

GREEN BAY PLANNING GROUP

MASTER PLAN



August, 2014
PUB-LF-075



**GREEN BAY PLANNING GROUP
MASTER PLAN**

**APPROVED BY THE NATURAL RESOURCES BOARD
AUGUST, 2014**

**Name Change of Little Tail Unit to Bayside Road Unit Approved by
the Natural Resources Board, May, 2016**

Wisconsin Department of Natural Resources

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Natural Resources Board

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Terry Hilgenberg, Vice-Chair
Gregory Kazmierski, Secretary
William Bruins
Christine Thomas
Jane Wiley
Gary Zimmer



101. S Webster Street, P.O. Box 7921
Madison, WI 53707-7921

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Pond Road viewing platform, Peshtigo Harbor; *photo by Eagle Herald/Rick Gebhard*

MASTER PLAN TEAM MEMBERS

Plan Acceptance Team

Tom Hauge, Director, Bureau of Wildlife Management
Erin Crain, Director, Bureau of Natural Heritage Conservation
Bob Mather, Director, Bureau of Forest Management
Steve Miller, Director, Bureau of Facilities and Lands
Dan Schuller, Director, Bureau of Parks and Recreation
Mike Staggs, Director, Bureau of Fisheries Management
District Land Program Managers: Paul Bruggink (Northern District); Aaron Buchholz (Northeast District); Laurie Osterndorf (Southern District); Craig Thompson (West-Central District)

Sponsor Team

Jeff Pritzl – Wildlife Management, District Wildlife Supervisor, Northeast District
Alan Crossley – Wildlife Management, Public Lands Specialist

Core Team

Yoyi Steele – Wildlife Management, Lead Planner
Alan Crossley – Wildlife Management, Public Lands Specialist
John Huff – Wildlife Management, Area Wildlife Supervisor, Peshtigo Area
Joe Henry – Natural Heritage Conservation, District Ecologist, Northeast District

Technical Team

John Huff – Wildlife Management, Area Wildlife Supervisor, Peshtigo Area
Dave Halfmann, Wildlife Biologist, Marinette & Oconto counties
Joe Henry – Natural Heritage Conservation, District Ecologist, Northeast District
James Harbaugh – Wildlife Management, Wildlife Technician, Brown & Marinette counties
Aaron McCullough – Wildlife Management, Wildlife Technician, Marinette County
Kate Lenz – Forestry, Forestry Staff Specialist, Marinette County
Mike Folgert – Forestry, Area Forestry Leader, Peshtigo Area
Tammie Paoli – Fisheries Management, Fisheries Biologist, Brown, Oconto, & Marinette counties
Mike Donofrio – Fisheries Management, Fisheries Team Supervisor, Eastern District
Mike Stahl – Law Enforcement, Conservation Warden, Oconto County
Jerry Leiterman – Parks, District Parks Supervisor, Northeast District

GIS Analysis/Map Production

Kaylin Helm – Facilities & Lands, GIS Analyst/Cartographer
Bobbi Winebar – Wildlife Management, Planning Assistant, Northeast District

Additional Contributors

Mark Dudzik – Facilities & Lands, Department Archaeologist
Shelley Wrzochalski – Forestry, Forester, Brown County
Kris Hess – Legal Services, Attorney
Brigit Brown – Parks and Recreation, State Trails Coordinator
Thomas Meyer – Natural Heritage Conservation, Conservation Biologist
Dawn Hinebaugh – Natural Heritage Conservation, Conservation Biologist
Randy Hoffman – Natural Heritage Conservation, Conservation Biologist

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LIST OF ACRONYMS

ADA	Americans with Disabilities Act
BMPs	Best Management Practices
COA	Conservation Opportunity Area
CTH	County Highway
DBH	Diameter at Breast Height
DOT	Department of Transportation
EAB	Emerald Ash Borer
EL	Ecological Landscape
GBPG	Green Bay Planning Group
GBWS	Green Bay West Shore
GLRI	Great Lakes Restoration Initiative
HMA	Habitat Management Area
NCMA	Native Community Management Area
RPA	Regional and Property Analysis
SCORP	Statewide Comprehensive Outdoor Recreation Plan
SGCN	Species of Greatest Conservation Need
SMA	Special Management Area
SNA	State Natural Area
WA	Wildlife Area
WDNR	Wisconsin Department of Natural Resources
WisFIRS	Wisconsin Forest Inventory and Reporting System

CHAPTER ONE: INTRODUCTION AND OVERVIEW

The Green Bay Planning Group (GBPG; also referred to as “the plan area”) includes 12 named properties located along the west shore of Green Bay in Brown, Marinette, and Oconto counties (Map A). The Green Bay West Shore Wildlife Area contains 11 separate, non-contiguous units scattered along the west shore (Map B). Three of these units have embedded State Natural Areas (SNAs). One stand-alone SNA, Bloch Oxbow, comprises the twelfth named properties. There also is a 757-acre gift lands parcel (known as the Badger Gift Lands) in Marinette County, and several other scattered parcels. These properties total 10,688 acres of state protected and managed land, including: 8,845 acres of WA (encompassing 1,018 acres of embedded SNA); 597.5 acres of stand-alone SNA; 757 acres of Gift Lands; and 474.5 acres of other state-owned lands, including Scattered Fishery Habitat, Statewide Wildlife Habitat, Statewide Public Access, and transferred DOT wetland mitigation. Property acreages are given in Table 1.1.

