6 Implementation of the Proposed Action (Draft CCP)

The draft CCP described in this chapter presents the details of how the Service would carry out its proposed action—alternative B for management of Medicine Lake NWR and the Northeast Montana WMD, and alternative B for Lamesteer NWR.

The planning team recommends a proposed action that best achieves the refuge complex's purposes, vision, and goals, and helps fulfill the Refuge System mission. The implementation of the final CCP begins once the Service selects and finalizes the preferred management alternative, the CCP has been approved, and the Service has notified the public of its decision.

If both alternative B's are selected (Medicine Lake; WMD and Lamesteer), the objectives and strategies presented in this chapter would be carried out over the next 15 years. The CCP would serve as the primary management document for the refuge until it is formally revised. The Service would carry out the final CCP with assistance from partner agencies, organizations, and the public.

The management direction in this chapter meets the purposes, vision, and goals of the refuge. This chapter also discusses objectives and strategies to help the refuge staff reach the CCP goals.

A *goal* is a descriptive, broad statement of desired future conditions that conveys a purpose, but does not define measurable units.

An *objective* is a concise statement that indicates what is to be achieved, the extent of the achievement, who is responsible, and when and where the objective should be achieved.

The *rationale* for each objective provides context such as background information, assumptions, and technical details.

Strategies provide ways to achieve objectives.

Jerry Rodriquez/USFWS

Bird watching at the refuge is a popular activity.

6.1 Medicine Lake NWR and the Northeast Montana WMD

Service's Proposed Action

The planning team proposed alternative B for Medicine Lake NWR and the Northeast Montana WMD after determining that it does the following:

- best achieves the refuge's purposes, vision, and goals, and helps fulfill the Refuge System mission
- maintains and, where appropriate, restores the ecological integrity of the refuge and the Refuge System, and addresses the significant issues and mandates
- is consistent with principles of sound fish and wildlife management

6.2 Lamesteer NWR

Service's Proposed Action

Alternative B would take the refuge out of the Refuge System and relinquish the easement to the current landowner. Under this alternative, the dam structure would be given over to the landowner or destroyed. The Service's easement requirements would no longer exist. The Service would divest its interest in the refuge. This would be carried out within the 15-year life of the plan.

Management Direction and Rationale for Lamesteer NWR

Once the CCP is approved, the managing station would work with the Division of Realty and the Land Protection Planning Branch within the Division of Planning to prepare a combined program proposal to divest this refuge. Within 5 years of CCP approval, the Service would relinquish the refuge to the current landowner to manage. The Service would work with the state, county, and landowner to divest the Service's interest. It would revoke all

refuge and easement agreements and transfer full control to the current landowner.

Through the CCP process, the Service evaluated the level of national trust resource values represented by Lamesteer NWR to determine if those values and associated risks are sufficient to justify continuing the easement. Trust resources are resources that through law or administrative act are held in trust for the people by the government. It was determined that Lamesteer NWR possesses no trust resource values and minimal habitat value for wildlife. The Service has no management authority on the uplands surrounding the easement, and public access is by permission of the landowner. Further, the dam structure is in need of substantial repairs to meet State of Montana and regional dam safety standards. Given the minimal habitat value of the refuge, it makes little sense to spend limited resources on costly dam repairs.

The planning division of the Service's regional office brought together refuge managers, supervisors, a regional biologist, planners, realty staff, and the senior management team to develop a model to help the Service determine whether a refuge should remain part of the Refuge System. The model was designed for field-level refuge staff to use during the CCP planning process. When the model was applied to Lamesteer NWR, it did not pass the test to remain as a refuge in the Refuge System.

6.3 Medicine Lake NWR and Northeast Montana WMD—Goals, Objectives, Strategies

The goals, objectives, and strategies for Habitat and Wildlife Management and Endangered, Threatened, and Rare Species are discussed together because issues for both are similar.

Habitat and Wildlife Management Goal

Conserve, restore, and enhance the ecological diversity of grasslands and wetlands of the glaciated mixed-grass prairie to support healthy populations of native wildlife, with an emphasis on migratory birds.

Objective 1: Habitat Management

Within 3 years of the CCP approval, begin to develop and implement a habitat management plan (HMP) for the refuge complex. The HMP would include more detailed and specific information than the CCP, such as additional data gathered for the upland and wetland habitats. The HMP would serve as the principal management document to direct all of the habitat management at the refuge complex.

Rationale:

This objective focuses on the development of a HMP to further guide and direct habitat management for the next 15 years. The HMP is more detailed because it focuses only on habitat and would not include other administrative functions of the refuge complex. Current habitat management plans such as the "Grassland Management Plan" and "Water Management Plan" are outdated, and ongoing research and monitoring have provided new information to guide the management of the refuge complex. The HMP includes all habitat types and would serve as a working document for staff and partners.

Strategies:

- Analyze existing information and data.
- Collect additional data on gaps related to vegetative composition and condition on uplands and wetlands.
- Focus staff efforts to collect data, including geographic information system (GIS) data, that can provide guidance for the HMP.

Objective 2: Native Prairie Communities

Maintain and improve native prairie habitat on refuge complex lands for the duration of this CCP so that at least 75 percent (or 13,000 acres) of habitat composition is of the desired native plant community for that site.

Rationale:

The largest threat to the integrity of the native prairie found on refuge complex lands is the invasion of nonnative plants, such as crested wheatgrass and smooth brome. Over the past 20 years, the lack of disturbances, such as prescribed fire and livestock grazing, have enabled these plants to out-compete the native prairie plants and expand their range.

The refuge would re-establish a livestock grazing system that would restore plant vigor and root health through periodic grazing that mimics grazing from historic bison herds. Prescribed fire would be applied to refuge complex lands to remove an overabundance of decadent vegetation. The northern Great Plains have a fire dependent ecosystem that evolved over thousands of years with wildland fires, browsing, and grazing. In addition, herbicides would be applied where applicable to control invasive plant species in the plant community descriptions (chapter 4, Vegetation) to encourage native plant recolonization. The HMP described in Objective 1 would discuss the management treatments in more detail.

Strategies:

- Apply appropriate treatments that mimic natural disturbance regimes, such as prescribed grazing and fire, and invasive plant control, to enhance native species.
- Conduct plant surveys annually on existing native prairie to monitor plant communities until adequate data is collected.
- Document vegetation structure and plant community response to management treatments. Use belt transect monitoring protocol every 5 years.
- Evaluate high-priority native prairie areas every 3 to 5 years and other areas every 4 to 7 years.
- Apply appropriate management treatments that mimic natural disturbance regimes, such as prescribed grazing and fire, rest, and invasive plant control, to enhance native species.
- Use a variety of media (brochures, outreach, signs or other ways) to educate the public about the importance of the native prairie.

Objective 3: Diverse Grassland Structure

Apply annual management treatments such as prescribed grazing and fire to promote diverse vegetative structure for migratory-bird nesting habitat. Up to 50 percent of native prairie may receive management treatment annually based on climate and plant community responses to treatments.

Rationale:

This objective focuses on vegetative structure and not just composition, and emphasizes the importance of providing a variety of habitat types in different developmental (successional) stages. Migratory birds have diverse habitat requirements, including distinct vegetative structure and composition. Refuge complex habitats should not all look alike; they should offer a mosaic of vegetative structure and composition. Diverse vegetative structure implies habitat with varying degree of structure. Some areas would have no vegetative litter (residual plant material) from recent grazing or burning, and others would be characterized by tall dense vegetation where no disturbances have occurred for some time.

