Chapter 1: Introduction, Purpose and Need, and Issues

1.1 Introduction

This document is an integrated Comprehensive Conservation Plan (CCP) and Environmental Impact Statement (EIS) for Trempealeau National Wildlife Refuge (NWR or Refuge). It follows the basic and accepted format for an EIS and each alternative presented contains the core of a CCP, namely goals, objectives, and strategies. Since it is an integrated document designed to meet the requirements for both an EIS and a CCP, some sections in the EIS were expanded (notably Chapter 1, Planning Background) to meet this dual function. In addition, various referenced appendices relate to either the EIS, CCP, or both, as applicable.

Trempealeau NWR is located within the Mississippi River Valley in southwestern Wisconsin (Figure 1). This 6,226-acre Refuge in Buffalo and Trempealeau Counties is managed by the U.S. Fish and Wildlife Service. The Refuge was established by Executive Order 7437 in 1936 as "a refuge and breeding ground for migratory birds and other wildlife" (Appendix E). Trempealeau NWR is part of the Upper Mississippi River NWR Complex with headquarters in Winona, Minnesota. The Complex includes Upper Mississippi River National Wildlife & Fish Refuge and Driftless Area NWR.

Trempealeau NWR lies adjacent to Navigation Pool 6 of the Mississippi River and is strategically located on this important migration corridor, providing resting and feeding habitat for thousands of waterfowl and other birds during spring and fall. The Refuge also includes more than 700 acres of rolling native prairie and oak savanna, habitat types that are scarce in Wisconsin.

Northern Shoveler Hen / USFWS

1.2 Purpose and Need for Action

1.2.1 Purpose

The purpose of this EIS is to adopt and implement a CCP for Trempealeau NWR. The Service is considering a range of alternatives of how best to manage the Refuge.

Comprehensive Conservation Plans are designed to guide the management and administration of National Wildlife Refuges for a period of 15 years and help ensure that each refuge meets the purpose for which it was established and contributes to the overall mission of the National Wildlife Refuge System (NWRS) (see Section 1.4.3 on page 6). The CCP helps describe a desired future condition of the Refuge, and provides both long-term and day-to-day

Figure 1: Location of Trempealeau NWR in Wisconsin

guidance for management actions and decisions. It provides both broad and specific policy on various issues, sets goals and measurable objectives, and outlines strategies for reaching these objectives. A CCP also helps communicate the Refuge's management direction to other agencies and the public.

The NWRS Refuge Improvement Act of 1997 (see Section 1.4.4 on page 6) mandates that the Secretary of the Interior, and thus the Service, prepare CCPs for all units of the National Wildlife Refuge System by October 2012. In addition to this mandate, there are several reasons why preparation of a CCP is needed at this time.

The last comprehensive plan (known as a Master Plan) was completed in 1983 (USFWS 1983). Since then, the Refuge environment has undergone change affecting habitat and wildlife, new laws and policies have been put in place, new scientific information is available, and levels of public use and interest have increased.

The National Environmental Policy Act of 1969 (NEPA) requires that federal agencies follow basic requirements for major actions significantly affecting the quality of the human environment. These requirements are:

Consider every significant aspect of the environmental impact of a proposed action.
Involve the public in its decision-making process when considering environmental concerns.
Use a systematic, interdisciplinary approach to decision making.
Consider a reasonable range of alternatives.

This EIS documents those requirements and provides the necessary information and analysis to the decision-maker.

Finally, the planning process is an excellent way to inform and involve the general public, state and federal agencies, and non-government groups that have an interest, responsibility, or authority in the management or use of certain aspects of the Trempealeau NWR.

1.2.2 Need

The CCP that ultimately arises from this EIS/CCP will help ensure that management and administration of the Refuge meet the mission of the Refuge System, the purpose for which the Refuge was established, and the goals for the Refuge. The mission, purpose, and goals are considered the needs or benchmarks for defining reasonable alternatives

American Coot, USFWS

presented in Chapter 2 and, along with an evaluation of consequences in Chapter 4, will form the basis for a decision. These needs are summarized below. More detail on issues related to these needs can be found in Section 1.4.8 on page 16, Planning Issues, Concerns and Opportunities.

Need I: Contribute to the Refuge System Mission

The mission of the National Wildlife Refuge System set forth in the Refuge Improvement Act of 1997 is:

> "To administer a national network of lands and waters for the conservation, management, and where appropriate, restoration of the fish, wildlife, and plant resources and their habitats within the United States for the benefit of present and future generations of Americans."

Need II: Help Fulfill the Refuge Purpose

The purpose of the Refuge comes from the authority under which it was established and in the case of Trempealeau NWR, from the authorities under which subsequent major land additions to the

Black-eyed Susan. USFWS

Refuge were made. Purposes for Trempealeau NWR are as follows:

> " ...a Refuge and breeding ground for migratory birds and other wildlife"
>
> Executive Order 7437, dated August 21, 1936. (Appendix E)
>
> "suitable for-(1) incidental fish and wildlife oriented recreational development, (2) the protection of natural resources, (3) the conservation of endangered species ..."
>
> Refuge Recreation Act of 1962 (16 U.S.C 460k-460k-4), as amended (Appendix D)
>
> "...for the development, advancement, management, conservation, and protection of fish and wildlife resources."
>
> 16 U.S.C. 742f(a)(4)(Fish and Wildlife Act of 1956.) (Appendix D)

Need III: Help Achieve Refuge Goals

Goal 1: Landscape – We will strive to maintain and improve the scenic and wild character, and environmental health of the Refuge.

Related needs are to:

- # Complete acquisition within the approved boundary with the addition of 12 acres under the Regional Director's authority.
- # Maintain the integrity of the Refuge boundary.
- # Ensure integrity of lands designated as Natural Areas or with other special designations.
- # Protect archeological and cultural resources and ensure consideration of preservation of historic properties.
- # Protect Refuge habitats and facilities during flood events.

Goal 2: Wildlife and Habitat – Our habitat management will support diverse and abundant native fish, wildlife, and plants.

Related needs are to:

- # Evaluate and manage forest resources.
- # Manage non-native trees and downed fuel.
- # Restore and enhance wetlands.
- # Restore productivity to Refuge pools.
- # Prepare for quick response to contaminant spills from train derailments or roadway accidents.
- # Reduce sediment, nutrients, and contaminants in waters upstream of the Refuge.
- # Restore and enhance prairie and oak savanna habitat.
- # Understand and reduce invasive plants and animals.
- # Monitor the status of key fish and wildlife.
- # Protect and enhance federally listed threatened, endangered, and candidate species and their habitats.
- # Manage deer herds to prevent over-browsing and loss of plant diversity.
- # Manage beaver and muskrat populations to limit damage to dikes and structures.
- # Improve fishery conservation efforts.
- # Provide adequate undisturbed areas to meet the nesting, feeding and migration needs of waterfowl.
- # Protect and enhance habitat for forest birds.
- # Understand and be ready to respond to wildlife disease outbreaks.

Goal 3: Public Use – We will manage public use programs and facilities to ensure sustainable, quality hunting, fishing, wildlife observation, wildlife photography, interpretation, and environmental education opportunities for a broad cross-section of the public; and provide opportunities for the public to use and enjoy the Refuge for traditional and

appropriate non-wildlife dependent uses that are compatible with the purposes for which the Refuge was established and the mission of the Refuge System.

Related needs are to:

- # Improve opportunities for wildlife observation and photography.
- # Improve opportunities for interpretation.
- # Improve opportunities for environmental education.
- # Provide diverse, high quality, hunting and fishing opportunities for people of all abilities.
- # Provide opportunities for appropriate non-commercial harvest of plant parts.
- # Improve opportunities for non-motorized biking.
- # Respond to requests for other uses such as horseback riding, dog trials, camping, and special fundraising events.
- # Update general public use regulations for clarity and effectiveness.

Goal 4: Neighboring Landowners and Communities – We will communicate openly and work cooperatively with our neighbors and local communities to help all benefit from the aesthetic and economic values of the Refuge.

Related needs are to:

- # Improve community outreach.
- # Establish a Refuge Friends group.
- # Promote an active and rewarding volunteer program.
- # Improve communication and cooperation with other agency partners.
- # Improve communication and cooperation with adjacent private landowners.
- # Coordinate with utilities and transportation departments to minimize impacts of easements and rights-of-way to habitats.

Goal 5: Administration and Operations – We will seek adequate funding, staffing, and facilities; and improve public awareness and support to carry out the purposes, vision, goals, and objectives of the Refuge.

Related needs are to:

- # Provide year-round access to the Refuge.
- # Provide adequate office and maintenance facilities.
- # Provide adequate staff to meet resource and public challenges and opportunities.
- # Identify operational and maintenance needs.

1.3 Decision Framework

The Service's Regional Director in Minneapolis, Minnesota, is the responsible official for approving the Final EIS in a Record of Decision. The Record of Decision will identify the selected alternative which will become the Final CCP. The selected alternative will be one of the alternatives in this Final EIS, although the final decision may reflect modification of certain elements of the alternatives based on public review and comment. The Final EIS also contains individual substantive comments or a summary of like-comments, received from the public, agencies, and other interested parties, along with a Service response (see Chapter 7).

1.4 Planning Background

1.4.1 Legal and Policy Framework

Trempealeau NWR is managed and administered as part of the National Wildlife Refuge System within a framework of organizational setting, laws, and policy. Key aspects of this framework are outlined below. A list of other laws and executive orders that have guided preparation of the CCP and EIS, and guide future implementation, are provided in Appendix D.

1.4.2 The U.S Fish and Wildlife Service

The Refuge is administered by the U.S. Fish and Wildlife Service, Department of Interior. The Service is the primary federal agency responsible for conserving and enhancing the nation's fish and wildlife populations and their habitats. Although the Service shares this responsibility with other federal, state, tribal, local, and private entities, the Service has specific trust responsibilities for migratory birds, threatened and endangered species, certain interjurisdictional fish and marine mammals, and the National Wildlife Refuge System. The mission of the Service is:

> "Working with others to conserve, protect, and enhance fish and wildlife and their habitats for the continuing benefit of the American people."