Table 1.1. Green Bay Planning Group Property Acreages.

Property	Acreage*	Embedded SNA	Acreage*
Green Bay West Shore Wildlife Area			
Charles Pond Unit	97	Charles Pond	97
Bayside Road Unit	243		
Long Tail Unit	317		
Oconto Marsh Unit	931		
Peats Lake Unit	510		
Pecor Point Unit	89		
Pensaukee Unit	515		
Peshtigo Harbor Unit	4,812	<ul style="list-style-type: none"> • Peshtigo Harbor Lacustrine Forest • Peshtigo River Delta Marshes 	<ul style="list-style-type: none"> • 440 • 481
Rush Point Unit	386		
Sensiba Unit	637		
Tibbett-Suamico Unit	308		
Stand-alone State Natural Area			
Bloch Oxbow	597.5		
Gift Lands			
Badger Gift Lands	757		
Other State-owned Lands			
Brown County	219.5		
Marinette County	130		
Oconto County	125		

*Property acreages are extracted from the DNR Managed Lands GIS spatial database and may differ from the acreages represented in property deed legal descriptions. Acreage totals do not include ~14 acres of scattered access easements located outside of existing project boundaries. Property acreages also may change depending on water level fluctuations in Green Bay.

PURPOSE AND MANAGEMENT AUTHORITY

Property master planning is a process that determines how a property will be managed and developed. The development of master plans is governed by NR 44, Wisconsin Administrative Code, the master plan rule. This rule defines master planning, sets forth its purposes, and specifies the general planning process and content of a master plan. This rule also establishes a uniform land management classification system to be applied in the master plan. By administrative code, the master plan is the controlling authority for all actions and uses on a property. The scope of management and use of state property depends upon its official designation.

WILDLIFE AREAS

Wildlife Areas (WAs) are acquired and managed under the authority of Section 23.09(2)(d)3, Wisconsin Statutes, and Chapter NR 1.51, Wisconsin Administrative Code. They are designated to provide places where people can hunt, trap, and fish. WAs also are open for traditional outdoor uses of walking, skiing, snow shoeing, nature study, berry picking, and other low-impact recreational activities. As directed by NR 1.51 and NR 1.61, other recreational uses may be allowed on WAs by the Master Plan if those uses do not detract from the primary purpose of these properties.

STATE NATURAL AREAS

State Natural Areas (SNAs) are defined and authorized in Sections 23.27-23.29, Wisconsin Statutes and Chapter NR 1.32, Wisconsin Administrative Code as “an area of land or water which has educational or scientific value or is important as a reservoir of the state’s genetic or biological diversity and includes any buffer area necessary to protect the area’s natural value”. Section 23.27(1) defines natural areas as "reserves for native biotic communities...habitat[s] for endangered, threatened, or critical species...or areas with highly significant geological or archaeological features". Section 23.28(1) provides authority to designate areas as SNAs and Section 23.29 provides authority to legally dedicate and protect SNAs in perpetuity. While the intent of the SNA program is to preserve the best examples of the state’s diverse natural communities, other recreational uses may be allowed if they do not threaten the site's natural values.

BADGER GIFT LANDS

A 757-acre parcel adjacent to and north of the Peshtigo Harbor Unit of the Green Bay West Shore WA is part of lands that were gifted to the Department as part of a 2002 consent decree with the Fort James Operating Company (now Georgia Pacific). This decree was part of the Natural Resources Damage Assessment for the Fox River. This parcel is now known as the Badger Gift Lands (named for Badger Paper Mills, Inc., who formerly owned the land).

OTHER STATE-OWNED LANDS

The GBPG also includes ten parcels scattered throughout the plan area that were acquired under the authority of the Scattered Fishery Habitat Program, Statewide Wildlife Habitat Program, and Statewide Public Access, statewide programs that permit purchase of small-acreage sites outside of existing property project boundaries. These parcels are acquired to protect important fish and wildlife habitat and to provide public access. There also are 125.5 acres of former DOT wetland mitigation, transferred to the Department in 2011, that fall outside existing project boundaries. These nine parcels comprise 474.5 acres.

SIGNIFICANCE OF THE PLAN AREA

The GBPG properties contain an ecologically significant collection of natural communities and features characteristic of the Great Lakes coastal zone. These include extensive, diverse emergent wetlands, shrub swamps, lowland forests, a river delta, sandspits, and embayments. The coastal wetlands within the plan area represent approximately 50% of all wetlands remaining on the shore of Lake Michigan. The entire plan area is included in the Green Bay West Shores Conservation Opportunity Area (WDNR 2008), which is considered to be of global significance. These properties contain numerous natural communities, provide valuable fish spawning and migratory bird stopover habitat, and host populations of rare animals and plants.