During the past 20 or more years, only a limited amount of disturbance has occurred on refuge lands. Some areas have a prescribed fire and grazing history, while others have no recent history of disturbance, and therefore have large unhealthy accumulations of vegetative litter. The northern Great Plains have evolved over hundreds of years with grazing from large herbivores such as bison, and have been burned from fires caused by thunderstorms and humans. The lack of disturbance on refuge complex lands has allowed invasive nonnative-plant species to expand at the expense of native prairie plants. The HMP would further explain and define how disturbance would be applied to refuge complex lands to improve migratory-bird nesting habitat.

Some migratory bird species are more specific to certain vegetative structure, while others are more adaptable.

Strategies:

- Evaluate high-priority native prairie areas every 3 to 5 years and other areas every 4 to 6 years, and assess their condition.
- Apply appropriate management treatments that mimic natural disturbance regimes (prescribed grazing and fire, rest, and invasive plant control) to improve grassland conditions, while meeting the life requirements of migratory birds.
- Initiate and develop multiyear grazing systems on private and refuge complex lands to improve migratory bird habitat.
- Use adaptive resource management to improve the native prairie on the basis of climate and vegetation response to various treatments.

Objective 4: Managed Wetlands

For the duration of the plan, manage water levels to provide a variety of wetland conditions to meet the life requirements of wetland-associated migratory birds. Identify management needs, and manipulate water levels as prescribed in the annual water plan.

Rationale:

Prolonged static water levels can create anaerobic conditions that limit decomposition and nutrient cycling. High water levels can also adversely influence the growth and development of aquatic vegetation by limiting light penetration and oxygen availability, and allowing water temperatures to remain cool. Continuous high-level water management also causes increased rates of erosion to shores and islands.

Appropriate water-level manipulations can create habitats that provide open-water areas with submerged vegetation and shallow areas with emergent food resources and cover for many wetland-dependent species. The exposure of wetland sediments to the atmosphere increases decomposition of organic material and improves the overall biological production potential. Refuge

wetlands would be managed to emulate the natural wet-dry cycles of the Great Plains. These natural water cycles provide a mosaic of habitats for shorebirds, amphibians, reptiles, waterfowl, invertebrates, water birds, and other wildlife, and also help recycle nutrients.

Strategies:

- Monitor and manipulate water levels throughout the year to provide planned wildlife habitat to follow the annual water management plan.
- Use water from Medicine Lake to supplement smaller units requiring water after a drawdown, or replenish losses due to evapotranspiration.
- Remove sediments from canals to allow for better water movement and wetland water-level management.
- Actively manage water units with historic outbreaks of avian botulism by removing water from these wetlands. Lower water levels make wetlands unattractive to migratory birds, and thus will reduce bird deaths.
- Maintain and repair existing water-control structures as needed, remove nuisance burrowing furbearers to reduce physical damage, and, where feasible, install new control structures to create or enhance managed wetlands.
- Work cooperatively with private individuals to remove nuisance burrowing furbearers to reduce physical damage to dikes and impoundments.
- Protect and maintain water rights in Cottonwood Creek, Lake Creek, and Sand Creek to manage Medicine Lake for the benefit of migratory birds.
- When necessary, divert runoff from Big Muddy Creek into Medicine Lake.

Objective 5: Invasive Species

Over the 15-year life of the plan, reduce crested wheatgrass by 15 percent, Canada thistle by 20 percent, leafy spurge by 25 percent, baby's breath by 70 percent, smooth bromegrass by 30 percent, and nonnative trees and shrubs by 90 percent in the 18,220 acres of refuge complex native prairie. Strive to eliminate small infestations of spotted knapweed, dalmation toadflax, and white top. Evaluate any new infestations of species not recorded in this list, and identify a control target.

Rationale:

Nonnative invasive plant species pose a large threat to the remaining native prairie on the refuge complex. Prolonged rest has encouraged encroachment from many of these aggressive plants, thus reducing the quality of habitat available to many migratory bird species. Some of these birds, such as Baird's sparrow, chestnut-collared longspur, Sprague's pipit, burrowing owl, and upland sandpiper, have documented declining populations, and are dependent on intact mixed-grass prairie tracts.

Historically, the northern Great Plains mixed-grass prairie was a treeless landscape. Trees and tall shrubs can reduce the survival of grassland birds by providing suitable nesting habitat for predators such great horned owl and black-billed magpie. They also provide perches for parasitic nesters, such as brown-headed cowbirds, which use the nests of other birds to lay their eggs. Recent data from the Souris River refuges in eastern North Dakota suggests that relatively small areas of tall woody vegetation can effectively fragment grassland habitats and cause many grassland bird species to avoid these areas (USFWS 2007). Elimination of tall woody vegetation is a biologically sound strategy to restore the landscape and improve habitat for a variety of grassland-dependent breeding bird species.

Strategies:

- Continue to gather information about improved techniques and the efficacy of invasive-plant control techniques.
- Within 1 year of plan implementation, begin mapping the locations and acreage of Canada thistle, especially in waterfowl production areas and any other newly identified infestations.
- Increase control and reduce infestations of invasive species using an integrated approach of mechanical, biological, and chemical techniques.
- Maintain nonnative tree plantings only at refuge complex headquarters to function as windbreaks for administrative buildings.
- Remap noxious weed infestations twice during the life of the plan to determine the progress of control work, focusing on leafy spurge, Canada thistle, white-top, and dalmation toadflax.
- Provide invasive plant management only for fee-title lands and not easements.

Objective 6: Land Acquisition and Easements

Over the life of the plan, protect at least 3,500 additional acres of native prairie on private lands in the refuge complex through perpetual easements or fee-title purchase from willing sellers.

Rationale:

The central grasslands were once North America's most extensive ecosystem (Johnson and Igl 2001). Grasslands are one of the two major habitat components (the other is wetlands) in the Prairie Pothole Region that influence the productivity of waterfowl (Dixon and Hollevoet 2005). Other bird species, such as marbled godwit and Wilson's phalarope, depend on both wetland and grassland areas during various parts of their life cycle.

With the large-scale conversion of native prairie to crop production or development, there has been a related change in grassland-dependent birds and other wildlife, such as Richardson's ground squirrel (Johnson and Igl 2001). It was not until the 1960s that widespread and systematic surveys of most bird species were initiated, in the form of the North American Breeding Bird Survey (BBS) (Robins et al. 1986). Quantitative evidence of grassland bird species population changes consequently exist for only the past 40 years, long after most grassland losses occurred. BBS data indicates that populations of many grassland bird species have been in decline since then. Grassland-nesting birds have shown more consistent population declines during this period than any other group of birds in North America (Sauer et al. 2001).

Although the Prairie Pothole Region supports a wide diversity of birdlife, prairie potholes are known for their role in waterfowl production. Although the region occupies only 10 percent of North America's waterfowl breeding range, it produces approximately 50 percent of the continent's waterfowl population (Kantrud 1983). Many species of waterfowl, such as mallard, northern pintail, gadwall, blue-winged teal, and northern shoveler, commonly nest in the grassed uplands that surround wetland basins. Grassland losses thus equate to reduced productivity for these species.

Converting native prairie areas of the region to cropland has impacted waterfowl by increasing habitat fragmentation and reducing the overall area of breeding cover for grassland nesting species (Sugden and Beyersbergen 1984, Batt et al. 1989). Greenwood et al. (1995) determined that duck nesting success in the Prairie Pothole Region increases as the amount of grassland in the landscape increases. Furthermore, it has been determined that increased grassland cover increases the daily survival rate for multiple duck species (Reynolds et al. 2001).

Unprotected grassland areas in cropland dominated landscapes often are converted to cropland, and associated wetlands are drained or converted to other uses (Dixon and Hollevoet 2005). Striving to protect what remains of the presettlement prairie landscape is an integral part of the Service's wildlife conservation efforts.