1.4.3 The National Wildlife Refuge System

The Refuge System had its beginning in 1903 when President Theodore Roosevelt used an Executive Order to set aside tiny Pelican Island in Florida as a refuge and breeding ground for birds. From that small beginning, the Refuge System has become the world's largest collection of lands specifically set aside for wildlife conservation. The administration, management, and growth of the Refuge System are guided by the following goals (USFWS 2004, Section 601 FW1.8):

The Refuge System's goals are to:

Conserve a diversity of fish, wildlife, and plants and their habitats, including species that are endangered or threatened with becoming endangered.
Develop and maintain a network of habitats for migratory birds, anadromous and interjurisdictional fish, and marine mammal populations that is strategically distributed and carefully managed to meet important life history needs of these species across their ranges.
Conserve those ecosystems, plant communities, wetlands of national or international significance, and landscapes and seascapes that are unique, rare, declining, or underrepresented in existing protection efforts.
Provide and enhance opportunities to participate in compatible wildlife-dependent recreation (hunting, fishing, wildlife observation and photography, and environmental education and interpretation).
Foster understanding and instill appreciation of the diversity and interconnectedness of fish, wildlife, and plants and their habitats.

1.4.4 National Wildlife Refuge System Improvement Act of 1997 and Related Policies

The Improvement Act of 1997 amended the National Wildlife Refuge System Administrative Act of 1966 and became a true organic act for the System by providing a mission, policy direction, and management standards. A summary of the key provisions of this landmark legislation and subsequent policies to carry out the Act's mandates follows:

Established Broad National Policy for the Refuge System:

Each refuge shall be managed to fulfill the mission and its purpose.
Compatible wildlife-dependent recreation is a legitimate and appropriate use.
Compatible wildlife-dependent uses are the priority public uses of the System.
Compatible wildlife-dependent uses should be facilitated, subject to necessary restrictions.

Directed the Secretary of the Interior to:

Provide for the conservation of fish, wildlife, and plants within the System.
Ensure biological integrity, diversity, and environmental health of the System for the benefit of present and future generations.
Plan and direct the continued growth of the System to meet the mission.
Carry out the mission of the System and purposes of each refuge; if conflict between, purposes takes priority.
Ensure coordination with adjacent landowners and states.
Assist in the maintenance of adequate water quantity and quality for refuges; acquire water rights as needed.
Recognize compatible wildlife-dependent recreational uses as the priority general public uses of the System.
Ensure that opportunities for compatible wildlife-dependent recreation are provided.

Bird Festival celebration of the Refuge's 70th birthday. USFWS

Ensure that wildlife-dependent recreation receives enhanced consideration over other uses of the System.

Provide increased opportunities for families to enjoy wildlife-dependent recreation.

Provide cooperation and collaboration of other federal agencies and states, and honor existing authorized or permitted uses by other federal agencies.

Monitor the status and trends of fish, wildlife, and plants in each refuge.

Provide Compatibility of Use Standards and Procedures:

New or existing uses should not be permitted, renewed, or expanded unless compatible with the mission of the System or the purpose(s) of the refuge, and consistent with public safety.

Wildlife-dependent uses may be authorized when compatible and not inconsistent with public safety.

The Secretary shall issue regulations for compatibility determinations.

Planning:

Each unit of the Refuge System shall have a Comprehensive Conservation Plan completed by 2012.

Plans must identify and describe the archaeological and cultural values found on the refuge.

Planning should involve adjoining landowners, state conservation agencies, and the general public.

1.4.4.1. Compatibility Policy

No uses for which the Service has authority to regulate may be allowed on a unit of the National Wildlife Refuge System unless it is determined to be compatible. A compatible use is a use that, in the sound professional judgment of the Refuge Manager, will not materially interfere with or detract from the fulfillment of the National Wildlife Refuge System mission or the purposes of the National Wildlife Refuge. Managers must complete a written compatibility determination for each use, or collection of like-uses, that is signed by the Manager and the Regional Chief of Refuges in the respective Service region. Draft compatibility determinations applicable to uses described in this document were included in the Draft EIS/CCP and were available for public review. Compatibility determinations are available for review at Refuge Headquarters.

1.4.4.2. Biological Integrity, Diversity, and Environmental Health Policy

The Service is directed in the Refuge Improvement Act to "ensure that the biological integrity, diversity, and environmental health of the NWRS are maintained for the benefit of present and future generations of Americans..." The biological integrity policy of 2001 helps define and clarify this directive by providing guidance on what conditions constitute biological integrity, diversity, and environmental health; guidelines for maintaining existing levels; guidelines for determining how and when it is appropriate to restore lost elements; and guidelines in dealing with external threats to biological integrity, diversity and health (66 CFRIO January 2004).

1.4.4.3. Public Use Natural Area Policy

The Refuge currently has one Public Use Natural Area, the Black Oak Island Public Use Natural Area. (See Section 3.10.2.2.1 on page 120). The Service's Refuge Manual (USFWS 2004), Section 8 RM 11 provides guidance for management, administration and visitor use of Public Use Natural Areas and lists the following objectives of the designations:

Assure preservation of a variety of significant natural areas for public use which, when considered together, illustrate the diversity of the NWRS natural environments.

Preserve those environments that are essentially unmodified by human activity for future use.

1.4.5 Refuge History and Purposes

In the late 1800s a railroad was constructed along the Mississippi River. Today it forms the Refuge's south boundary. In the early 1900s, a drainage district was formed with the intent of draining the area north of the railroad dike for farming. The district dug a channel diverting the Trempealeau River and Pine Creek into the Mississippi River about 3 miles downstream of the Trempealeau River's original delta. Dredged material taken from the new channel was placed on the south bank to create barrier dikes to protect adjacent lands from flooding. Attempts to drain and farm within the dikes were largely unsuccessful and the drainage district eventually went bankrupt. Following the completion of Lock and Dam 6 at Trempealeau in the mid-1930s, water levels throughout Pool 6 were raised several feet and stabilized for navigation on the main river channel. Wetlands protected by the railroad and barrier

Dresser Farm, 1935. USFWS

1965 Flood, Trempealeau NWR. USFWS

dikes became part of a corporation known as Delta Fish and Fur Farm (Delta FFF).

Trempealeau NWR was established in 1936 when 706.9 acres were set aside by Executive Order 7437 (Appendix E) (Figure 2). The original Refuge consisted of an upland portion with open areas of former hay, pasture, and cropland. For more than 40 years the Refuge remained small in spite of several attempts to purchase more than 5,000 acres of the surrounding Delta FFF. The Delta FFF yielded a variety of incomes to its owners from farming, timber harvest, commercial fishing, furbearer trapping, and turtle and bait fish harvest. In addition, a group of local sportsmen leased the marshes for waterfowl hunting. Under private ownership the area remained relatively unchanged. Of significance was the major flood in 1965 which breached dikes, inundated Refuge buildings, and caused irreparable damage to wetland plant communities.

In 1975, Dairyland Power Cooperative acquired the Delta FFF. Dairyland wanted to construct a rail loop for a coal off-loading facility near their power generating plant at Alma, Wisconsin. The land they would need was part of the Upper Mississippi River NW&FR. As part of a land exchange Dairyland divested 132 acres of the Delta FFF and sold an additional 4,778 acres to the Service in 1979. This addition, plus other recent acquisitions, has brought Trempealeau NWR to its present 6,226 acres.

The 1936 Executive Order and subsequent legislation established the purposes of the Refuge as listed in Section 1.2.2 on page 3. These purposes remain valid to this day and guide the planning management, administration, and use of the Refuge.

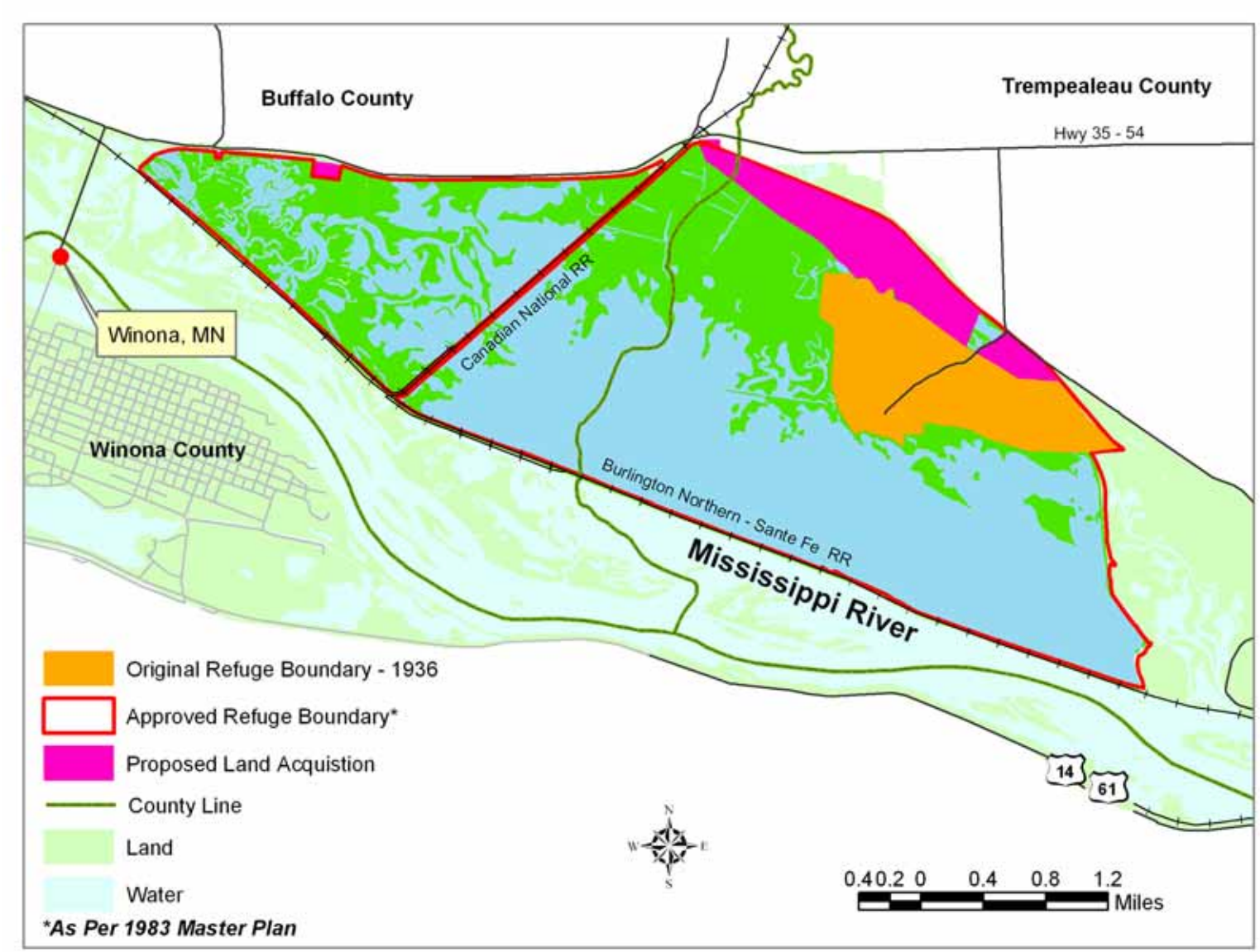
1.4.6 Relationships to Other Agencies, Partners and Other Initiative Planning

1.4.6.1. Partnerships

Partnerships with other federal agencies including state and local units of government and schools and private organizations are important in Refuge management. Wisconsin Waterfowl Association provides both funds and volunteer assistance in support of an annual waterfowl hunt for persons with disabilities on the Refuge. Ducks Unlimited has partnered with the Service on a major habitat project on the Refuge and additional work is planned. Major wetland habitat work was done on the Refuge in the mid-1990s under the Environmental Management Program (EMP) funded by the U.S. Army Corps of Engineers (Corps). The Corps, Wisconsin DNR and Minnesota DNR assist the Service with planning and project implementation under EMP.