The primary recreational uses of the properties are the traditional outdoor pursuits of hunting, fishing, and trapping. These pursuits are popular in the plan area counties, with a total of over 78,000 fishing licenses, over 69,000 hunting licenses, and nearly 900 trapping licenses sold in Brown, Marinette, and Oconto counties in 2012. Deer, waterfowl, and upland game hunting, wetland furbearer trapping, and fishing are particularly popular on the GBPG properties. Recreationally, the properties are important providers of public recreation land in close proximity to regional population centers, including the cities of Marinette, Peshtigo, Oconto, and Green Bay. This is especially true for the properties in the southern portion of the plan area, which are located near the densely populated Green Bay metropolitan area. Public recreation lands in Brown County account for only 0.7% of the land base, but were responsible for 11% of the deer harvested in Brown County in 2012, a fact which underscores the importance of the GBPG properties to traditional outdoor recreation.

The properties also are used for wildlife viewing, especially for waterfowl, cranes, herons, rails, other wetland birds, and migrating songbirds. Other activities include dog training, target shooting, hiking, paddling, and cross-country skiing.

OVERVIEW OF THE PLAN

The GBPG Master Plan describes how these state properties will be managed, used, and developed. The plan recognizes the significance of the plan area's location within the Great Lakes coastal zone and reflects the importance of maintaining the integrity of the

shore zone and the connection between aquatic and terrestrial habitats. The plan focuses on maintenance and enhancement of coastal wetlands, both open and forested, and associated wildlife and fish through habitat management, and protection of high-quality, regionally rare natural communities through native community management. Recreation management focuses chiefly on the traditional outdoor activities of hunting, trapping, and fishing, as well as other nature-based, non-motorized recreational pursuits such as wildlife viewing, hiking, and paddling. The plan also recognizes the importance of working with external partners, including other government agencies (local, state, and federal), nonprofit conservation groups, and private landowners to achieve common goals.

RESOURCE MANAGEMENT

The plan emphasizes habitat management of forested and open wetlands, including bottomland and swamp hardwoods, shrub swamps, emergent marshes, sedge meadows, and riverine habitats. These habitats support a wide variety of wetland- and wet-forest-dependent species, including waterfowl, snipe, rails, woodcock, and wetland furbearers. Management to maintain and improve shallow wetlands, streams, and other waterways and restore hydrologic connections to Green Bay will provide and enhance spawning and nursery habitat for Northern pike and other native fish. Game and non-game fish, including lake sturgeon, as well as other aquatic species will benefit from management of riverbank and nearshore areas.

The plan also includes management of upland habitats such as aspen and oak forests, grasslands, and upland brush. Though less extensive than the wetlands, these areas provide habitat for woodcock, ruffed grouse, wild turkey, white-tailed deer, and numerous other species.

The west shore of Green Bay is considered highly significant for thousands of migrating waterfowl, shorebirds, waterbirds, raptors, and songbirds due to its location on the Great Lakes shoreline, its north-south orientation, and variety of high-quality habitats. The plan's emphasis on managing a diverse mosaic of coastal habitats in large and interconnected blocks will maintain and enhance the value of this critical stopover area for migrating birds.

Regionally rare and high-quality natural communities within the GBPG properties include Floodplain Forest, Northern Dry-mesic Forest, Emergent Marsh, Great Lakes Beach, and Great Lakes Barrens. Native community management of these areas, including existing SNAs, will support a wide variety of wildlife, including rare species such as red-shouldered hawk, Forster's tern, and piping plover.

RECREATION MANAGEMENT

The traditional outdoor pursuit of hunting, fishing, and trapping are the primary recreational uses of the GBPG properties, and these are the focus of recreation management in the Master Plan. Deer and waterfowl hunting and wetland furbearer

trapping are especially significant draws for users. Management to support these activities consists largely of habitat management, maintenance of existing facilities, maintaining and improving access, and maintenance of waterfowl refuges. New proposals include identifying and developing shore fishing opportunities, expanding an existing fish refuge at Sensiba to encompass a new pike spawning area, enhancing accessible hunting opportunities, and making improvements to an existing shooting range.

A secondary recreational focus in the Master Plan is other nature-based outdoor activities that are compatible with hunting, fishing, and trapping, such as wildlife viewing, hiking, paddling, and cross-country skiing. The plan supports these activities through maintenance of existing trails and viewing platforms. Additional opportunity for these types of activities will be explored at the Badger Gift Lands, Peshtigo Harbor, Oconto Marsh, Sensiba, and Long Tail.

The plan is also adding a new opportunity for motorized recreation. In response to a request from a local snowmobile club, a connector trail from the Marinette County snowmobile trail network will be routed across a portion of the Peshtigo Harbor Unit in order to provide access to Green Bay.