Despite the extensive loss of grasslands that has already occurred throughout the state, there is an opportunity for the Service, and more specifically for the refuge complex, to protect a large percentage of the area's remaining grasslands by establishing perpetual and long-term easements and purchasing waterfowl production areas and refuges. There is strong public interest in protecting wildlife habitats, and a disproportionately large amount of private land includes grassland habitat, compared to the funding available to acquire easements and waterfowl production areas. Refuge complex staff decisions can benefit from science-driven habitat models, such as those developed by the Habitat and Population Evaluation Team (HAPET).

Preference should be given to purchasing easements and fee-title lands comprising unprotected grassland patches that are deemed priority by HAPET models or are located in close proximity to already protected tracts of grassland.

Strategies

- Identify high-priority areas for protection using waterfowl breeding pair distribution (figure 11) maps (commonly referred to as Thunderstorm maps), land-use cover maps, "National Wetland Inventory" data, grassland priority-protection maps, piping plover critical habitat, grassland bird conservation-area maps, and other tools.
- Pursue other funding sources and partnerships to protect native prairie tracts because there is no funding mechanism for purchasing native prairie tracts that do not qualify as migratory waterfowl habitat.
- Acquire private inholdings from willing sellers within the approved Migratory Bird Conservation Commission (MBCC) boundary of the Medicine Lake NWR.
- Acquire select high-priority lands as waterfowl production areas.
- Continue to partner with Montana Fish, Wildlife, and Parks (MFWP), Ducks Unlimited (DU), National Resources Conservation Service (NRCS), The Nature Conservancy (TNC), and other organizations to secure land acquisition funding through the North American Wetland Conservation Act (NAWCA), Land and Water Conservation Funds (LWCF), USDA conservation programs, and other sources.

- Enforce provisions of all grassland and wetland easement contracts through annual monitoring, and correct as necessary.

Objective 7: Native Prairie Conservation on Private Land

Collaborate with partners to annually conserve, restore, and enhance at least 5,000 acres of native prairie on private lands throughout the refuge complex through outreach, technical assistance, education, and habitat improvement projects.

Rationale:

It is unlikely this objective could be achieved relying on Service efforts only. Collaborating with many partners to fulfill wildlife habitat goals is necessary. This objective aims to conserve and enhance native prairie within the refuge complex, which allows Service personnel to provide technical expertise. Protecting private lands becomes paramount to restoring the overall health of native prairie and wildlife populations.

The Service promotes grassland easements and technical assistance regarding grazing systems, which provide economic benefits to landowners by increasing forage production and promoting sustainable operations to help keep ranchers and wildlife on the landscape. Restoring and conserving native prairie would aid in capturing precipitation to recharge wetlands, prevent sediment and chemical runoff into wetlands, and preserve wetland function.

Wetland-associated grassland habitat within the refuge complex is especially critical for grassland nesting waterfowl such as blue-winged teals, mallards, and northern pintails, grassland nesting shorebirds, such as marbled godwits, Wilson's phalaropes, and long-billed curlews, and grassland nesting passerine species, such as Baird's sparrow, Sprague's pipit, and chestnut-collared longspur.

Although a sizeable proportion of untilled prairie remains in the refuge complex in private ownership, much of it is heavily grazed with little residual cover available in the spring for nesting migratory birds. The implementation of rotational grazing systems on native and tame grasslands would improve the condition of upland nesting habitat and reduce silt and agrochemical runoff entering wetlands. This rest-rotation grazing system would result in a diversity of vegetation structure providing habitat for many different species at different times of the season.

Some important programs administered by Service partners that may require assistance include NRCS, primarily through the Environmental Quality Incentive Program (EQIP) and sometimes the Wildlife Habitat Incentive Program (WHIP), Montana Fish, Wildlife, and Parks, primarily through the Upland Gamebird Habitat Enhancement Program (UGHEP), the Farm Services Agency, through the Conservation Reserve Program (CRP).

Strategies:

- Work cooperatively with private landowners to design and implement grazing systems that promote healthy native prairie.
- Provide private landowners technical assistance on practices and programs that protect grasslands and highlight native prairie values.
- Continue to provide logistical support, technical expertise, and office space and supplies to support a Partners for Fish and Wildlife biologist.
- Work cooperatively to protect and enhance grasslands within the Fort Peck Indian Reservation boundary.
- Continue to partner with the MFWP, DU, NRCS, TNC, Fort Peck tribes, and other organizations to secure funding through the NAWCA, LWCF, and other sources for habitat enhancement and protection.

Objective 8: Wetlands Conservation on Private Land

Conserve annually 500 acres of wetlands on private land within the refuge complex through outreach, technical assistance, education, and habitat improvement projects.

Rationale:

Wetlands are among the most productive ecosystems in the world, and are essential to the ecological health of northeastern Montana. Wetlands play an important role in the landscape. They improve water quality, aide in floodwater storage, recharge aquifers, provide fish and wildlife habitat, support recreational and aesthetic appreciation, and offer significant biological diversity and productivity. Many species of birds, reptiles, amphibians, insects, crustaceans, and mammals rely on wetlands for food, water, and shelter, and as a place to brood and rear their young. Most of the Prairie Pothole Region is in private ownership, and the productivity of the wetlands is determined by the activities occurring around them. Assisting landowners in maintaining the biological integrity of their properties is beneficial to everyone.

Strategies:

- Work cooperatively with private landowners to design and carry out conservation practices that promote healthy wetlands.
- Provide technical assistance to private landowners about programs and practices

available to protect wetlands, and highlight wetland values.

- Participate in partnership efforts to improve water quality within the Big Muddy Creek watershed and in other land use projects that could benefit refuge complex wetlands.
- Provide technical expertise, office space, and supplies to support a Montana Partners for Fish and Wildlife biologist.
- Work cooperatively to protect and enhance wetlands within the Fort Peck Indian Reservation boundary.
- Continue to partner with the Fort Peck tribes, MFWP, DU, USDA, TNC, and other organizations to secure funding through the NAWCA, LWCF, and other sources for habitat enhancement and protection.

Objective 9: Wetlands Water-Quality Monitoring
Within 5 years of the plan's approval, implement a comprehensive monitoring program encompassing the refuge complex wetlands to assess and evaluate threats and impacts to water quality and water quantity.

Rationale:

The foundation for strong biological diversity begins with water quality and the productivity and health of the micro-organisms found in all wetlands. These micro-organisms are affected by contaminants and other water-quality threats and impacts, such as agricultural runoff, sedimentation, surface and groundwater contaminations, oil and gas contaminants, volume (ground and surface water), alkalinity, and influences of artificial nitrogen and sodium. These threats apply to all wetlands, not just actively managed or naturally influenced wetlands.

Strategies:

- Continue to study the Clear Lake aquifer in cooperation with the SCCD, Montana Bureau of Mines and Geology, and the United States Geologic Survey (USGS), to determine its function and effects on surface wetlands.
- Determine monitoring parameters to identify external threats to water quality from oil and gas contaminants and agricultural influences, and gather baseline information on existing wetland conditions. Monitoring trends in alkalinity is especially important due to the nature of many wetlands found throughout the refuge complex.
- Monitor the most threatened wetlands every 5 years.
- Evaluate potential oil and gas contaminants throughout the refuge complex by collaborating with an environmental specialist provided by the Service.
- Use existing data as a baseline on water quality and quantity by referring to the Water Management Plan (table 16) and the water samples collected in the early 1990s.

Objective 10: Artificial Islands
Within 5 years of CCP implementation and in conjunction with development of the HMP, evaluate all artificial islands for migratory bird production potential. Consider removal of any artificial island that is not essential habitat or that might damage migratory bird populations.

