would not cause any artificial increase of natural water levels or flows without ensuring that the impact would be limited to lands in which the Service has acquired an appropriate real estate interest from a willing seller such as fee title ownership, flowage easement, or cooperative agreement. Thus, none of the alternatives would have negative impacts on drainage from neighboring lands. If Service activities inadvertently create a water-related problem for any private landowner (flooding, soil saturation or deleterious increases in water table height, etc.), the problem would be corrected at the Service's expense.

4.3.7 Water Pumping

No pumping or artificial filling of wetlands is planned. Refuge goals are to restore the natural hydrology of the area. The presence of the Addition Area, when fully restored , should lessen the severity of flooding and increase the duration of flows off of the land during other times of the year. This is expected because natural vegetation and wetlands should slow flood waters and keep soils more moist, thus providing for a higher water table and making water available for a longer period of time.

4.3.8 Crop Depredation

In general, crop depredation would not be expected to increase throughout most of the area. In instances where small fields become surrounded by forest, depredation from deer could increase. However, most bottomland fields are not small and Refuge goals on uplands would be to plant areas into prairie grassland. Wetland development would not likely increase depredation by geese. Goose populations in the area are not limited by the availability of water but by the availability of crops. Only increases in cropland would cause appreciable increases in the goose population. In addition, most restored wetlands would be small and/or forested, which are not preferred by geese. Geese prefer large open wetlands.

4.3.9 Refuge Administration

Any acquired lands would become part of the National Wildlife Refuge System. These lands would be administered by staff at Marais des Cygnes National Wildlife Refuge. The administration office for the Refuge is located along State Highway 52, 3 miles west of Amoret, Missouri, and the Addition area. As the land base increases and the complexity of habitat management and administration increases, additional staff would likely be hired, and management facilities would be constructed within the Addition area. Speaking very generally, a fully staffed refuge of this size would have about seven staff members and an annual operating budget of approximately $700,000. See Appendix A for more details about potential future Refuge management activities.

4.3. 10 Impact on Public Roads

The Service does not close roads without approval from the appropriate managing authority, i.e. township, county, or state. Generally, closures are sought only if a road is landlocked by Service property and is a dead end. The current road system would remain the same unless access requires modification sometime in the future. Coordination with state, county, and township officials and residents would be required for any road closure.

4.4 Cumulative Impacts

The phrase "cumulative impacts" refers to the overall effect of the proposed action or a series of similar actions in a landscape or regional setting. Restoring natural wildlife habitat, as proposed in alternatives B, C, and D, is generally considered to have positive environmental consequences. This project restores and protects native prairies and bottomland forests, both of which have experienced dramatic losses, as well as their associated streams and riverience communities, thus benefiting the wildife that depend on these habitats.

Complementary past conservation efforts include creation of the Refuge and the State's Marais des Cygnes Wildlife Area. Any time acres are added to conservation areas, it benefits species that are sensitive to edge habitat. The restoration of lost or degraded wetlands in particular will have an overall positive impact on the surrounding region and the human environment, including water quality for downstream municipalities.

The southern edge of the Kansas City metropolitan area of 1.6 million people is within 45 miles of the proposal area. Fragmentation of wildlife habitat is occurring rapidly as retirement homes and hobby farms are built throughout the region. River bottoms are increasingly under pressure for timber harvest and construction of levees to prevent flooding and create "higher value" land. Without this project, it is likely that fragmentation will continue and habitat will be lost, resulting in less wildlife. While the August A. Busch at Four Rivers Conservation Area is growing, the Conservation Area is located 20 miles downstream of the Marais des Cygnes NWR and is not likely to contribute to wildlife benefits in the immediate project areas. We are not aware of any future conservation project that would negate the need for this project.

4.5 Environmental Justice

Executive Order 12898 "Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations" was signed by President Bill Clinton on February 11, 1994, to focus federal attention on the environmental and human health conditions of minority and low-income populations with the goal of achieving environmental protection for all communities. The Order directed federal agencies to develop environmental justice strategies to aid in identifying and addressing disproportionately high and adverse human health or environmental effects of their programs, policies, and activities on minority and low-income populations. The Order is also intended to promote nondiscrimination in federal programs substantially affecting human health and the environment, and to provide minority and low-income communities access to public information and participation in matters relating to human health or the environment.

In 1998, U.S. Census Bureau figures showed that 18 percent of the population of Bates County lived below the poverty level. In 2000, the population of Bates County was 16,653. A total of 445 people (3 percent) were reported as a racial minority.

Few minority or low income people are likely to live in the Addition area, as the area is sparsely populated due to flooding of nearly half of the area. However, management activities on Refuge lands would be expected to increase the quality of life of those people living in the area by providing better water quality and increased recreational opportunities, including hunting and fishing.

4.6 Summary of Issues and Consequences by Alternative

The issues identified through public scoping and internal Service discussions and how each alternative addresses or is impacted by each issue is shown in Table 2.

Table 2. Summary of Issues and Consequences by Alternative

Issue (How will each alternative affect each issue?)	Alternative A	Alternative B	Alternative C	Alternative D
Accomplishing habitat & wildlife management goals	Little to no benefit	Significant Benefit	Significant Benefit	Slight Benefit
Recreational Opportunities	Limited public opportunities	Expanded public opportunities	Expanded public opportunities	Limited public opportunities
Taxes	No Change	Decrease balanced by Revenue Sharing	Same as Alternative B	No Change
Local Economy	No Change	Benefit	Benefit	No Change
Landowner Rights	No Change	No Change	No Change	No Change
Service Land Acquisition	None	Fee & easement acquisition plus voluntary agreements	Same as Alternative B	None
Revenue Sharing	None	Likely to exceed current taxes	Likely to exceed current taxes	None
Relocation Benefits	None	Available	Available	None
Cultural Resources	No Change	Neutral to slight improvement in protection	Same as Alternative B	No Change
Private Drainage	No Change	No Change	No Change	No Change
Water Pumping	No Change	No Change	No Change	No Change

Issue (How will each alternative affect each issue?)	Alternative A	Alternative B	Alternative C	Alternative D
Crop Depredation	No Change	Decreased goose depredation; possible static or slight increase in deer depredation	Same as Alternative B	No Change
Refuge Administration	None	Staff, salaries, and operating funds phased in over time	Same as Alternative B	None
Public Roads	No Change	No change without approval of entity controlling roads	Same as Alternative B	No Change
Cumulative Impacts	No Change	Positive impact on the social and natural environment	Same as Alternative B	Same as Alternative B
Environmental Justice	No Change	Benefit	Benefit	No Change
Cemetery Access	No Change	No Change	No Change	No Change