EXTERNAL PARTNERSHIPS

Partnerships are critical to WDNR's work. The Department has collaborated with numerous organizations, private landowners, and local governments on the west shore to acquire, restore, and manage wildlife habitat and fish spawning sites, monitor wildlife and fish populations, control invasive species, and plan, develop, and maintain recreational opportunities and facilities. These partners include Ducks Unlimited, Wisconsin Waterfowlers Association, Oconto Sportsmen's Club, Northeast Wisconsin Land Trust, Oconto Promise, Green Bay Duck Hunters Association, Chappee Rapids Audubon Society, the Village of Suamico, and The Nature Conservancy. The GBPG Master Plan acknowledges the importance of these public-private partnerships and calls for continuing collaboration with these and other partners and private landowners to achieve recreational resource management and protection objectives.

BOUNDARY MODIFICATIONS

The DNR currently owns 10,688 acres within the GBPG properties. This includes lands within and outside of existing project boundaries, as well as access easements. The following project boundary and acreage goal adjustments have been approved for the Green Bay West Shore Wildlife Area: 359 acres of project boundary contractions and 3,187 acres of project boundary expansions, 981 acres of which are already in DNR ownership. This yields a net total expansion of 1,847 acres.

These boundary modifications seek to achieve the following goals:

CHAPTER 1:
Introduction and Overview

- Encompass lands the Department already owns and manages within project boundaries.
- Increase opportunities for access to our public lands.
- Provide larger contiguous blocks of ownership to improve efficiency of habitat management activities and to encompass or protect significant natural features and habitats (e.g., coastal wetlands; floodplain forest).
- Protect existing investments in wildlife and fishery lands by sustaining essential inputs (e.g., surface water flows to fish spawning sites).
- Protect current properties and uses from encroachment by non-compatible land uses. Hunting regulations state that gun hunting is not allowed within a 100-yard radius of homes unless the resident provides permission. Modifying boundaries as approved provides greater certainty that existing DNR lands can be fully used for all of the intended purposes.
- Coordinate acquisition and stewardship activities with external partners (e.g., Northeast Wisconsin Land Trust) to maximize habitat and recreational benefits and utilize limited acquisition resources efficiently.

Of the 2,206 expansion acres that are not already in Department ownership, land cover consists primarily of wetlands, water, and forests (approximately 1,643 acres), with much smaller amounts of upland grass/shrub and developed areas. Agricultural lands comprise only 230 acres of the approved expansions.

Table 1.2 summarizes boundary modifications by property.

Table 1.2. Boundary Adjustment Acreages by Property.

Property	Expansion (acres)	Contraction (acres)	Acres already in DNR ownership
Green Bay West Shore Wildlife Area			
Peshtigo Harbor Unit	1,470	-	757
Rush Point Unit	56	-	-
Oconto Marsh Unit	50	-	2
Pecor Point Unit	344	-	46
Pensaukee Unit	-	51	-
Charles Pond Unit	72	60	51
Tibbet-Suamico	319	-	-
Bayside Road Unit	320	-	-
Sensiba Unit	366	-	125
Long Tail Unit	-	248	-
Peats Lake Unit	190	-	-
Total	3,187	359	981

CHAPTER TWO: MANAGEMENT, DEVELOPMENT, AND USE

INTRODUCTION

This chapter details the management, development and use of the state properties within the Green Bay Planning Group (GBPG) needed to achieve the properties' long-range vision and goals. Each property is planned and managed to optimize its own inherent capabilities, yet at the same time to realize its importance as a component of the larger landscape mosaic of public and private properties. Chapter Two is organized into three main parts: the **Introduction** contains an overview of the benefits of public land protection and the Vision and Goals that guide the overall project; **Section One** covers universal plan elements which apply to all the state properties in the plan area; and **Section Two** focuses on the individual properties, including property descriptions for each property followed by management objectives and prescriptions unique to that property.

The GBPG includes the following properties, shown on Map B:

- Badger Gift Lands
- Bloch Oxbow State Natural Area
- Green Bay West Shore Wildlife Area
 - Peshtigo Harbor Unit
 - Rush Point Unit
 - Oconto Marsh Unit
 - Pecor Point Unit
 - Pensaukee Unit
 - Charles Pond Unit
 - Tibbet-Suamico Unit
 - Bayside Road Unit
 - Sensiba Unit
 - Long Tail Unit
 - Peats Lake Unit
- Scattered Fishery Habitat, Statewide Wildlife Habitat, & Statewide Public Access parcels

PUBLIC LANDS: AN INVESTMENT IN WISCONSIN'S FUTURE

Wisconsin is known for its abundant natural resources, for the value our citizens place on the rich traditions of hunting, fishing, trapping, camping and hiking, and for the ease of access to recreational land and wild places for everyone who lives here, including those who live in our largest metropolitan areas. We are defined by our clean lakes and rivers, vast forests, and abundant fish and wildlife. Conserving these resources is not an expense, but an investment that pays many dividends, both economic and social. A University of Minnesota study found that for every \$1 invested in conserving natural

CHAPTER 2: Management, Development, and Use

areas in that state, there is a return of up to \$4 (MEP 2011). Although similar data are not available for Wisconsin, one can imagine that a similar return of \$4 on each \$1 investment in public land in Wisconsin is quite possible.