Rationale:

Productive nesting islands must have adequate nesting cover for waterfowl and other migratory birds and provide security from mammal predators. Approximately 150 islands have been constructed on refuge complex wetlands. New research has revealed that many types of artificial islands are ineffective and do not meet the cover and safety criteria required for successful migratory bird nesting. Some islands can attract more predators and reduce brood survival. All artificial islands would be assessed for their nesting value and would either be removed or repaired. In particular, the islands in Goose Lake, Knudson Bay, Homestead Lake, and Katy's Lake would be addressed.

Strategies:

- Identify and map all artificial islands.
- Develop evaluation criteria based on scientific research.
- Initiate incremental removal or repair of islands based on the assessment and budget permits.

Objective 11: Native Prairie Restoration
Within 15 years after CCP approval, restore up to 2,000 acres on the refuge complex that previously produced crops to native-prairie plant species. Prairie plant species would include warm- and cool-season grasses and forbs, and priority would be given to areas that have become decadent and overrun by undesirable, nonnative, cool-season grasses.

Rationale:

Over the long term, native prairie plants are economically and ecologically superior to genetically altered (cultivars) on previously cropped areas. Permanent native vegetation eliminates frequent (every 8 to 10 years) management treatments (haying, disking, and reseeding) of decadent stands of nonnative planted species. Native vegetation reduces local habitat fragmentation, eliminates the "edge" effect associated with crop fields, and improves migratory-bird nesting and other wildlife habitat.

A native-species planting strategy vastly improves the capacity for grouping of plants to out compete nonnative grasses. Native species plantings also reduce "source sites" from which introduced and weedy plants invade adjoining native prairie. Native grasses have better and longer-lasting structural diversity within stands.

Long-term management of native species plantings requires disturbance using prescribed grazing and burning during the growing season. Native species plantings are in compliance with Service policy that discourages planting of introduced species on Fish and Wildlife Service lands and stresses planting native species (USFWS 2001a).

Strategies:

- Evaluate high-priority locations for replanting native grasses and forbs, taking into consideration location, wildlife values, and habitat diversity.
- Convert crested wheatgrass as a priority, but also consider old dense nesting cover fields. Determine accurate estimates of crested wheatgrass.
- To ensure seed source is locally adapted to various soil types of the refuge complex, establish seed production plots of local native grasses and forbs, and harvest seed from these plots and other refuge and private-land seed sources near the refuge.
- Use crop farming and herbicide to eliminate existing nonnative vegetation, and prepare the seedbed for planting native species. Nonnative species are extremely aggressive and may require 2 or more years to eliminate the seed source before native species can be seeded.
- Develop an HMP with specific information related to converting nonnative areas to native vegetation.

Objective 12: Privately-owned Grasslands

Conserve annually the 2,500 acres of nonnative and noninvasive (tame) grasslands on private land in the 3-county refuge complex area through outreach, technical assistance, education, and habitat improvement projects.

Rationale:

Tame grass plantings convert highly erodible cropland acreage to year-long vegetative cover to reduce soil erosion and sediment in wetlands, improve water quality, and establish wildlife habitat. The conservation of these lands contributes to migratory bird populations and provides habitat for resident birds and other wildlife. The development of ethanol and other crop-based fuels may have a negative impact on the continuation of these programs and would directly impact wildlife populations in northeast Montana. Maintaining the lands in year-round grass cover is important.

Strategies:

- Provide technical assistance to private landowners interested in state and federal programs that restore and enhance grasslands.
- Work cooperatively with private landowners to design and implement grazing systems that promote healthy grasslands, with an emphasis on incorporating expiring CRP tracts into those systems.
- Provide support and office space for a Montana Partners for Fish and Wildlife biologist.
- Work with the Fort Peck tribes and individual landowners to protect and enhance grasslands within the Fort Peck Indian Reservation boundary.
- Continue to partner with the Fort Peck Tribes, MFWP, DU, USDA, TNC, and other organizations to secure funding through the NAWCA, LWCF, and other sources for habitat enhancement and protection.

Objective 13: Conservation Easements

Within 15 years, purchase fee-title or conservation easements on approximately 1,780 acres, based on priority considerations from willing sellers within the approved boundary (figure 9 in chapter 3), to maintain biological diversity and related wildlife values, and to conserve the relatively naturally functioning systems and processes of the refuge complex.

Rationale:

As part of the CCP, the refuge complex staff evaluated the future habitat protection needs of the Medicine Lake NWR. The refuge complex's land-acquisition project proposal is part of a conservation strategy to protect highly productive wildlife

habitat, including both wetlands and uplands on lands adjoining and surrounding the refuge complex. The greatest threats to these lands are agricultural conversions of grasslands to cropland, conversions from grasslands to groundwater-irrigated cropland, and drainage of wetlands. For example, from 1982 to 1997, more than 1.2 million acres of native prairie were converted to agricultural production in Montana (Johnson 2000).

Strategies:

- Acquire lands from willing sellers through fee-title or easement purchases, according to the following priorities (see table 14):

  Priority 1 Zone—This includes the area on the northeast side of the refuge. Priority 1 area lies within the highly productive Prairie Pothole Region and has topography typical of the glacial drift prairie--relatively gentle rolling plains with occasional shallow depressions. This is an area of high wetland density, and resulting prairie-wetland complexes contain a high diversity of wetland types and sizes.

  Priority 2 Zone—Areas included in Priority 2 Zone also have protective wetlands and remnant native grassland species. Vegetation is primarily the wheatgrass-needlegrass association of the mixed-grass prairie (Coupland 1950), but plant associations are diverse and fluctuate greatly with annual moisture, slope, aspect, and soil type. Subirrigated, wet meadow areas are dominated by prairie cordgrass, switchgrass, western wheatgrass, rushes and sedges, and abundant tall forbs.

  Priority 3 Zone—Priority 3 Zone is influenced by Big Muddy Creek, a meandering narrow (~20–30 feet wide), perennial prairie stream, the largest in this area. This floodplain consists primarily of soils formed in deposits from glacial outwash and alluvial deposits, are moderately to poorly drained, and are saline or salt-affected in many locations. Numerous wetlands were formed from shallow depressions, oxbow cutoffs, and a high water table from underground aquifers.

Table 14. Land Acquisition by Priority (figure 9 in chapter 3)

Description	*Total Area*
Priority 1 Zone	1,092
Priority 2 Zone	477
Priority 3 Zone	215
Total (acres)	1,784

Endangered, Threatened, and Rare Species Goal

Contribute to the preservation and restoration of endangered, threatened, rare, and unique plants and wildlife that occur or have historically occurred in the refuge complex.

Objective 1: Piping Plovers

Annually support an average piping plover breeding population of 175 adults with a fledging rate >1.3 chicks per nesting pair in the refuge complex.

Rationale:

The recovery plan (USFWS 1994) outlines the goals for recovering piping plovers, including designation of critical habitat.

Strategies:

- Assist in the annual monitoring of breeding populations and reproductive success on the refuge complex and private lands.
- Develop site-specific management prescriptions for plover habitat in the refuge complex.
- Maintain an active role in the ongoing partnership recovery effort on the Missouri Coteau Alkali Lakes Core Area.
- Provide technical assistance to landowners of available programs and practices to protect piping plover habitat and surrounding grasslands.
- Purchase grassland easements or obtain voluntary agreements to protect native grasslands associated with piping plover critical habitat.
- Use proven predation management techniques, such as nest cages and temporary and permanent electric fences, to increase recruitment.
- Manipulate water levels where possible to prevent inundation of active nests.
- Use methods such as grazing systems, prescribed fire, salt deposition, and gravel hauling (as appropriate) to enhance or create nesting habitat.
- Continue working with private land owners to remove predatory habitats such as tree rows, old houses and out buildings, and rock piles.