Partnerships with Wisconsin DNR staff at nearby Perrot State Park include sharing of equipment and cooperative management of the Great River State Trail, which passes through Trempealeau NWR. The Wisconsin DNR Area Wildlife Manager for Trempealeau and Buffalo counties provides technical advice on Refuge hunting and trapping programs and has provided assistance and oversight on wetland restoration projects funded by the Service on private lands. The Refuge has negotiated cooperative agreements with Buffalo County Land Conservation Department to accomplish stream bank restoration and other habitat work in local watersheds.

Figure 2: Trempealeau NWR Boundary



A partnership with the Mississippi Archaeology Center aids in the management of Refuge collections. Under a cooperative agreement the Mississippi Archaeology Center curates collections from 9 investigations and other sources. The Refuge has 6,906 artifacts at repositories. The artifacts are owned by the Federal Government and can be recalled by the Regional Historic Preservation Officer for exhibits and other Refuge purposes.

1.4.6.2. Other Conservation and Planning Initiatives

1.4.6.2.1 Federal Government

Three federal agencies have jurisdictions over land in the vicinity of the Refuge: the U.S. Fish and Wildlife Service, U.S. Army Corps of Engineers and the Federal Highway Administration. The Service's plans and policies are relevant to the Refuge since the Service owns and manages Trempealeau NWR and co-owns and manages the adjacent Upper Mississippi River NW&FR. Planning by the U.S. Army Corps of Engineers is relevant since the Corps administers the Environmental Management Program, manages the lock and dam navigation system on the adjacent Mississippi River, and owns a portion of lands within the UMRNWFR. The Federal Highway Administration planning is relevant since they designated and oversee the Great River Road which passes within a mile of Trempealeau NWR.

Fish and Wildlife Service Plans, Policies and Programs

Relevant plans involving the Service include the *Trempealeau National Wildlife Refuge Master Plan* and accompanying Environmental Assessment (EA) (USFWS 1982) and the *1987 Master Plan for the Upper Mississippi River National Wildlife and Fish Refuge* with accompanying EA (USFWS 1987). The *Trempealeau NWR Master Plan* was completed in 1983 following major expansion of the Refuge with the acquisition of the former Delta FFF. It provides a summary of Refuge resources, and a concept plan for future development and use of the Refuge with an accompanying public involvement process. This document has served as the Refuge's principal management guidance for over two decades and will be superceded by the CCP.

The Service is also involved in the development and implementation of a number of conservation plans for migratory bird species including the *North American Waterfowl Management Plan* (North American Waterfowl Management Plan 2004), *Blueprint for the Future of Migratory Birds* (USFWS 2003), *Partners in Flight Bird Conservation Plan* (Knutson 2001), *U.S. Shorebird Conservation Plan* (Brown, et al. 2000), and the *North American Waterbird Conservation Plan* (Steering Committee 2001). These plans are discussed below with specific references to Region 3 where applicable.

The Upper Mississippi River and Great Lakes Joint Venture is the local component of the *North American Waterfowl Management Plan*. On a National level, this plan focused on partnering among agencies to secure, protect, restore, enhance and manage wetlands and associated uplands in priority landscapes; to conduct research and monitor specific waterfowl populations, and to provide environmental education and conservation planning with community involvement. Between 1986 and 1997, plan partners have invested over $1.5 billion on projects in the United States. Specific habitat objectives for the Upper Mississippi River and Great Lakes Joint Venture include providing 9.1 million acres of wetlands and associated uplands in waterfowl production counties and 533,000 acres in waterfowl migration counties. Trempealeau NWR would fall under the latter category.

The *Blueprint for the Future of Migratory Birds* was drafted in July 2003 as a strategic plan to guide the Service's Migratory Bird Program. A number of implementation strategies were developed under the categories of Population Monitoring, Assessment and Management, Habitat Conservation, Permits and Regulations, and Consultation, Cooperation, Communication and Recreation.

The *Partners in Flight (PIF) Conservation Plan's* initial focus was on neotropical migrants, species that breed in North America but winter in Central and South America, but the focus has spread to include most landbirds. A series of Bird Conservation Plans are being developed for the entire continental United States. The U.S. Fish and Wildlife Service's Office of Migratory Bird Management serves as a technical advisory body to the PIF Federal Committee. A component of the Bird Conservation Plan (BCP) for the Upper Midwest is the Upper Great Lakes Plain, a physiographic area which includes the "Driftless" or unglaciated area in Southwest Wisconsin which encompasses Trempealeau NWR (Partners in Flight, 2004). This component of the BCP designates Priority Bird Populations and Habitats for the Upper Great Lakes Plain as follows:

Grasslands: Henslow's Sparrow, Sedge Wren and Bobolink

Shrub-scrub: Golden-winged Warbler

Deciduous forest/savannah: Cerulean Warbler, Black-billed Cuckoo, Red-headed Woodpecker

All of the above are Region 3 Fish and Wildlife Resource Conservation (USFWS) species. The Partners in Flight perspective on conservation recommendations and needs for the Upper Great Lakes Plain is noteworthy.

> "There are many large urban centers in this area whose growth and sprawl will continue to consume land. The vast majority of the pre-settlement forest and oak savannah grasslands already have been converted to agriculture. The conversion of cropland may have benefited some grassland birds, and forest birds still persist. Rates of cowbird parasitism and nest predation in this heavily fragmented region, however, are extremely high and it is possible that only those bird communities in the few remaining expanses of contiguous habitat are self-sustaining. Forest habitat needs to be retained or restored so that a significant number of patches of sufficient size and quality each support a healthy population of cerulean warblers. It is assumed that each of these patches will then support the full range of forest birds. The total area of savannah habitat also should be increased, although the need for large blocks is not as apparent. These few areas of grassland that still exist should be retained." (Knutson 2001)

The *U.S. Shorebird Conservation Plan* was developed to stabilize populations of declining shorebird species and ensure that common species remain so. This will be accomplished, in part, through implementation of 11 regional conservation plans that outline strategies to provide sufficient high-quality shorebird habitat and to overcome other shorebird limiting factors. This plan addresses shorebird conservation in the Upper Mississippi Valley/Great Lakes (UMVGL) planning region, which is a large, diverse area that provides important habitat for a variety of shorebirds, especially migrants. The purpose of the plan is to conserve shorebirds in the UMVGL region through a combination of habitat protection, restoration, and management, population monitoring, research, and education outreach.

The *North American Waterbird Conservation Plan* is currently under development. It is a collaborative effort by federal and state agencies, NGOs, researchers, and other experts to formulate a plan that provides an overarching framework for conserving and managing seabirds, and other aquatic birds throughout North America. The goal of the Plan is to ensure that the distribution, diversity and abundance of populations, habitats, and other important sites of seabirds and other waterbirds are sustained or restored and maintained throughout their ranges in North America.

Tundra Swan. USFWS

Along with the Upper Mississippi River NW&FR, Trempealeau NWR was designated an Important Bird Area by the American Bird Conservancy. This designation in 1997 was based on the overall bird habitat values of both refuges specifically for the large numbers of Tundra Swans and Canvasbacks that use the refuges during migration.

Environmental Management Program

The Environmental Management Program (EMP) was established by Congress in 1986 coincident with the construction of a second lock and dam on the Mississippi River at East Alton, Illinois. Congress recognized the need for addressing environmental concerns in balance with the expansion of commercial navigation on the "Mississippi River". The 1999 Water Resources Development Act (Appendix D) increased the annual funding authorized to $33 million and established two main elements as continuing authorities:

- Planning, construction, and evaluation of fish and wildlife habitat rehabilitation and enhancement projects (HREPs).
- Long term resource monitoring, computerized data inventory and analysis, and applied research (LTRMP).

EMP is a coordinated ecosystem restoration program for the Upper Mississippi River system administered by the U.S. Army Corps of Engineers

in partnership with the U.S. Fish and Wildlife Service, U.S. Geological Survey, the states of Minnesota, Wisconsin, Iowa and Illinois, and non - governmental organizations. To date, 26 projects have been completed affecting more than 40,500 acres of habitat. A major HREP was completed on Trempealeau NWR in 1999 with construction of several miles of new dikes and four water control structures including one permanent and two seasonal pumping stations at a cost of over $4 million.

Environmental Pool Planning

Environmental Pool Plans (EPPs) were developed through a cooperative effort among state and federal agencies and the public to develop common habitat goals and objectives for the Upper Mississippi River. EPPs were intended to serve as a communication tool and one of several guides for sequencing habitat management projects in the St. Paul District of the Corps of Engineers for Pools 1 through 10. Desired future habitat maps were developed for each pool, representing what river managers and the public have identified as the habitat and features necessary to reverse negative trends in habitat quality and move toward a more sustainable ecosystem (Fish and Wildlife Work Group, 2004).