The State of Wisconsin manages about 1.6 million acres of publicly-owned forests, barrens and savannas, grasslands, wetlands, shrublands, streams and lakes. Most of these lands are open to hunting, fishing, trapping, hiking, cross-county skiing, wildlife watching, and other outdoor, nature-based recreation. The economic impact of fishing, hunting and wildlife watching in Wisconsin is considerable. According to the 2006 National Survey of Fishing, Hunting and Wildlife-Associated Recreation, Wisconsin report (USFWS 2008), a total of 2.9 million residents and non-residents aged 16 years and older fished, hunted and/or watched wildlife in Wisconsin in 2006, spending \$3.7 billion in the process.

Nearly 1.39 million anglers spent 20.8 million days fishing in 2006, accounting for \$1.66 billion in retail sales and \$2.75 billion in overall economic output. This generated \$196 million in state and local taxes and provided 30,000 jobs (Southwick Associates 2007a). Nearly 700 thousand hunters spent 10 million days hunting in 2006, accounting for \$1.39 billion in retail sales, \$2.19 billion in overall economic impact, and generating \$197 million in state and local tax revenue and 25,000 jobs (Southwick Associates 2007b).

In addition, Wisconsin's \$12 billion/year tourism industry (TFW 2012) and \$23 billion/year forest industry (WDNR 2009) both are inextricably linked to abundant natural resources and a vibrant public land base.

All WDNR-managed lands have been certified as sustainable by two separate third-party audit firms, indicating that these lands meet the social, ecological, and economic rights and needs of the present generation without compromising those of future generations. All timber harvested from state lands can be marketed as sustainable and therefore has an enhanced value.

Even those citizens who do not engage in hunting, fishing, hiking, camping, or other outdoor activities on public lands have a reason to value them. These lands provide "ecosystem services" that improve our quality of life in various ways. Ecosystem services are conditions or processes associated with natural ecosystems that provide benefits to humans.

For example, land conservation protects human health by keeping our drinking water clean and is a cost-effective tool in protecting water quality. A growing understanding of the role that forests and natural lands play in filtering pollutants and maintaining water quantity and quality has led many municipalities and water suppliers, particularly those in growing communities, to consider land protection as part of a multiple-barrier approach to providing safe drinking water. A study conducted by the Trust for Public Land and the American Water Works Association showed that forestland in particular greatly reduces the cost of treating drinking water. For every 10 percent increase in the source area's

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Management, Development, and Use

forest cover (up to 60 percent), treatment and chemical costs decreased approximately 20 percent (Ernst 2004).

Wetlands provide natural flood insurance by acting as sponges, storing rain that runs off the land and slowly releasing it to the atmosphere, groundwater, and adjacent lakes, rivers and streams. Strategic wetland protection and restoration can help reduce flood peaks and damage, protect human health and safety, and reduce the need for expensive projects such as levees, detention ponds, and the reconstruction of flood-damaged roads.

Ingraham and Foster (2008) estimated the value of some of these basic ecosystem services. They calculated an economic value for the wildlife habitat, carbon sequestration, disturbance prevention (e.g., flood control), freshwater management and supply, nutrient regulation, and waste management provided by USFWS National Wildlife Refuges in the contiguous United States. The value of services provided by forests, shrublands, grasslands, and wetlands amounted to \$2,900/acre/year. Using the same approach, Wisconsin's public lands provide a total return of \$3.33 billion/year or \$2,400/acre/year (Table 2.1).

Table 2.1. Estimated Annual Value of Ecosystem Services Provided by WDNR-owned Lands.

	Dollars/acre*	WDNR-owned acres	Value
Forests	\$1,014.27	879,898	\$892,454,144
Shrublands	\$660.13	121,928	\$80,488,331
Grasslands	\$61.67	160,211	\$9,880,212
Wetlands	\$10,608.43	221,522	\$2,350,000,630
Total		1,383,559	\$3,332,823,318

*Source: Ingraham and Foster 2008

Our wild lands also provide a cultural and historical connection to who we are and where we've been. They provide a sense of place in the landscape and are important habitats for people. They include historic and archaeological sites, scenic views, water access, bridges and more. Trails, for example, are links to our natural resources. They play an important role in providing access to the outdoors for people with varied physical abilities, support environmental education, and build a public commitment to environmental conservation.

The majority of Americans agree that preserving undeveloped land for outdoor recreation is important (Outdoor Foundation 2011). Lack of access to, and interest in, nature keeps kids from experiencing the outdoors, leading to a growing disparity between the time children spend indoors wired to technology and the time they spend outside enjoying nature (TNC 2011). Evidence suggests that children and adults benefit so much from contact with nature that land conservation can now be viewed as a public health strategy (Frumkin and Louv 2007).