Wilderness Goal

Conserve the wilderness quality and associated natural processes of the 11,360-acre Medicine Lake Wilderness, including the Sandhills portion of the designated area.

Objective 1: Wilderness Protection

Over the next 15 years, maintain the high quality of the wilderness by adhering to “minimum tool” concepts and following Service guidelines for wilderness management. Manage wildlife habitat, achieve class I air-quality standards, and maintain and protect the lake vista.

Rationale:

The Medicine Lake NWR wilderness is managed according to the Wilderness Act of 1964. The act requires wilderness areas be managed in a natural condition, with opportunities for solitude and a primitive and unconfined type of recreation. Visitors to the Sandhills portion of the wilderness area is primarily by hikers and hunters, largely for wildlife observation. Public use of Medicine Lake is primarily for wildlife observation, fishing, and canoeing.

The Service’s wilderness policy (USFWS, 2001b) describes how the refuge manager preserves the character and qualities of designated wilderness while managing for the establishing purposes of the refuge. This policy, like the Wilderness Act, states that wilderness is maintained with outstanding opportunities for solitude and a primitive and unconfined type of recreation. The refuge manager conducts minimum requirements analyses before taking any action that may impact wilderness character. In general, the manager would not modify habitat, species population levels, or natural ecological processes in refuge wilderness unless doing so maintains or restores ecological integrity that has been degraded by human influence or is necessary to protect or recover threatened or endangered species.

Strategies:

- Remove garbage, old implements, and other debris, such as pipes, fence enclosures, and farm site remnants, from Bruce’s Island and other wilderness areas.
- Using the minimum requirements decision guide, and following wilderness management policy, protect the pristine grassland qualities of the 2,320-acre Sandhills area, 695 acres on islands, and the 18-acre Bridgerman Point peninsula. Employ land management practices such as prescribed grazing and fire that mimic

natural occurrences that historically shaped the area.

- Using the minimum requirements decision guide, and following wilderness management policy, continue to maintain the vista of the 11,366-acre Medicine Lake wilderness area.
- Continue to monitor the air quality as required in the Clean Air Act to verify that class I standards are being achieved.
- Conduct plant surveys to determine plant communities and species composition.
- Protect grasslands from negative human impacts, such as invasive plants and vehicle trespass.
- Protect and maintain water rights on Cottonwood, Lake, and Sand creeks to allow full access of spring runoff into Medicine Lake.
- When necessary, divert spring runoff from Big Muddy Creek into Medicine Lake.
- Monitor water quality to determine that Clean Water Act standards are being met and that water is of sufficient quality for associated biota.
- Update the current Wilderness Refuge Plan (table 16), referring to the Service draft policy on Wilderness Management Plan contents and formats.
- Use a variety of media and tools to educate the public about the important value of the Wilderness Area designation.
- Continue to allow for ice fishing on Medicine Lake near the Highway 16 bridge using temporary tent-like structures (no permanent structures allowed).

Visitor Services Goal

Provide opportunities for visitors to enjoy wildlife-dependent recreation and to help visitors understand and appreciate the value of the mixed-grass prairie and the Refuge System.

Safe and adequate access, low hunting pressure, and the opportunity to find solitude may be all that is required for most hunters to consider their hunt a success. For many hunters, a reasonable opportunity to harvest game is another indication of a high-quality experience. Hunters that have experienced a high-quality hunt likely will develop an appreciation for the wildlife, the land, fellow hunters, and the Refuge System.

Objective 1: Management Plan

Within 5 years of the CCP approval, initiate a visitor services management plan for the refuge complex. The plan would include more detailed and specific information than the CCP related to recreation uses. It would serve as the principal management document directing the public-use program for the refuge complex.

Rationale:

This objective focuses on the development of a visitor services management plan to further define and direct the public-use management program for the next 15 years. The plan would be more detailed than the CCP because it would focus only on public use and would not include other administrative functions. The refuge does not have a current approved plan. With additional monitoring, the plan would ensure that all public uses are compatible with the purposes of the refuge.

Strategies:

- Assess current public uses for compatibility.
- Gather additional information from the public pertaining to recreational use.
- Promote wildlife-dependent recreational uses to increase awareness and appreciation of the natural resources of the native, mixed-grass prairie and the wilderness area, and the value of native prairie.
- Provide for most public-use activities on the north and east side of Medicine Lake.

Objective 2: Hunting

Provide high-quality hunting opportunities in refuge complex hunting areas. At least 90 percent of hunters pursuing big game, upland game, and migratory birds have indicated they are satisfied with their experience. Hunters therefore have a great awareness and appreciation for refuge resources and the value of the Refuge System.

Rationale:

The Medicine Lake NWR Complex offers exceptional opportunities for hunting waterfowl on a secluded prairie pothole in the remote sections of the WMD, tracking whitetail deer in the wide-open sandhills prairie, and pursuing the elusive sharp-tailed grouse. The refuge complex works to create a safe hunting environment by allowing appropriate areas to be opened to hunting and carefully managing hunting pressure and hunter congestion.

Strategies:

- Until the HMP and Visitor Services Management Plan are completed, continue to maintain three hunting areas on the refuge. Area 2 would be open for big game, upland game bird, and waterfowl hunting, according to state seasons. Waterfowl sanctuary areas would remain closed, providing a safe feeding and resting area for migratory birds until November 15, when these areas are frozen and would open for deer and upland game-bird hunting only.
- Keep waterfowl sanctuary areas closed to provide a safe feeding and resting area for migratory birds until November 15. Open for deer and upland game-bird hunting after areas are frozen.
- Provide opportunities to find solitude by continuing the "walk-in hunting only" status at selected refuge roads that are closed to vehicles.
- Provide handicapped-accessible hunting opportunities. Investigate creating accessible blinds and offering hunts for people with disabilities.
- Encourage youth hunting opportunities, and explore the possibilities for additional seasons, unique areas, and special-season dates for youth that would be outlined in the Visitor Services Management Plan.
- Continue to provide adequate parking areas to allow hunters access and disperse hunter concentrations among hunting areas.
- Evaluate land acquired by the refuge, and where feasible, open new areas to hunting.
- Continue to work cooperatively with Montana Fish, Wildlife, and Parks to conduct law enforcement patrols to ensure compliance with regulations and provide a safe experience for all visitors.
- Keep waterfowl production areas open for public hunting and trapping, according to state and federal regulations.
- Develop new brochures for the WMD that provide information on refuge-complex hunting regulations and access.
- Conduct annual informal surveys of hunters to gauge the quality of hunting experiences. Use the information from the surveys to make improvements to the hunting experience.

Objective 3: Fishing

Until the Habitat Management Plan and the Visitor Services Management Plan are completed, provide a maximum of 10 months per year of public sport fishing on Medicine Lake, when resources needed to administer this program do not adversely affect the refuge complex's ability to implement habitat and wildlife management. Continue to provide anglers safe, reasonable access, minimal conflicts with others, and general satisfaction with their experiences.

Rationale:

The Service manages Medicine Lake as an open-water area for breeding and resting migratory birds. Because Medicine Lake is large (8,200 acres) and is the refuge's deepest lake (average 6-foot depth), it offers the best opportunity for recreational sport fishing. Though fish are found in other refuge areas, management objectives for the wetlands are to benefit migratory birds and not to provide for sport fishing. Recreational fisheries would be managed on Medicine Lake only, and all other refuge pools would be managed for the benefit of migratory birds.