U.S. Army, Corps of Engineers, Section 404 Permits

Projects proposed by the Refuge that may impact wetlands are required to be reviewed by the Corps of Engineers to determine whether or not a permit under Section 404 of the Clean Water Act is required. Projects subject to permit requirements could involve dredging, filling or replacement of a structure in wetlands in or adjacent to Trempealeau NWR.

Great River Road

Recently, the Federal Highway Administration designated that portion of the Great River Road in Wisconsin as a National Scenic Byway based on its cultural and scenic uniqueness. For most of its length in Wisconsin the road follows the Mississippi River and passes within a mile of the entrance to Trempealeau NWR. The National Scenic Byway designation will allow Buffalo and Trempealeau counties and individual communities to compete for funding for projects to help enhance and/or interpret cultural, historic, natural, scenic and recreational qualities along the route. Due to its proximity, Trempealeau NWR will likely receive additional visitation due to the further development and expansion of public facilities along the Great River Road.

1.4.6.2.2 State of Wisconsin

State law, in particular, governing the use of navigable waters and removal or placement of fill within wetlands is relevant to Refuge planning. This is discussed in the remainder of this section along with a summary of planning efforts in process for the Wisconsin Land Legacy Report (WIDNR 2004) and Great River State Trail extension.

Chapter 30, Wisconsin State Statutes-Navigability

Under former private ownership, wetlands within the Delta FFF were closed to public entry. This was challenged in court on several occasions and the matter was finally settled at the Wisconsin State Supreme Court (WIDNR 2004). The court ruled that because the wetlands of the Delta FFF were completely surrounded by dikes and high grounds with no means for a boat to access the property by water, the wetlands within the Delta FFF were in fact, private. The Service has done nothing to modify the railroad or barrier dikes to permit public boat access from adjacent wetlands, and the agency will continue to provide public boat access to Trempealeau NWR waters from sites it designates within the Refuge.

Regarding Chapter 30 wetland impacts within Trempealeau NWR, it is questionable whether permits are required due to the “non-navigable” status of Refuge waters. However, in the past the Refuge has applied for, and received permits under Chapter 30 for projects including dike construction and rehabilitation, culvert replacement, rip-rapping, and so

Wild Bergamot. USFWS

on. It would seem to be in the public's best interest for the State of Wisconsin to review and authorize work of this type.

Wisconsin Land Legacy Report

In February 2003, the National Resources Board approved the Wisconsin Land Legacy Report (WIDNR 2004) and directed the Wisconsin Department of Natural Resources (WIDNR) to develop a plan describing how the report could be most effectively used to protect and maintain natural resources identified. An implementation strategy, currently in draft, will look at protecting lands through acquisition, conservation easements, cooperative agreements with landowners, and other techniques both by WIDNR and other agencies and non-governmental organizations such as the Nature Conservancy, Bluffland Alliance, Pheasants Forever and others. The Land Legacy Report identified open space lands between Trempealeau NWR and Perrot State Park as being very important for conservation and recreation purposes. Future consideration will be given to pursuing protection of natural resources and open space character of these lands. (Thompson, personal communication 2004).

Great River State Trail (GRST) Extension

In April 2004, the Wisconsin Department of Natural Resources submitted a grant proposal to the Wisconsin Department of Transportation requesting $971,696 in funds to construct an extension to the GRST from Marshland, adjacent to the Trempealeau NWR, to the City of Winona's Aghaming Park. This would be accomplished by building a dedicated bicycle/pedestrian trail on State Highway 35/54 right-of-way, separated from the motor vehicle travelway, for approximately 3.9 miles (Miss. Riv. Reg. Plan Commission 2000). The trail, following the former Chicago & Northwestern Railway, would depart from the highway and cross over the Burlington-Northern Santa Fe Railroad grade via bicycle-pedestrian-snowmobile bridge to be constructed. The route would then connect up with "old" Highway 54 and continue on to Aghaming Park. The City of Winona has rehabilitated the former "wagon bridge" and will assume construction and maintenance responsibilities for the trail within Aghaming Park, and across the Minnesota Highway 43 bridge spanning the Mississippi River into the mainland of Winona. (See Figure 3)

The connector will provide a safe and segregated commuting facility for bicycle and pedestrian traffic passing in both directions across the Minnesota/Wisconsin borders. Proponents of the project believe it will enhance direct access to a variety of parks including the Town of Buffalo's Bluff Siding Park, two National Wildlife Refuges, a major state wildlife area, the City of Winona's Aghaming Park, and will provide a link to the Minnesota DNR Bufflands Trail System.

River Education Days at Trempealeau NWR. USFWS

1.4.6.2.3 Town of Trempealeau Land Use Plan

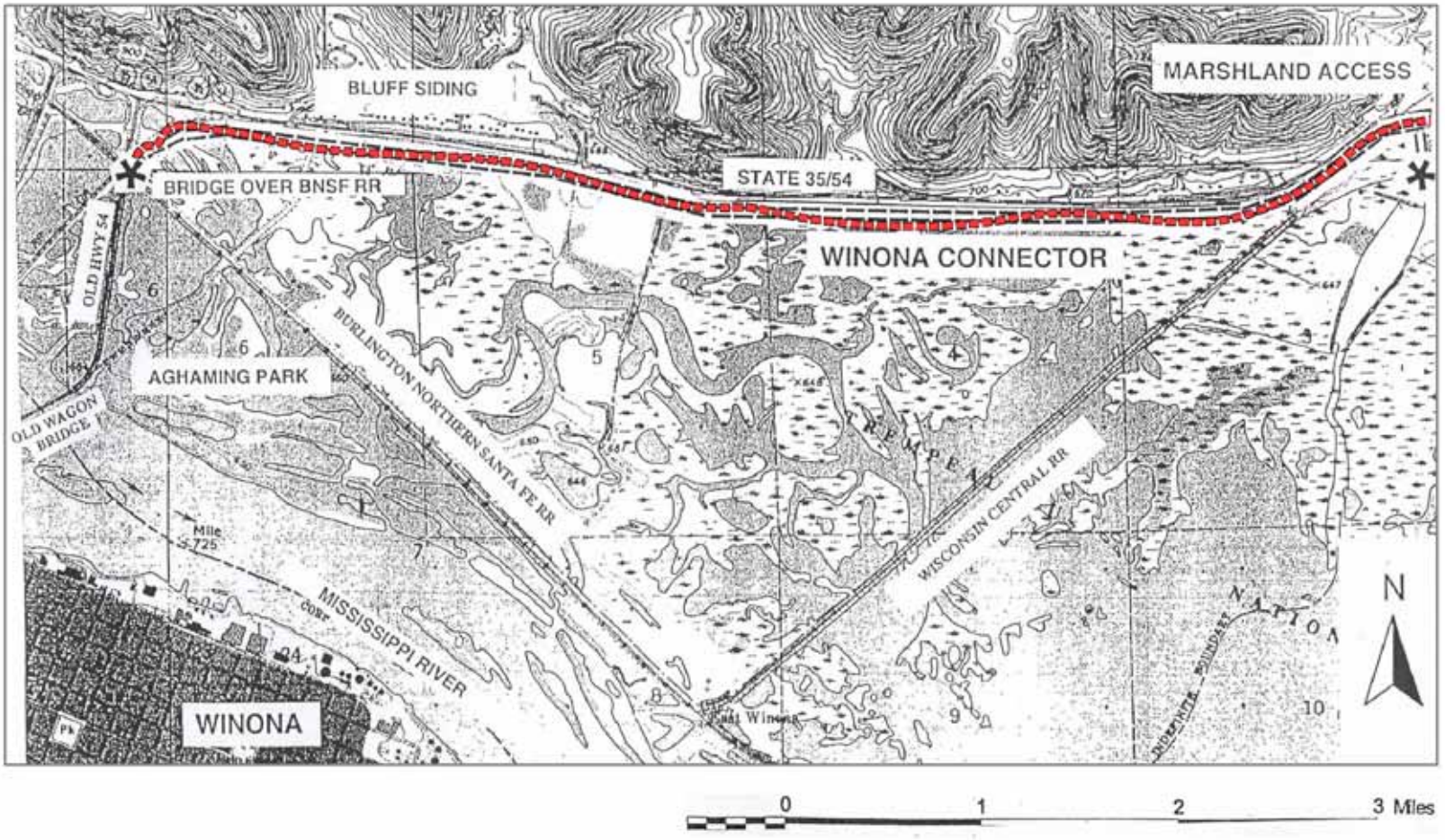
The Trempealeau County Planning and Zoning Department, under the direction of the Trempealeau County Zoning Committee, is working with individual towns within Trempealeau County to develop a land use plan that will ultimately guide future development of the towns in Trempealeau County. Details on this plan are included in Section 3.10.2.1.1 on page 120.

1.4.6.2.4 Buffalo County

Land and Water Resource Management Plan

Buffalo County's Land Conservation Committee, Land Conservation Department, and Land and Water Resource developed a "*Land and Water Integrated Management Plan*" in 2000 to meet the requirements of Act 27, Chapter 92 of the Wisconsin Statutes (Buffalo County 2000). Goals described in detail include: Agricultural Waste Manure Management for Water Quality; Reduction of Sediment Delivery to Water Systems; Preservation of Wetlands; Protection of Groundwater Sources, Woodland Management and Farmland Preservation. At the core of this plan are the goals that describe the ways the County will strive to meet state and federal water quality standards. Plans are to correct streambank cattle damage in watersheds including the Middle Trempealeau River Watershed in 2003. Additional emphasis will be placed on the tributaries

Figure 3: Great River State Trail, Winona Connector



Volunteer assisting with the Wood Duck banding program. USFWS

of the Lower Buffalo River which are major contributors to sedimentation at Rieck's Lake, a major migration rest stop for Tundra Swans (Buffalo County, 2000)

Buffalo County Outdoor Recreation Plan, 2002-2006 (Miss. Riv. Reg. Plan Commission 2000)

Buffalo County' *Outdoor Recreation Plan* provides a county-wide inventory of existing outdoor recreation facilities and opportunities. The plan sets a direction for county-wide recreation planning and guides local facility development and programming.