CHAPTER 2: Management, Development, and Use

It can be difficult to weigh the ultimate value of purchasing, conserving, and managing public land in Wisconsin. Upfront costs are obvious and immediate, while benefits are usually long-term and may seem vague by comparison. However, in addition to dollars and cents, land conservation also should be measured in the currency of recreation, environmental benefits, connections to nature, and land health. Expenditures for public land conservation and management are best understood not as a cost but as an investment that will pay dividends, including economic ones, long into the future (Gies 2009). Likewise, the land acquisition and management strategies outlined in this master plan will pay commensurate dividends to the region and its residents, long into the future.

VISION

The Green Bay Planning Group properties will provide high-quality habitats for diverse wildlife and fish species and high-quality outdoor, nature-based recreational opportunities in lightly developed settings for current and future users. These opportunities will be provided within a matrix of diverse coastal wetland and upland communities, including emergent marshes, rivers and streams, shrub swamps, and both bottomland and upland hardwood forests. Natural communities will be managed sustainably for ecological benefit and user enjoyment in a manner consistent with their statutory designations and ecological capabilities. Management of these properties will be directed at maintaining the ecological integrity of the shore zone, recognizing that the interplay between terrestrial and aquatic habitats in this area is vitally important to the health of the Green Bay ecosystem.

GOALS

- Goal 1:** Protect, restore, enhance, and manage for a variety of high-quality coastal wetland and associated upland habitats, including emergent marshes, sedge meadows, shrub swamps, lowland hardwoods, aquatic habitats, aspen, oak, upland hardwoods, and grasslands.
- Goal 2:** Provide recreational opportunities for hunting, fishing, trapping, paddling, bird watching, wildlife viewing, nature study or enjoyment, and other compatible nature-based outdoor pursuits, with an emphasis on non-motorized recreation.
- Goal 3:** Promote quality habitat for desirable game and non-game species, including rare and special concern species, within the natural range and variability of this landscape.
- Goal 4:** Protect, enhance, and restore spawning and nursery habitat for native fish, both resident and migratory.
- Goal 5:** Manage habitats on the properties to maintain and enhance their importance as migratory bird stopover sites, emphasizing a diverse mosaic of coastal habitats in large, interconnected blocks.
- Goal 6:** Maintain and enhance connectivity between terrestrial and aquatic communities throughout the properties.

SECTION ONE: UNIVERSAL ELEMENTS FOR ALL DEPARTMENT PROPERTIES

RESOURCE MANAGEMENT BY LAND CLASSIFICATION

Management of these properties generally is described by a specific land management classification per NR 44 that indicates the primary management objective for a property or area within a property. These classifications are determined during the master planning process and help identify the preferred set of actions to achieve short and long-term objectives. Only management activities or techniques identified or referenced in this master plan and compatible with the site's ecological capability will be pursued in these management areas.

All the lands within the GBPG are covered by the following land management classifications:

Habitat Management Area (HMA) (NR 44.06(5)): The majority of lands within the GBPG (9,001 acres) fall into this classification. The primary objective for HMAs is to provide integrated upland, wetland and/or aquatic habitat management that meets critical life-cycle needs for a variety of plant and animal species. Typically the emphasis is to provide habitats needed to sustain productive game species populations. Areas that initially do not have desired habitat conditions but have a high potential to be restored may be included under this classification.

Native Community Management Area (NCMA) (NR 44.06(6)): All State Natural Areas and selected management units, totaling 1,662.5 acres, are classified as NCMA's on the GBPG properties. NCMA's are managed to perpetuate presettlement plant and animal communities, whether upland, wetland, or aquatic, and protect the biological diversity of the native ecosystems. A native community is a distinct and reoccurring assemblage of indigenous flora and fauna associated with a particular set of physical characteristics. Areas that initially do not have the desired community conditions but have a reasonable potential to be restored may be included in this classification.

All traditional recreational uses, such as hunting, fishing, trapping, and nature enjoyment, are allowed on NCMA's unless an area needs to be closed to protect a rare species during breeding season or to protect a very fragile habitat.

Special Management Area (SMA) (NR 44.06(7)): Lands in this classification are managed to provide and maintain areas or facilities for special uses not included under other land management classifications. The only areas classified as SMA's on the GBPG properties are a 7-acre area encompassing the shooting range on the Badger Gift Lands and the 3-acre Little River boat access site.

The total acreages of these management areas by property are shown in Table 2.2. Refer to individual property map series (series C through N) for land classification maps.

Table 2.2. Land Management Classifications of the GBPG Properties.

Property	HMA acres*	NCMA acres*	SMA acres*
Badger Gift Lands	750	-	7
Bloch Oxbow State Natural Area	-	597.5	-
Green Bay West Shore Wildlife Area			
Peshtigo Harbor Unit	3,891	921	-
Rush Point Unit	386	-	-
Oconto Marsh Unit	931	-	-
Pecor Point Unit	89	-	-
Pensaukee Unit	468	47	-
Charles Pond Unit	-	97	-
Tibbet-Suamico Unit	308	-	-
Bayside Road Unit	243	-	-
Sensiba Unit	637	-	-
Long Tail Unit	317	-	-
Peats Lake Unit	510	-	-
Other State-owned Lands			
Brown County	219.5	-	-
Marinette County	127	-	3
Oconto County	125	-	-
Total	9,001.5	1,662.5	10

*Land management classification acreages are extracted from the DNR Managed Lands GIS spatial database and may differ from the acreages represented in property deed legal descriptions. Acreages also may change depending on water level fluctuations in Green Bay.