Medicine Lake is large but shallow, and the water is alkaline by nature, so the lake is not suited for a self-sustaining sport fishery. Before the refuge was established and the water control structure and diversion canal were constructed, water levels in late summer were very low and sometimes dry. Montana Fish, Wildlife, and Parks now stocks Medicine Lake annually with young northern pike to sustain a fishery on the lake. The refuge would continue to allow stocking as long as the cost to stock fish is not incurred by the refuge.

The Service allocates the refuge limited annual resources in terms of funding and staff, and its priority is to manage upland and wetland habitat. Fishing programs would continue if resources needed do not detract from funding and staff needed for habitat management. Most fishing opportunities occur as ice-fishing in the winter from shore and bank locations near the bridge at Montana Highway 16 or close to the refuge headquarters. Costs to administer this program are limited to law enforcement and brochure printing. No additional expenses are anticipated.

The refuge intends to keep the present level of fishing access, unless funding and staffing shortfalls require closures of fishing access. However, partnerships with local groups and outdoor clubs could be used to enhance access for shore anglers.

Strategies:

- Provide accessible fishing opportunities for persons of all abilities. Investigate creating an accessible fishing area at the Montana Highway 16 kiosk, pending

coordination with the Montana Department of Transportation.

- Continue to maintain fishing access points and parking areas.
- Develop new brochures with information on refuge fishing opportunities, regulations, and access.
- Educate anglers about the Medicine Lake wilderness designation and use policy by placing interpretive panels and/or brochures in the fishing area at the Highway 16 bridge.
- Continue to work cooperatively with Montana Fish, Wildlife, and Parks regarding law enforcement, regulations, stocking fish, and other issues.
- Continue to maintain the fishery at Medicine Lake, and close Gaffney Lake, Swanson Lake, and Lake 12 to fishing and manage for migratory birds.

Objective 4: Environmental Education and Interpretation

Within 3 years of the CCP approval and depending on additional staff and funding, re-establish a minimum of at least five annual interpretive and environmental education programs. Focus programs on refuge complex natural and cultural resources, as well as habitat and wildlife management practices. By year 15, annually conduct an average of 15 environmental education and interpretation programs.

Rationale:

Environmental education and interpretation are two of the six wildlife-dependent recreational activities specified in the Refuge System Improvement Act. The refuge complex features a 14-mile interpretive wildlife drive with information kiosks, interpretive signs, and pull-outs. Due to budget constraints, the Service currently conducts minimal environmental education activities, typically when local school teachers contact the staff. The conservation and restoration of native prairie would be the primary management direction over the next 15 years. Environmental education programs would focus on teaching children and adults the importance of protecting the mixed-grass prairie and wildlife. Today's children are the landowners and land stewards of the future, and they are essential in accomplishing conservation efforts in northeastern Montana.

Strategies:

- Update the general brochures for Medicine Lake NWR and the Northeast Montana WMD.
- Develop a refuge complex fact sheet.
- Provide educational opportunities and events during National Wildlife Refuge week, International Migratory Bird Day, and at county fairs.
- Construct a visitor contact station with offices at a future location to be determined, and create seasonal and permanent displays and exhibits for the refuge complex.
- Conduct interpretive programs such as guided tours, films, and nature talks.
- Maintain interpretive panels, and develop new panels for the refuge complex.
- Continue to maintain the refuge's 14-mile wildlife drive to provide a safe and enjoyable experience for all visitors.
- Continue to operate the Youth Conservation Corps program.
- Foster a volunteer program, and actively recruit student interns.
- Develop environmental education materials, and carry out programs that explain various management activities, habitats, and wildlife.
- Continue to provide access to refuge lands for "hands-on" environmental education experience.
- Continue to maintain an environmental education area with restrooms and information kiosks near the Highway 16 bridge.

Objective 5: Wildlife Observation and Photography

Within 5 years of development of a Visitor Services Management Plan, provide 90 percent of visitors a high-quality experience, with many opportunities to view and photograph wildlife.

Rationale:

Wildlife observation and photography are compatible wildlife-dependent recreational uses on portions of the refuge, and directly relate to the mission of the Refuge System. These activities help foster an appreciation and understanding of wildlife and the outdoors in the local, regional, and national communities.

The beautiful landscapes, wetlands, and skies at Medicine Lake NWR and Northeast Montana WMD afford people the opportunity for viewing and photographing hundreds of wildlife and plant species. To ensure that visitors continue to have high-quality experiences, the refuge would provide

information on where to observe wildlife in a safe and undisturbed manner.

Strategies:

- Define areas where wildlife observation and photography would be permitted in the Visitor Services Management Plan.
- Maintain the refuge's 14-mile wildlife drive (auto tour route).
- Provide a safe and enjoyable wildlife experience for all visitors.
- Explore the feasibility of constructing a boardwalk and an observation blind at Sayer Bay.
- Continue to maintain an accessible colony-nesting bird observation platform with mounted binoculars near Bridgerman Point.
- Maintain an observation blind near an active sharp-tailed grouse "dancing" ground.
- Construct a walking trail from the proposed visitor contact station to the lakeshore that includes a viewing blind.
- Conduct informal surveys, and solicit feedback from visitors to determine progress in achieving this objective.

Refuge Operations Goal

Use staff, partnerships, volunteers, and funding efficiently through effective communication and innovation, to support the National Wildlife Refuge System.

Objective 1: Support

Over the life of the plan, focus refuge staff efforts on fulfilling migratory bird and habitat management responsibilities. However, since the number of employees has decreased since 2000, this objective focuses on increasing staff to the year 2000 level, and seeking more funding and other support for the refuge complex.

Rationale:

The Service allocates limited annual resources (funds and staff) to the refuge, and the priority for these resources is to manage upland and wetland habitats. Staff would accomplish fewer objectives and strategies if the refuge does not reach the target (minimum) staffing level and obtain adequate funding. The current and proposed staffing chart (table 15) defines minimum staff levels.

Strategies:

- Create priorities for filling all positions identified on the current and proposed staffing chart, and determine which positions to fill first when funding is restored.
- Host an annual open house for local and regional communities to increase the transparency of refuge operations and management.
- Upon approval of the CCP, establish a minimum staffing level for seasonal employees.
- Continue to support and recruit youths from local schools for the Youth Conservation Corps program.
- By year 5, identify needs for more office space, housing, and equipment storage when minimum staffing levels are realized.
- Foster a local volunteer program, and actively recruit student interns.

Objective 2: Priorities

Within 15 years of CCP approval, secure additional funding to complete 100 percent of intended habitat restoration. Include restoration with the following priorities: (1) intensive management of existing native prairie, including reducing invasive species and increasing prescribed grazing and fire; (2) native prairie reseeding; and (3) maintenance of nonnative planted areas to improve migratory-bird nesting habitat.

Rationale:

The refuge has limited funding and staff, and needs to target operations funding for the highest priority habitats on the refuge complex. Staff members would focus their efforts on the priority habitats and units. Additional staff and funding would be necessary to restore the mixed-grass prairie.

Strategies:

- Use additional funding to purchase herbicides to control invasive species and remove or control nonnative woody plants.
- Continue to use maintenance funding to maintain or replace equipment and facilities to meet Service standards.
- Secure additional funding to construct an equipment storage building to protect existing equipment and tools, thus extending their useful life. Equipment is necessary for habitat protection, restoration, and maintenance of existing facilities.

- Maintain existing facilities and equipment to Service standards, including roads, dikes, water control structures, buildings, and fences (all of which are critical in habitat management and protection).

Partnerships Goal

Develop partnerships to support research, conserve habitat, and foster awareness and appreciation of the mixed-grass prairie.

Objective 1: Strong Partnerships

For the duration of the plan, strengthen existing partnerships and create opportunities for new partnerships with federal, state, and local agencies, organizations, schools, corporations, and communities to promote the understanding and conservation of the mixed-grass prairie ecosystem and refuge complex resources, activities, and management.