1.4.6.2.5 Aghaming Park-City of Winona, Minnesota

A Community Resources Plan for Aghaming Park was completed in 1999 and submitted to the City of Winona by the Aghaming Park Planning Team facilitated by the Resource Studies Center, of St. Mary's University, Minnesota (Drazkowski, 1999). Aghaming Park includes several hundred acres of floodplain forest with scattered emergent wetlands and old river channels. The property is unique in that it is owned by the City of Winona but located on the Wisconsin side of the Mississippi River, separated from Trempealeau NWR by the Burlington-Northern Santa Fe Railroad dike (Figure 3 on page 14). A multi-disciplinary planning team that includes Fish and Wildlife Service representation is looking at planning for resource management, public education and recreational use of Aghaming Park. With recent renovation of the Wagon Bridge from Latsch Island, Aghaming is again open to public vehicle access from Minnesota. As discussed in Section 1.4.6.2.2 on page 12 and Section 3.7.2.2 on page 112, there is also a proposal to extend the Great River State Trail to provide access for hikers and bikers to Aghaming Park.

1.4.7 Refuge Vision and Goals

The Refuge vision provides a simple statement of the desired, overall future condition of the Refuge. Refuge goals are "stepped down" from the vision and provide a framework for more detailed, measurable objectives that are the heart of the CCP. The vision and goals are also important in developing alternatives, and are key reference points for keeping objectives and strategies meaningful, focused, and attainable.

1.4.7.1. Refuge Vision

> "Trempealeau National Wildlife Refuge is enjoyed and appreciated by the people of America as a beautiful, scenic place where a diversity of native plants and animals thrive in healthy prairies, forests, and wetlands."

1.4.7.2. Refuge Goals

Goal 1: Landscape

We will strive to maintain and improve the scenic and wild character, and environmental health of the Refuge.

Goal 2: Wildlife and Habitat

Our habitat management will support diverse and abundant native fish, wildlife, and plants.

Goal 3: Public Use

We will manage public use programs and facilities to ensure sustainable, quality, hunting, fishing, wildlife observation, wildlife photography, interpretation, and environmental education opportunities for a broad cross-section of the public; and provide opportunities for the public to use and enjoy the Refuge for traditional and appropriate non-wildlife dependent uses that are compatible with the purposes for which the Refuge was established and the mission of the Refuge System.

Goal 4: Neighboring Landowners and Communities

We will communicate openly and work cooperatively with our neighbors and local communities to help all benefit from the aesthetic and economic values of the Refuge.

Goal 5: Administration and Operations

We will seek adequate funding, staffing, and facilities; and improve public awareness and support

to carry out the purposes, vision, goals, and objectives of the Refuge.

1.4.8 Planning Issues, Concerns, and Opportunities

Issues, which are often synonymous with concerns and opportunities, were identified through the scoping and public involvement process described in Chapter 6. The issues below represent input from the public, other agencies and organizations, and Refuge managers and staff as well as the mandates and guidance reflected in earlier sections of this chapter.

The issues were critical in framing the objectives and strategies for the various alternatives, and they form the basis for evaluating the environmental consequences of each alternative. Care has been taken to ensure that these issues track through the document, recognizing that required formats and contents for CCPs and EISs do not always present a perfect crosswalk to and from issues.

Also, while these issues do not represent every challenge facing the Refuge, they do represent a reasonable and comprehensive set of issues. When converted to measurable objectives in Chapter 2, they create a meaningful plan of action to help meet the mission of the Refuge System and the purposes and goals of the Refuge.

1.4.8.1. Goal 1: Landscape

1.4.8.1.1 Land Acquisition

Acquisition of land remains a key conservation tool for the well being of fish and wildlife resources, for providing public use opportunities, and for maintaining the wild and scenic character of the Refuge. Only 340 acres within the acquisition boundary approved in the 1983 Refuge Master Plan remain to be acquired. An additional 12 acres outside of the current approved boundary would be added under the Regional Director's authority. Most of these lands are adjacent to the Trempealeau River and include important examples of historic bottomland forests. Present land use includes hunting, fishing, and some farming. All of these lands are subject to frequent flooding. The entrance road to the Refuge is also subject to flooding where it crosses the Trempealeau River. Construction of a bridge at the crossing may alter flows on adjacent properties, and if so, purchase of flood easements would be required. Acquiring these lands would alleviate issues with the entrance road, and allow the Refuge to restore and protect bottomland forest and emergent marshes. Additionally, the Trempealeau River could move freely within its floodplain regardless of land use issues.

1.4.8.1.2 Refuge Boundary

Maintaining an accurate and clearly marked Refuge boundary is a critical basic need of resource protection. Brush cutting, dumping, mowing, illegal hunting and fishing, and vehicle trespass all occur along areas of the boundary, often intruding onto Refuge lands. The north boundary along highway 35 is viewed by thousands of travelers daily, but its scenic beauty is sometimes compromised by illegal activities. While a good portion of the Refuge boundary is clearly delineated by dikes, other sections are less obvious and have missing, faded, or incorrectly placed signs. In addition, private landowners have complained about Refuge visitors crossing the boundary and trespassing on their lands. A clearly marked and maintained boundary would be a deterrent to encroachment and other illegal activities and would help to maintain positive relations with neighboring landowners.

1.4.8.1.3 Flood Protection

The Burlington Northern Sante Fe Railroad (BNSFR) dike separates the Refuge from the main channel of the Mississippi River. The dike, owned and maintained by the railroad, has been breached and overtopped by the Mississippi River only once in the 1965 flood. During the near-record flood in 2001, floodwaters rose to the bottom of the rails putting severe pressure against the Mississippi River side of the dike. The BNSFR requested that the Service reduce the pressure by allowing floodwater to enter Trempealeau NWR through several water control structures. However, the amount of water that could be diverted into Refuge pools was insufficient to offer protection for the railroad dike, but damage to Refuge infrastructure and habitats occurred. The Refuge has no official policy for dealing with water management issues during major flood events, making it vulnerable to impacts from "emergency" actions.

1.4.8.1.4 Natural Areas and Special Designations

In 1986, Black Oak Island (see Figure 6 on page 34) was designated a Public Use Natural Area as an example of undisturbed, mature, eastern deciduous forest. However, some of the biological characteristics on which the designation was based are threatened by invasive plants, especially European buckthorn. The site also contains important archeological resources that are not inventoried and are subject to shoreline erosion and potential theft. A

A volunteer pulling buckthorn. Trempealeau NWR

management plan is needed to ensure the future integrity of the area.

Refuge roads from the main entrance to the Marshland access are a designated part of the Great River State Trail. The popular bike trail traverses old railroad grades from La Crosse to Marshland, Wisconsin. Future plans are to continue the trail along the north boundary of the Refuge into Winona, Minnesota. Although more accurate counts are needed, an estimated 18,000 to 20,000 cyclists annually use the section of the trail that crosses the Refuge. However, little interpretation of the Refuge or its resources is available to this segment of the visiting public. In addition, cyclists are often confused due to lack of directional signing. Also, flooding at the main entrance road blocks the route for weeks each year, forcing cyclist to detour around the Refuge.

1.4.8.1.5 Archeological Resources

Federal laws, executive orders, and regulations, as well as policies and procedures of the Department of Interior and the Service protect cultural resources on federal lands. The Service has a responsibility to protect the many known and unknown cultural resources located on the Refuge. Trempealeau NWR has been described as one of the most important archeological sites in the Midwest. Human use of the area dates back 12,000 years. Dozens of sites and more than 6,000 artifacts have been cataloged from various locations. However, most surveys have been conducted in a few areas on the east side of the Refuge. The majority of the lands have not had even baseline surveys conducted and the locations and extent of archeological resources are unknown. Habitat management activities that create any soil disturbance are delayed until archeological assessments can be completed. Additionally, protection of sites is difficult because of a lack of information about what resources are present. Trempealeau NWR has a history of looting and collectors are active in the area. While law enforcement efforts have been stepped-up over the years, problems persist. Opportunities to interpret the Refuge's cultural resources must be integrated with the need to protect them.

1.4.8.2. Goal 2: Wildlife and Habitat Issues

1.4.8.2.1 Forest Management

Forests are classified into either upland or bottomland on the Refuge. Over 85 percent of the upland forests are dominated by non-native tree species, planted decades ago in an attempt to provide additional wildlife habitat. However, these plantings encroach on and fragment rarer prairie habitats, and prevent growth of native, mast-producing hardwoods. Over the past years, nearly all upland forests have been invaded by a dense understory of European buckthorn, limiting growth of native hardwoods, shrubs, and wildflowers. Black locust trees, extremely invasive in sandy soils, are dominant in forest stands and would quickly take over most of the prairie areas if left uncontrolled. Efforts to control invasive or non-native forest plants are limited by current funding and staffing levels. In addition, clearing large areas of pine plantings would impact species which use the groves, such as owls. Some citizens have also voiced concern over removing pine plantations from the Refuge.

Bottomland forests lined most of the old river channels before impoundment. These forests, once abundant, were either cleared for farming or destroyed by prolonged flooding when Lock and Dam 6 went into operation. Much of the existing bottomland forest is degraded by reed canary grass or even-aged silver maple stands. Little of the bottomland forest is regenerating and large, old trees suitable for Bald Eagle nesting, Great Blue Heron rookeries, or Wood Duck nesting cavities are becoming less abundant. Some previously cleared and

farmed fields could be restored by tree planting and aggressive weed control, but funding and staff would need to be redirected from other activities.

Some areas of the Refuge are littered with dead and downed trees, especially oaks that died of oak wilt. Down timber presents a fuel hazard and creates difficulty in some burn units. Other standing, dead trees present safety hazards. There is a demand for firewood from local people and the Refuge allows some fire wood removal under special use permit. However, for safety, staff cut the trees down and move them to an area that is accessible with a pickup. Staff time limits the amount of wood that can be removed. Commercial harvest of black locust for fence posts and non-native pines from pine plantations is a viable management tool for restoring prairies. However, cutting trees and skidding them to a road for transport disturbs the soil and possible archeological artifacts. In the past, tree harvest activities have been restricted to times when the ground was frozen. Archeological surveys of the prairies and adjacent forests need to be completed so that habitat management can proceed. Also, potential stands for commercial harvest need to be identified in an updated forest management plan.