Any additional lands acquired likely would be classified as HMA, and managed according to the general wildlife, fisheries, and forestry management objectives and prescriptions and Management Prescriptions by Cover Type, as appropriate to the habitats present. A NCMA classification may be considered if a habitat evaluation indicates the presence of, or potential to restore, high-quality examples of natural communities that are characteristic of the plan area or that are considered regionally rare or significant.

GENERAL WILDLIFE HABITAT MANAGEMENT

The following general management objectives and prescriptions apply, as appropriate, to all the properties in the plan area. Additional prescriptions are described in the Management Prescriptions by Cover Type section later in this chapter. Management objectives and prescriptions for specific habitats and management areas on individual properties are included in the individual property sections.

These objectives and prescriptions will be implemented contingent upon the availability of staff and material resources, and may be modified as needed to respond to unpredictable or catastrophic events (e.g., storm damage, severe insect or disease

infestations). Implementation of objectives and prescriptions also will depend upon hydrologic conditions. The GBPG properties are in the Green Bay coastal zone and are directly affected by changing water levels in Green Bay. Daily, seasonal, and long-term water level changes within the plan area caused by seiches, annual flooding events, or extended drought or wet periods affect the distribution and extent of plant communities and of the fish and wildlife that use them. Due to the dynamic nature of hydrology in the coastal zone, objectives and prescriptions will be implemented as hydrologic conditions allow.

Objectives

- Provide the largest practicable blocks of habitat, particularly wetlands and forest, including a continuum of habitats from lowland to upland. Also, establish and maintain linkages, including hydrologic connections, between habitat blocks to create travel corridors for the movement of species over time.
- Maintain and enhance the quality and extent of open wetlands, with particular emphasis placed on sedge meadow and emergent marsh, for the benefit of common (mallard, blue-winged teal, wood duck, muskrat, etc.) and uncommon (yellow rail, American bittern, black tern, willow flycatcher, etc.) breeding species, as well as for migratory bird stopover habitat.
- Adaptively manage a shifting mosaic of wetlands including emergent marsh, sedge meadow, and shrub carr across the landscape as opportunities exist and hydrologic conditions allow.
- Maintain native upland brush and restored or surrogate grasslands to provide habitat for game species such as American woodcock and grassland-nesting waterfowl, particularly in sites where it helps create an upland-to-lowland habitat continuum or serves as a transition between more open habitats (e.g., wetlands) and forests.
- Monitor and control populations of invasive species and eradicate them where feasible. Invasive species of particular concern currently include *Phragmites*, reed canary grass, non-native cattail, purple loosestrife, glossy buckthorn, common buckthorn, and spotted knapweed. Support efforts to manage and prevent spread of aquatic invasive species.
- Manage habitats to protect and enhance natural communities and populations of rare species, including endangered, threatened, and special concern species and Species of Greatest Conservation Need (SGCN).
- Protect cultural sites and features from disturbance and degradation.
- As appropriate, follow the Management Prescriptions by Cover Type provided later in this chapter when conducting management actions that support the above objectives and prescriptions.

Prescriptions

- Manipulate water levels on flowages and impoundments to improve wildlife and fish habitat, particularly for Northern pike, nesting waterfowl and migrating waterbirds, waterfowl, and shorebirds.
- Fill ditches and break old drain tiles to improve water level management and aid wetland restoration efforts, except where these are being used for fish spawning, fish nursery, or migratory passage.
- In limited cases, use nest boxes, platforms, or similar devices to enhance reproduction of desired wildlife, such as black tern or other colonial nesting birds. As natural nesting substrate develops, transition away from artificial nesting support.
- Control invasive species using appropriate techniques including prescribed fire, flooding, mechanical control (e.g., mowing, cutting, pulling), chemical control (e.g, herbicide application), or biocontrol.
- Provide a “soft edge” of grasses or shrubs between cover types, as appropriate, to minimize sharp transitions and allow habitat types to shift in response to hydrologic changes.
- Restore land to native cover types where applicable.
- Maintain current maps of known cultural sites and features. Follow appropriate regulations (e.g., Section 44.40, State Statutes, Manual Code 1810.10) when proposing or planning any management activity that has the potential to disturb a cultural site.
- Maintain existing dikes and water control structures. However, some structures may be removed, and others added, where necessary after evaluation and consultation between appropriate programs.