Rationale:

Partnerships require extensive time to coordinate, develop, and maintain. Long-term commitments, including funding and staff time, are needed to maintain a strong and lasting relationship with our partners, such as Montana Fish, Wildlife, and Parks, the counties of Sheridan, Daniels, and Roosevelt, the cities of Medicine Lake and Plentywood, Ducks Unlimited, and The Nature Conservancy.

Without adequate staffing, the refuge complex might compromise its current partnerships and not develop new partners. Several CCP objectives depend on partner support and funding. Many of our wildlife, habitat, and Visitor Services programs would not continue without the additional funding and support from partners. Without partners, many of the habitat protection, restoration, and enhancement projects would go unfunded. Partners thus are essential in fully implementing the CCP.

The complex reaches across the 3-county landscape on privately owned land with wetland and grassland easement programs and habitat management activities on Service owned lands. Management activities such as prescribed grazing and burning and upland restoration can affect neighbors and the surrounding communities. Communication through individuals and organizations, and staff participation in local events, meetings, and activities build and maintain support for the refuge complex's programs. Partnerships are vital to accomplishing the Service mission. By establishing and maintaining partnerships, refuge staff would foster communication among local communities, landowners, and other interested parties. The refuge staff would continue to seek new opportunities and strengthen existing relationships to help achieve mutually beneficial goals and objectives.

Strategies:

- Refuge staff would increase involvement in community and civic activities to strengthen relationships.
- Refuge staff would continue to strengthen relationships with existing partners such as Montana Fish, Wildlife, and Parks, Ducks Unlimited, The Nature Conservancy, and Sheridan County.
- Refuge staff would seek and develop volunteer opportunities with the local community.
- Refuge staff would promote new partnerships to support conservation, restoration, and awareness of the mixed-grass prairie and its wildlife.
- Refuge staff would participate in projects and events sponsored by local and regional partners and cooperators.
- Refuge staff would investigate developing a "friends" group for the refuge complex within 5 years after CCP approval.
- Refuge staff would promote the refuge's management practices, such as prescribed grazing and burning, among private landowners and would provide technical assistance.

Objective 2: Outreach

For the duration of the plan, annually reach at least 200 individuals through formal and informal events and activities. Focus outreach to increase awareness, appreciation, and understanding of natural resource conservation and management practices. Promote the significance of remaining native-prairie grasslands and wetlands among area landowners and the local and regional communities.

Rationale:

Outreach efforts help educate people about the refuge and its needs. The refuge staff would work to expand the public outreach program to local and regional communities and city, county, state, and federal officials. Outreach may include formal meetings and "tailgate" discussions with visitors or landowners, and well as news releases, organized programs, tours, and presentations.

Strategies:

- Regularly attend local wildlife and community meetings to provide information on refuge complex activities, management, and issues.

- Communicate with the community and local landowners about the importance of a stewardship ethic.
- Visit with congressional offices annually to keep them up-to-date on refuge complex activities, management, and issues.
- Annually visit with commissioners from the refuge complex's three counties (Daniels, Sheridan, and Roosevelt) to keep them up-to-date on refuge complex activities, management, and issues.
- Write monthly news articles for local newspapers, and deliver television and radio spots on request.
- Develop and maintain a refuge complex website.
- Foster a local volunteer program.

Cultural Resources Goal

Preserve and value the cultural resources and history of Medicine Lake NWR Complex to connect staff, visitors, and the community to the area's past.

Objective 1: Preserve Resources

For the duration of the plan, preserve and protect significant cultural resources within refuge complex lands.

Rationale:

Cultural resources include archaeological sites (prehistoric and historic and their associated documentation), buildings and structures, landscapes, objects, and historic documents. These assets form tangible links with the past. The refuge is responsible for protecting and managing these irreplaceable resources for future generations. The Service established a cultural resources management program to manage the rich collection of cultural resources under its jurisdiction. Some of the primary goals related to refuge management include: 1) identify, evaluate, and encourage preservation of cultural resources and 2) consult with a broad array of interested parties.

Strategies:

- Consult with a Service archeologist before any landscape management disturbance or activity that might affect structures older than 50 years or disturb the soil surface. These activities must go through a Section 106 review under the National Historic Preservation Act.
- Adhere to all federal laws associated with cultural resources.
- Consult with a Service archeologist on appropriate site mapping, data storage, site preservation, and protocols to follow regarding newly discovered sites.
- Consult with a Service archeologist on cultural resource research and study requests.
- Avoid areas of known cultural resources (and potentially sensitive areas when practical) during management actions such as fencing. While cultural resources information should not be readily available to the public, refuge staff and law enforcement officers should know the locations of sensitive resources so they can be managed and protected.
- Continue to coordinate cultural resource inventories on refuge complex construction and development sites.
- Avoid or conduct noninvasive (archival or oral history) investigations of cultural sites such as historic graves.
- Whenever possible, document interviews with local people and long-term refuge staff.
- Protect structures that are eligible for the National Register of Historic Places.
- Educate staff on cultural resource issues and the importance of National Historic Preservation Act compliance, because staff awareness is vital to preservation and protection of resources.

Research Goal

Conduct innovative natural resource management, using sound science and applied research to advance the refuge complex staff's understanding of natural resource function and management within the northern Great Plains.

Objective 1: Applied Research

During the 15 years following CCP approval, use applied and adaptive research that might influence management decisions and support the refuge's purpose. From this information, identify and create priorities for additional research to assist the refuge complex in achieving habitat objectives.

Rationale:

Habitat-based goals and objectives form the basis for establishing research and monitoring priorities for the refuge complex. Investigations must be

designed, funded, and carried out to address questions or information gaps. Research would be supported on a case-by-case basis, as long as it does not detract from the refuge purpose.

Partnerships are critical for achieving the research goal and objectives. Cooperative efforts, such as shared funding, lodging, vehicles, equipment, knowledge, and expertise, are needed to accomplish research projects.

Strategies:

- Focus wildlife population research on assessments of species-habitat relationships. Develop models that predict wildlife responses to habitat management or restoration.
- Design and conduct issue-driven research unlikely to be addressed reliably using long-term monitoring. Develop predictive models of habitat management and restoration.
- Promote refuge research and science priorities within the broader scientific community that focus on meeting information needs identified in habitat management goals and objectives.
- Determine whether restored habitat is meeting the requirements of migratory birds.
- Continue to support current research on crested wheatgrass and groundwater and surface wetlands impacts as a result of oil and gas development.

6.4 Personnel

Medicine Lake NWR currently supports 9 full-time permanent employees and between 7 and 10 seasonal employees whose average tenure is 4 months per year. This equates to about 12 FTE employees. Additional permanent and career seasonal staff would be required to implement the strategies in the CCP and effectively monitor the flora and fauna to determine if the goals and objectives of the CCP are being met.

Table 15 compares the current staff levels with the proposed additional staff needed to fully implement the CCP. A staff assessment of the refuge approved 20 permanent FTEs to complete all necessary functions (Fiscal Year 2006). However, the proposed staffing levels are based on numerous existing vacancies and realistic funding projections for the next 15 years.

If all the proposed positions were funded, the refuge staff would be able to carry out all aspects of this CCP, which would provide maximum benefits to refuge wildlife, facilities, and operations, and provide for increased public use. Projects that have adequate funding and staffing would receive priority status. Staffing and funding are requested for the 15-year period of the CCP.