1.4.8.2.2 Forest Bird Management

The Mississippi River Valley is an important travel corridor for migrant songbirds. Little is known about the importance of protected stopover sites like Trempealeau NWR for migrating songbirds. How these birds are using the various habitats and the timing of different species groups moving through is a mystery. Likewise, management that alters habitats, like removal of invasive shrubs or conversion of forest to prairie, may have unintended impacts to some of these species. Some of these species may be slipping through the cracks simply because they are not being monitored or considered when management decisions are made. Much could be learned from long-term studies that focus on migrant forest birds.

1.4.8.2.3 Wetland Management

Stable, deep water, and poor water clarity have led to a general declining trend in productivity in impounded wetlands on the Refuge. Wind, waves and rough fish suspend bottom sediments, resulting in poor aquatic plant growth. Stands of emergent plants have declined dramatically over time. Invertebrate populations are especially poor, a consequence of poor plant growth. Invasive plants such as Eurasian milfoil and purple loosestrife are increasing. Cross dikes to break units into more manageable sizes, better water control and rough fish management would benefit most wetland areas.

1.4.8.2.4 Water Quality

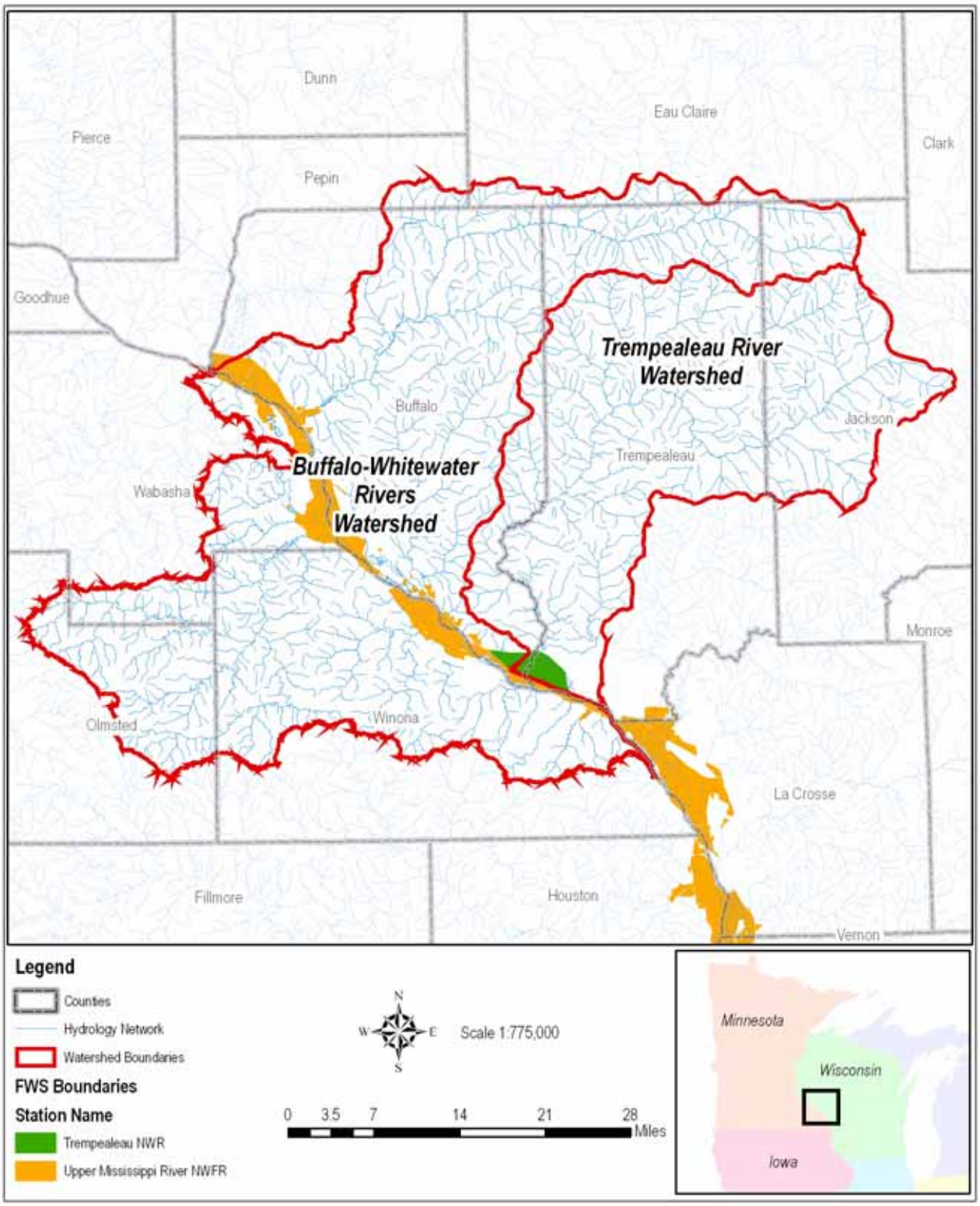
The Refuge Improvement Act of 1997 called upon the Secretary of the Interior to administer the Refuge System in a way that will “ensure that the biological integrity, diversity, and environmental health of the System are maintained for the benefit of present and future generations” and “assist in the maintenance of adequate water quantity and quality to fulfill the mission of the System and the purposes of each Refuge.” Water quality is a key to the overall health of the food chain that drives and sustains the multitude of fish, wildlife, and plant species that rely on the Refuge for critical parts, or all, of their life cycle requirements. Some areas of the Refuge, particularly areas directly fed by the Trempealeau River, are impacted by high sediment loads transported from upstream agricultural lands. Likewise, the habitats of the Mississippi River are degraded by sediments transported by the Trempealeau and Buffalo rivers (see Figure 4). The Service has programs to help restore eroding streams on private lands in Trempealeau and Buffalo Counties. Repairing these streams at the top of the watershed is critical to keeping sediments on the land rather than flowing into the Mississippi River. Staff and funding shortages preclude implementing a private lands program to fully address watershed concerns and potential benefits.

Water clarity during the growing season is essential for the germination of aquatic plants. Wind and wave action often suspend the sediments in the large open pools, keeping the water muddy. In addition, rough fish (carp and buffalo) are abundant in the slow moving, warm waters of the impoundments. These fish grub for roots, disturbing aquatic plants and churning up sediments. Aquatic plants have virtually disappeared from hundreds of acres. In addition, the Refuge has a history of fish kills during the winter when dissolved oxygen becomes critically low.

1.4.8.2.5 Water Level Management

The Refuge was once a backwater of the Mississippi River, but was essentially isolated in the early 1900s by the construction of the Burlington Northern Sante Fe Railroad dike and the diversion of the Trempealeau River. The hydrology was further altered in the 1930s by the construction of Lock and Dam 6 on the Mississippi River. The result is a deeper, relatively stabilized water system. Over time, stable water levels have adversely affected

Figure 4: Watershed of the Trempealeau and Buffalo Rivers



aquatic plant abundance, diversity and distribution. Fish and wildlife dependent on these plant communities have also declined. Shorebirds are particularly dependent on mudflats and sandbars during migration, but these habitats have been mostly eliminated by higher water levels. Recently, a series of dikes and pumps were installed that permit water level management on about 1,500 acres of the Refuge. The remaining 4,000 acres of wetland are essentially unmanageable, subject to the effects of wind, waves, and rough fish that keep the water too cloudy to be fully productive.

1.4.8.2.6 Waterbird Management

The Mississippi River is critical to the life history of many species of waterbirds including waterfowl, herons, rails, terns, pelicans, and egrets. Many of these species are sensitive to disturbance during the breeding season and require large marsh areas to nest. Others stage in large flocks in the fall, feeding to build up fuel reserves for migration. Trempealeau NWR plays an important role in providing relatively undisturbed resting and breeding space along Pool 6 of the Mississippi River. The Refuge is becoming increasingly important to migrating Tundra Swans as staging and feeding areas up river become silted in. However, some of the public would like to see more backwater marsh areas including the Refuge open to public hunting. In addition, non-motorized, electric motor-powered recreational boating is allowed during fall migration and sometimes disturbs large flocks of birds. Public use activities need to be reviewed in consideration of the larger role the Refuge plays as a part of the Mississippi River Flyway.

Black Terns are a species of special interest because of declines in some parts of the country. Populations are expanding at the Refuge and habitat conditions are generally good at this time. However, monitoring is difficult and the Refuge relies on volunteers to do it. While annual monitoring may not be warranted at this time, the wildlife inventory plan needs to be updated to include protocols that sufficiently monitor this species.

Wood Ducks and Hooded Mergansers were once more abundant on the Refuge and may be declining because of limited breeding habitat. These species need mature or over-mature trees near good brood habitats to successfully produce young. Mature forests are becoming less abundant on the Mississippi River as forests age and are replaced with invasive plants or silver maple. Many of the older forests on the Refuge are remnants from before the locks and dams were constructed and replacing them may not be possible with current hydrologic conditions.

1.4.8.2.7 Furbearer Management

Trapping was implemented on the Refuge in 1981 to help control damage to dikes and water control structures from muskrats and beavers. The area has a long tradition of furbearer harvest dating to the time when the land was owned by the Delta Fish and Fur Farm. The existing trapping program is regulated by issuing special use permits to individuals who purchase trapping rights to specified units through an auction. The program is conducted within the framework of the Wisconsin State trapping regulations and according to special Refuge regulations. Occasionally, raccoons and skunks must be removed to safeguard ducks at banding sites. While the Trapping Plan is relatively current (1999) it needs review and updating to reflect recent national policy and regulation changes governing compatibility of commercial uses on Refuges, current furbearer population estimates, habitat changes, and new management needs.

1.4.8.2.8 Emergency Response to Spills

Mishaps with chemicals on adjacent lands could cause severe damage to Refuge resources, especially sensitive wetlands. The Refuge is bounded on three sides by train tracks and a state highway. Train derailments or tanker accidents involving chemical spills could have catastrophic impacts to Refuge habitats and wildlife. Emergency response would require specialized equipment (airboats, helicopters), trained personnel, and the coordination of many agencies. The Refuge needs to have a system for responding to spills and needs to ensure specialized and ongoing training for staff.

1.4.8.2.9 Grassland Management

Historical records indicate that the upland areas of the Refuge were once dominated by prairie and oak savanna habitats. Much of the uplands were converted to agriculture before the Refuge purchased the property in 1936. Under Refuge management in the 1940s through the 1960s, various pine species, black locust, Siberian pea, and honeysuckle were planted to reduce soil erosion and provide wildlife habitat in tune with the management practices of the time. In the 1970s, many of the oaks in the savanna were removed because of oak wilt disease. Today, forests on some uplands consist mostly of non-native pine trees, black locust, and shrubs. Grasslands are fragmented into small units surrounded by forest edge that support populations of species that prey on or parasitize grassland and for-

est birds. In addition, black locust saplings march across the prairies each year at an alarming rate. Control of invasive plants, especially black locust is limited by available staff, equipment, and restrictions on chemical use. Only remnant prairies still exist outside of the Refuge and these are likely to disappear as more private land is developed.

Prescribed fire is an important component of maintaining grassland vigor and health, and has been used at Trempealeau NWR for many years. About 335 acres are burned on a rotational system under prescriptions described in a Fire Management Plan (USFWS, in preparation in 2007).

1.4.8.2.10 Invasive Plants and Animals

Invasive plants continue to pose a major threat to native plant communities and the wildlife that depends on them. All habitats types on the Refuge have invasive plants of one variety or another. Biological control is available for some species, but mechanical removal is the mainstay of the control program. While volunteers, school groups and staff have made some headway, labor is a limiting factor. In addition, control has been hampered by funding for basic inventory, direct control, and research into species-specific biological control.

Years of impoundment and stable water conditions have contributed to a fishery dominated by carp and other non-desirable rough fish. Invasion by other species of Asian carp may be imminent. These species are destructive to aquatic vegetation and generally keep impounded pools turbid and unproductive for plants or other wildlife. Removal of rough fish is difficult because water management facilities are insufficient to lower water levels enough to cause wide spread mortality. Some years, particularly with heavy snowfall, low dissolved oxygen levels do result in large fish kills. Local commercial fishermen have an interest in harvesting rough fish and in the past have been instrumental in rough fish control. However, commercial fishing is closely tied to market price and often the management needs of the Refuge and the economic needs of the fisherman do not coincide. The Fishery Management Plan (USFWS 1980) needs to be updated in consultation with fishery biologists from the La Crosse Fishery Resource Office.

Prescribed burning, Trempealeau NWR. USFWS

Zebra mussels have not been found in Trempealeau waters, but are common in the adjacent rivers. Trempealeau has little defense against these invaders once they become abundant in the river systems.

1.4.8.2.11 Monitoring Fish, Wildlife, and Plant Populations

One of the directives in the Refuge Improvement Act of 1997 was to monitor the status and trends of fish, wildlife, and plants on national wildlife refuges. Although monitoring has been a part of managing the Refuge for many years, gaps remain in baseline population data for many species. A Wildlife Inventory Plan was completed in 1987, but needs updating to reflect changes in habitat, the status of many species, and new policies, procedures, and technologies for monitoring. In addition, management in a changing environment must be adaptive, which requires ongoing monitoring and thoughtful investigation as issues arise and change. Meeting these needs has been hampered by biological staffing and funding levels.

1.4.8.2.12 Threatened and Endangered Species

Threatened or endangered species are issues due to their often precarious population status, and need for special management consideration or protection. The Bald Eagle was removed from the threatened list in 2007. However, they will continue to be monitored on the Refuge. One candidate species, the eastern Massasaugua rattlesnake, occurred as recently as the late 1970s, but is now found only at sites north and south of the Refuge. Suitable habitat may still be present for reintroduction. The State of Wisconsin lists 21 species of birds, one plant, two butterflies, and two turtles that occur on the Refuge as threatened, endangered or warranting special concern (see Table 5 on page 108).

1.4.8.2.13 Deer Herd Management

The landscape of southwestern Wisconsin supports very abundant populations of white-tailed deer, in some areas exceeding 75 deer per square mile. Recently, chronic wasting disease has been detected within 70 miles of the Refuge, and efforts

are under way by the State to reduce overabundant deer. Trempealeau NWR is bordered by agricultural lands along the length of its north boundary. Deer undoubtedly feed on these lands, then find shelter and safety from hunting pressure on the Refuge. The number of deer on the Refuge at any one time is unknown, and staff and funding shortfalls preclude intensive surveys. However, history has shown that when deer populations were estimated to be between 130-150 animals (1974), wintering populations depleted food resources on the Refuge. A clear browse line was visible and understory shrubs were absent in many areas. The Refuge gained the reputation of being a good place to see deer and even today there is some public interest in increasing deer to "viewable" numbers.

Presently, deer numbers are low and browse surveys indicate that deer are not adversely impacting vegetation. However, some questions exist as to whether low deer numbers have allowed invasive shrubs to become prolific in the forest under story. Grazing pressure may be one method of controlling invasive shrubs. Deer herd surveys using the most current methods and technologies should be included in an updated wildlife inventory plan. Accurate population numbers are needed to determine appropriate harvest and browse levels.

1.4.8.2.14 Deer Hunting

Deer hunting is an important form of wildlife-dependent recreation and is also used to manage over-browsing or disease. Deer numbers are controlled using special gun and archery hunts. A set number of permits are available for the gun hunt and over-the-counter permits are available for late season archery. The hunt is an important management tool for managing deer numbers. However, without better deer population data, the staff has difficulty determining the appropriate level of harvest. Historically, gun permits have been capped at 60, with 10 to 20 deer harvested each year. Recently, with the popularity of birding on the increase, conflicts have arisen over the use of the Refuge by hunters and non-hunters at the same time. Both activities occur in the same areas and visitor safety is a concern. The gun hunt occurs over the Thanksgiving holiday (regulated by State law), the time when many visitors from outside the local area are coming to the Refuge to view wildlife. The Refuge hunt plan is out of date and should include options for addressing time and space concerns among various user groups.

Finally, because of the proximity of chronic wasting disease (CWD), close coordination with the State of Wisconsin and the creation of a CWD plan are warranted. Staff also need additional training and specialized equipment to deal with any outbreaks.

1.4.8.2.15 Wildlife Disease Management

A wide range of issues are currently in the public eye regarding wildlife disease and potential impacts to human populations. Wild animals play a role in the spread of west Nile virus, Lyme disease, meningitis, chronic wasting disease and avian influenza to name a few. The role wildlife plays in the transmission of these diseases to humans is not always clear. Even more unclear are the long-term impacts of diseases on wildlife populations. Recently waterfowl mortality from ingestion of an introduced faucet snail is of grave concern to managers of the Upper Mississippi River NW&FR. The public desires information about how they may be impacted by these immerging diseases. In addition, staff needs to be trained in the most current and best management practices for handling not only diseased animals, but also banding birds or participating in other hands-on wildlife management operations. A disease contingency plan needs to be developed in conjunction with other land management agencies.

The management of mosquito populations may emerge as a future concern given the increased incidence of mosquito-borne illnesses in parts of the Midwest. The Service has a national policy on mosquito abatement on national wildlife refuges that allows control only in cases of documented human health emergencies. Mosquito control must be species specific, based on population sampling and identified population thresholds, and use the least intrusive means possible (USFWS 2005).

1.4.8.3. Goal 3: Public Use Issues

1.4.8.3.1 Wildlife Observation and Photography

Wildlife observation and photography are very popular activities for visitors, and a source of economic growth for local communities. As priority public uses of the Refuge System, these uses are to be encouraged when compatible with the purposes of the Refuge. The Refuge provides outstanding wildlife viewing opportunities year round from many miles of trails and roads. The Great River Road and the Great River State Trail pass by the Refuge, making it highly visible and accessible to the public. However, access is generally restricted to able-bodied individuals. Some trails and observation

Waterfowl hunter with visual disability. USFWS

points need to be improved to accommodate people with disabilities including those with hearing or vision impairments. While most of the Refuge habitats are easily accessible, emergent marsh presents a challenge. Access to an area of emergent marsh would provide opportunities to view wildlife in all representative habitat types. Also, winter is a unique opportunity to observe wildlife, but access to most of the refuge is limited by snowfall for 4 to 5 months each year. The public and communities desire more opportunities for wildlife observation, while managers must balance opportunities with the need to limit disturbance to wildlife and archeological resources, and ensure safety of visitors.

Wildlife photography opportunities are abundant along roads, trails and observation points without special facilities. In the past the staff has had little formal communication with area photography organizations. The needs of this user group are not known and efforts to develop facilities or programs should be predicated on consultation and partnering with area photographers. The Refuge needs to update the visitor services plan to establish clear guidelines for these programs.

The Federal Lands Recreation Enhancement Act (HR 4818) passed Dec. 8, 2004, and became effective in 2006. It authorizes the Secretary of the Interior to collect entrance fees, and requires that the funds be spent on visitor services and facilities. With one entrance point, the Refuge is situated to collect fees. While the legislation does not mandate fee collection is does encourage the agency to review potential sites. Service guidance will be forthcoming.

1.4.8.3.2 Interpretation

Many signs and kiosks currently in place are outdated, not up to current Service standards, and do not interpret the mission of the Refuge System. Interpretive signs do not clearly communicate Refuge regulations to the public. There are no facilities for formal interpretive programming such as staff led talks or other special events. The visitor contact station has limited restroom facilities open only during business hours. A rented portable toilet must be used after hours, on weekends or for special events. Vehicle pull-outs and boat launches are in need of upgrading and maintenance. Funding is generally not available to purchase interpretive supplies like binoculars, field guides or media equipment. An overall visitor services plan is needed to establish detailed guidelines for interpretive programming.

Biking is a popular activity because the Refuge connects with the Great River State Trail. Thousands of bicyclists pass through every year. Generally this activity is not disruptive and is a low impact way of observing plants and animals. The State has secured funding to extend the trail to Winona. The Refuge will become a stop along the trail, rather than an endpoint. This may change the way cyclists use the Refuge, with increased traffic and demand for more bike-friendly facilities. In addition, requests may arise for motorized use of the trail by ATVs or snowmobiles. The visitor services plan needs to address the needs of this user group and the potential for increased bike traffic.

1.4.8.3.3 Environmental Education

Trempealeau NWR is ideally situated to provide curriculum based programming. The demand for formal environmental education has been increasing and staff has few resources to accommodate the requests. Current programs are funded through partnerships and grants, but are difficult to continue year after year. Wisconsin has inclement weather many months of the year and the Refuge has no all-weather group facilities for teaching. Additionally, there are no restroom facilities that can accommodate groups. Although the staff has worked with many area educators, more outreach and networking is needed to formally develop Refuge-specific programs tailored to state and national curriculum standards. Training for teachers and volunteers, as well as teaching materials that could be used at the schools, would expand opportunities for environmental education.