6.5 Funding

Projects required to carry out the CCP are funded through two separate systems, as follows:

- The refuge operations needs system (RONS) is used to document requests to Congress for funding and staffing needed to carry out projects above the existing base budget.
- The Service asset maintenance management system (SAMMS) is used to document the equipment, buildings, and other existing properties that require repair or replacement

Lists of the RONS and SAMMS projects required to carry out this draft CCP (including maintaining structures and equipment at a safe and productive level for the 15 years of the CCP) are found in appendix I and J.

6.6 Partnership Opportunities

Opportunities exist near the Medicine Lake NWR complex to establish partnerships with sporting clubs, elementary and secondary schools, and community organizations. A strong partnership already exists between the Service and Montana Fish, Wildlife, and Parks.

At regional and state levels, partnerships might be established with various organizations. Some of these partnerships already exist (or exist at a different level), such as with Ducks Unlimited and The Nature Conservancy. Existing partnerships could be expanded, and new ones created with organizations such as the National Audubon Society, National Wild Turkey Federation, Montana Wildlife Federation, and wildlife societies, wilderness societies, and others.

6.7 Monitoring and Evaluation

Adaptive management is a flexible approach to long-term management of biotic resources. Adaptive management is directed over time by information such as the results of ongoing monitoring activities.

Table 15. Current and Proposed Staffing

Current	*Proposed Staffing**
Project Leader (GS-13)	Project Leader (485) (GS-13)
Deputy Project Leader (GS-12)	Supervisory Refuge Operations Specialist (485) (GS-12)
Refuge Operations Specialist (485) (GS-7/9) VACANT	Refuge Operations Specialist (485) (GS-7/9) for WMD
NONE	Refuge Operations Specialist (485) (GS-5/7/9) for Refuge
Wildlife Biologist (GS-11)	Wildlife Biologist (486) (GS-11)
Biological Technician (GS-5/7) VACANT	Biological Technician (GS-5/7) WMD
NONE	Biological Technician (GS-5/7) Refuge
NONE	Resource Specialist (GS-9) Geographical Information Systems (GIS)
Administrative Officer (GS-7/9)	Administrative Officer (GS-9)
NONE	Office Secretary (GS-5)
VACANT	Park Ranger (025) (GS-9) Law Enforcement
NONE	Outdoor Recreation Planner (411) (GS-7/9)
Prescribed Fire Specialist (401) (GS-7/9)	Prescribed Fire Specialist (401) (GS-9)
VACANT	Fire Program Technician (404) (GS-5/7)
Maintenance Mechanic (WG-10)	Maintenance Mechanic (4749) (WG-10)
Maintenance Worker (WG-8)	Seasonal Maintenance Worker (4749) (WG-8)

** 20 permanent FTEs are approved under the region 6 organization chart. In addition to the FTEs identified above, the refuge would use seasonal and youth programs to fill staffing needs.*

Projects are carried out within a framework of scientifically driven experiments to test the predictions and assumptions outlined within a CCP (figure 20).

To apply adaptive management, specific survey, inventory, and monitoring protocols would be adopted for the Medicine Lake NWR Complex. The Habitat Management Plan would be used to provide the monitoring protocols. The habitat management strategies would be systematically evaluated to determine management effects on wildlife populations. This information would be used to refine approaches and determine how effectively the objectives are being met. Evaluations would include participation by Service personnel and other partners. If monitoring and evaluation indicate undesirable effects for target and nontarget species or communities, alteration to the management projects would be made. Subsequently, the CCP would be revised.

6.8 Step-down Management Plans

Specific monitoring and evaluation activities would be described in step-down management plans. This CCP is intended to be a broad umbrella plan that outlines general concepts and objectives for habitat, wildlife, wilderness, public use, cultural resources, refuge operations, and partnerships. Step-down management plans provide greater detail for implementing specific actions authorized by the CCP. Table 16 presents plans that are anticipated to be needed for the refuge complex, their current status, and next revision date.

Table 16. Step-down Management Plans for Medicine Lake NWR Complex, Montana

Plan	*Date Completed or Revised*
Fire Management Plan	2001, next revision 2009
Annual Water Management Plan	2001
Safety Plan	1996
Cropland Management Plan	1995
Invasive Plant Control Plan	1995
Research Natural Area Management Plan	1994
Grassland Management Plan	1993
Hunting and Fishing Management Plan	1990
Wilderness Management Plan	1985
Visitor Services Management Plan	Within 5 years
Habitat Management Plan	Within 3 years

6.9 Plan Amendment and Revision

This CCP would be reviewed annually to determine the need for revision. A revision would occur if and when significant information becomes available, such as a change in ecological conditions. Revisions to the CCP and subsequent step-down management plans would be subject to public review and NEPA compliance. At a minimum, this plan would be evaluated every 5 years and revised after 15 years.

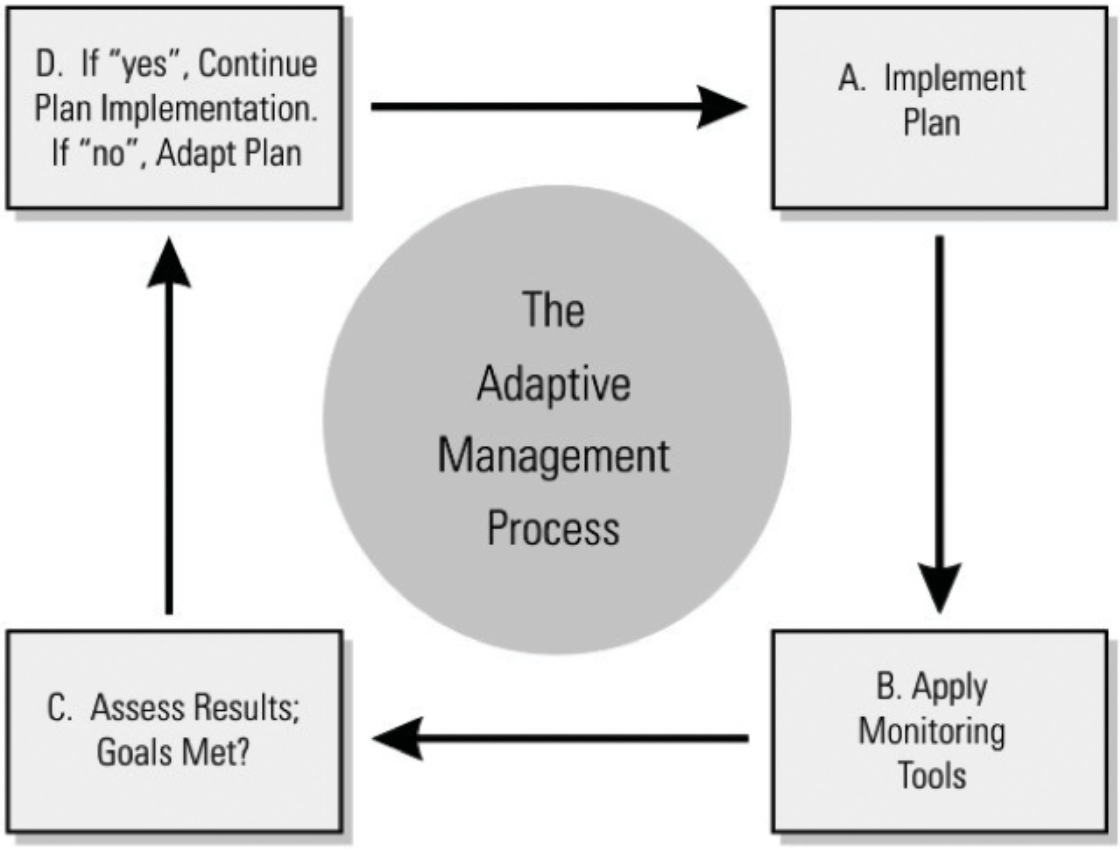

Figure 20. Adaptive management process.