1.4.8.3.4 Hunting

Waterfowl hunting is one of the priority public uses of the Refuge System and remains a vital part of the cultural, social, and economic fabric of the communities around the Refuge. As habitats and wildlife decline and hunting pressure increases on surrounding lands, potential hunting opportunities within the Refuge become more valued. Within the

context of a larger river system, the Refuge provides important sanctuary for migratory birds. Navigation Pool 6 on the adjacent Mississippi River has no areas closed to hunting where birds may find respite. With the exception of a limited hunt for people with disabilities, the Refuge has been closed to waterfowl hunting. The public desires more hunting opportunities, particularly in high quality habitats like those found on the Refuge. However, managers must balance hunting opportunities with the need to limit disturbance to wildlife and accommodate other visitor interests such as wildlife observation or photography.

Opportunities to hunt other species may be available. Small game (rabbits and squirrels), upland game birds (grouse, pheasant, partridge, crow), migratory game birds (Snipe, Sora, Mourning Doves, Woodcock, Virginia Rail) Turkey, coyote, raccoon and red fox have legal hunting seasons in Wisconsin and occur on the Refuge. Information on population size, habitat use and life requirements of most of these species is not known specifically for the Refuge. While hunting some of these animals may be feasible, there may be little management need to control these populations. More information needs to be collected, and some of these species may warrant an addition to the wildlife inventory plan. Likewise, if areas are to be open to new hunting programs the hunt plan and visitor services plan should include detailed review of the program's benefits.

1.4.8.3.5 Fishing

Over the years, the quality of the fishery has declined. Northern pike and yellow perch, popular sport fish, are no longer present in numbers that support recreational fishing. The sport fishery could be improved, however there may be conflicts with water drawdowns to promote growth of aquatic plants. Also, sediments have likely filled many overwintering holes needed by sport fish. Rough fish (carp and buffalo) and bullheads dominate the fishery and are not popular sport fish. The demand for fishing in the Refuge pools is relatively low. There is one fishing platform in Pool A, but the area around the platform is relatively poor fish habitat. The platform does not meet accessibility guidelines. The Trempealeau River may be more popular for fishing, but access can be difficult because of the steepness of the bordering dike and downed trees. Bow fishing for carp is allowed in Wisconsin, but not on the Refuge. Bow fisherman want to access the Trempealeau River from the Refuge and a conflict arises over allowing people with projectile weapons on the Refuge. Policy has been inconsistent in the past. The staff needs to update the fishing plan and investigate potential options for improving fishing access along the Trempealeau River.

Northern pike. USFWS

1.4.8.3.6 Harvesting Fruit, Nuts, and Other Plant Parts

Some plants growing on the Refuge produce edible products such as fruit and nuts. In the past the Refuge has allowed the harvest of berries, nuts, mushrooms, and asparagus for personal consumption. Harvest is typically light. Recently, requests have been received for other plants like wild rice, sage and cone flower. Some of these requests are for personal consumption, others are for ceremonial or medicinal purposes. Other requests have been made to collect native grass and wildflower seeds. The Refuge needs to develop a clear policy on what the harvest policy is and what levels of harvest can be sustained without jeopardizing habitats or wildlife.

1.4.8.3.7 Horseback Riding

As more and more hobby farms become established in the vicinity, interest in the use of the Refuge for horseback riding has increased. Horseback riding is considered a non-wildlife dependent activity and is subject to more scrutiny than other wildlife-dependent uses. Conflicts with other Refuge visitors, the need for larger parking facilities for trailers, maintenance of trails, and introduction of invasive plants are potential drawbacks that need careful consideration.

1.4.8.3.8 Domestic Pets

Unless specifically authorized, national wildlife refuges are closed to dogs, cats, livestock, and other domestic animals per federal regulations (50 CFR 26). Domestic animals can harass and kill wildlife, and at times become a direct threat to people engaged in recreation. Dogs on a leash are permitted on the Refuge. Requests for opening areas to unleashed pets during the winter and for dog field trials necessitate careful consideration.

1.4.8.3.9 Non-Refuge Sponsored Events

Boy Scout jamborees, over night camping by school groups, weddings, family reunions, and fundraising walks or runs by charities are examples of non-refuge sponsored events that are considered non-wildlife dependent activities. Requests for hosting these events come in a few times each year. Each of these activities must be considered individually to determine if they are likely to impact Refuge resources and can be adapted to include some aspect of resource interpretation. Staff availability and scheduling are likely to limit these activities.

1.4.8.3.10 Non-Refuge Sponsored Research

Refuges are interesting places and have many resources that are worthy of investigation. Requests for research projects by universities, other agencies, or individuals need to be considered. At times research projects, although interesting, do not further the management objectives of the Refuge and sometimes are disturbing to habitats and wildlife. Staff time is required to permit and monitor these activities. Clear guidelines need to be developed as to what research is in the best interest of the Refuge and how much staff resources should be committed.

1.4.8.3.11 General Public Use Regulations

General public use regulations include things like hours of operation, vehicle restrictions, use of fires, parking and other administrative or safety rules. The current public use regulations were last reviewed and updated in 1992. Regulations need to be reviewed to address new laws and policy and to help correct problems not specifically covered in current regulations governing the National Wildlife Refuge System (50CFR, subchapter C part 26). Refuge Officers and the public need to clearly understand what is and is not allowed on the Refuge.

1.4.8.4. Goal 4: Neighboring Landowner and Community Issues

1.4.8.4.1 Community Outreach

There is a general lack of awareness of the goals of the Refuge and the mission of the Refuge System. Citizen support is critical to a successful resource management program. Rebuilding society's connection with its environment is an important component of long-term resource protection. Numerous opportunities exist to build connections between the Refuge and the community. However, staff shortages and other priorities have limited efforts to work within the community. Refuge planning must include a strong component of community outreach and participation by Refuge staff.

1.4.8.4.2 Friends Groups

Friends groups play a critical role in helping the public understand the importance of protecting and preserving refuges. They provide critical support by volunteering, raising funds, and educating the public. Trempealeau NWR has not had its own Friends group, but instead has been a part of the Bob Pohl Chapter of the Friends of the Upper Mississippi River Refuge based in Winona, Minnesota. Trempealeau NWR does not have a presence in the local community and needs to establish its own Friends group that will provide an independent citizen voice for the protection, conservation, and enhancement of Refuge resources.

1.4.8.4.3 Volunteers

Volunteers are a valuable asset providing thousands of hours of labor, completing tasks that otherwise would not be accomplished. Volunteers conduct biological surveys, lead interpretive programs, maintain equipment and facilities, and assist with special events. The Refuge has a core of dedicated volunteers who are committed to protecting the beauty of the Refuge. Staffing is unlikely to increase in the future and volunteers may be called upon to perform more of the surveys or maintenance tasks that go undone. Refuge staff must find ways to foster a sense of pride and ownership in the volunteers, while continuing to recruit new people.

1.4.8.4.4 Partnerships

The Refuge administers the Partners for Wildlife Program for Trempealeau and Buffalo Counties. Opportunities for upper watershed improvement abound in the northern portions of these counties. These projects are immensely important to reducing sediments flowing to the Mississippi River. Expertise is available to assist landowners with con-

trol of invasive plants, and to restore and enhance wetlands and grasslands. Unfortunately, limited funding and staffing allow only a few of these projects to be completed each year. Projects are on a waiting list and landowners are continuing to request more assistance.

The Refuge shares its east boundary with Perrot State Park. The Refuge and the Park occasionally coordinate activities, but a stronger partnership would support both public facilities. Coordinating interpretive programming and recreational activities would benefit visitors that use both areas. There may also be opportunities to share staff and equipment for habitat management projects.

1.4.8.4.5 Private Property Rights

Adjacent landowners have a variety of concerns about how their lands or their farming operations may be impacted by Refuge habitat, wildlife and recreation management. Crop damage by deer and waterfowl, flooding, trespass by hunters, and access across the Refuge to private land are issues that are frequently contentious.

1.4.8.4.6 Easement and Right-of-Way Management

Two major dikes that are owned by the railroads cross the Refuge. Several power lines cross or border Refuge land, and State Highway 35/54 borders the Refuge on the north. All of these easements or right-of-ways present management challenges. Work crews and equipment need to cross Refuge lands for access to repair facilities, unknown numbers of wildlife collisions and bird strikes occur, accidental contaminant spills are a threat, and the need for road or power line expansion is imminent. The Refuge needs to develop a management plan for easement and rights-of-way that is consistent with current policies and management recommendations.

1.4.8.5. Goal 5: Administration and Operations Issues

1.4.8.5.1 Entrance Road Flooding

The main Refuge entrance road, which is also part of the Great River State Trail, is a low-lying gravel road in the floodplain of the Trempealeau River. The entrance road floods frequently and is closed for 5-6 weeks each year, usually during the spring when songbird viewing is at its best. Ice-jams close the road for months during some winters. An alternate, unimproved access for staff is available through the Marshland gate. The Wisconsin Department of Transportation has requested that this access not be promoted to the public because of safety concerns with its location on a curve, adjacent to a train crossing. The Refuge needs to develop a year-round access road for staff and visitors.

Canada Goose banding program at Trempealeau NWR. USFWS

1.4.8.5.2 Facilities

Office facilities are too small to meet the needs of full staffing and especially summer hires and volunteers. Maintenance facilities that were constructed in 1936 are scheduled for replacement. Visitors need to have year-round access to restrooms, and there are no facilities to conduct formal interpretation or education programs.

1.4.8.5.3 Staffing

Current staffing levels are below essential staffing needs and reflect gaps between what should be done and what can be done. The Refuge is fortunate to have a cadre of talented and giving volunteers who fill in some of the gaps in staffing. However, long-term programs are difficult to manage with short-term volunteer resources. Adequate staffing becomes more critical as public demand for recreation programs, biological information, and resource protection increases.

1.4.8.5.4 Operations and Maintenance Need

Plans and planning need to articulate the needs for staff and funding to manage and administer programs, facilities, and equipment. These needs must be represented in databases and other documents that are used in budget decision-making at the national and regional level.