GENERAL WARMWATER FISHERIES MANAGEMENT

Green Bay supports significant populations of smallmouth bass, walleye, Northern pike, yellow perch, and many nongame fish species. Interconnected streams and waterways and shallow beds of emergent and submergent vegetation along the west shore provide critical spawning and nursery areas. Larger rivers, including the Peshtigo, Oconto, Pensaukee, Suamico, and Little Suamico, also provide important spawning and nursery habitat and host diverse aquatic communities, including several species of rare fish. Healthy, fishable populations of game fish are dependent on a balanced, diverse non-game community. Managing for a diversity of natural shorelines and habitats will ensure that these communities remain viable and abundant.

Objective

- Maintain and enhance existing native fish populations and diversity through habitat management, restoration, enhancement, protection, monitoring, and research.

Prescriptions

- Monitor game and nongame fish populations using standardized fish surveys to detect long-term trends and establish management objectives.
- Allow natural hydrologic processes to occur wherever possible, or restore where feasible.
- Actively manage selected sites for fish spawning and nursery habitat.
- Maintain open water habitat in sloughs, oxbows, and river channels.
- Enhance or restore degraded shorelines where possible.

NATIVE GREEN BAY FISH SPAWNING AND NURSERY AREA MANAGEMENT

The coastal wetlands along the west shore of Green Bay have long been recognized for their importance to spawning fish and nursery habitat. Small perennial or seasonal interconnected streams and wetlands provide nursery areas for native fish such as Northern pike. These streams and pooled wetlands provide very productive habitat for other fish species as well as aquatic organisms. Each spring, adult Northern pike migrate from Green Bay proper into stream, ditch, and wetland complexes along the west shore of Green Bay. These adult pike may travel miles inland, depending on water levels, to seek suitable spawning habitat in shallow wetlands. Females lay their eggs on grassy vegetation, and the adults migrate back to Green Bay while the eggs incubate. When the eggs hatch, larval fish may remain in the wetland to feed and grow several inches before migrating passively with water flows to Green Bay.

Lake sturgeon spawn and recruit in the lower Peshtigo and Oconto rivers, making these rivers important in the restoration of lake sturgeon populations in Green Bay. Lake sturgeon principally spawn below the Peshtigo Dam (Peshtigo River) and Stiles Dam (Oconto River). They usually migrate to spawning areas in April and generally have two to three spawning events spread over two to four weeks. Post spawning, adults quickly emigrate from these waters into Green Bay. Depending on water temperatures, the eggs hatch in six to ten days. During the spawning and egg development stages, sturgeon need flowing, oxygenated water. Larval sturgeon drift downstream and settle into slow-moving waters and pool habitat to feed and develop. These young sturgeon remain in the lower river stretches for three to five months before emigrating to Green Bay at 5-8 inches in size.

Objectives

- Restore, enhance, and maintain the functional values of known spawning and nursery areas for native Green Bay fish such as Northern pike, lake sturgeon, Great Lakes spotted muskellunge, walleye, and lake whitefish, and establish new spawning areas where practicable.

- Improve stream and ditch connectivity to allow migratory fish species to access suitable spawning and nursery habitat.

Prescriptions

- Identify and remove barriers to fish passage at road and stream crossings.
- Protect important known or potential spawning areas through purchase, easement, or management agreements as opportunities present themselves. Continue to work with public and private partners to identify new potential spawning areas. Collaborate with dam owners to ensure that adequate and consistent flows are present below dams to foster optimum sturgeon spawning conditions and providing flowing, oxygenated water for egg development.
- On Department-managed Northern pike spawning and nursery areas, maintain the habitat as grasses, sedges and other soft-stemmed vegetation where spawning occurs by mowing brush and other woody-stemmed plants, cutting and removing trees and tops, and prescribed burns in marshes to remove debris and encourage new growth. Continue to work with invasive species management experts to decrease the abundance of the exotic invasive plants and encourage native grasses and sedges.
- Maintain, increase, or restore seasonal spring water flow over and through marshes by utilizing bank cuts, with appropriate stabilization methods, and spillway structures, dike removal/modification, installation of culverts, bridges, and mechanical water manipulation as needed.
- Identify and inventory potential lake sturgeon spawning and nursery habitat in the Peshtigo and Oconto rivers.
- Restore known lake sturgeon spawning and nursery areas as needed with appropriately sized and placed materials to encourage sturgeon use and maximize hatching survival.

GENERAL FOREST MANAGEMENT

Forest management activities follow the *Wisconsin Forest Management Guidelines* (PUB-FR-226-2011) as well as the DNR *Silviculture and Forest Aesthetics Handbook* (2431.5), the *Public Forest Lands Handbook* (2460.5), the *Timber Sale Handbook* (2461), the *Old-growth and Old Forests Handbook* (2480.5), and Forestry Best Management Practices (BMPs) for water quality and invasives species. Consult these resources for additional details and management considerations. The objectives and prescriptions listed below are for the primary forest types found throughout the GBPG properties. The prescriptions include an overview of the general management methods and guidance from the *Silviculture Handbook*, as well as some additional considerations to be applied to this group of properties. Additional prescriptions relating to management of specific forest types within the plan area are found in the Management Prescriptions by Cover Type section later in this chapter.

Objectives

- Maintain and enhance the extent, quality, and connectivity of lowland hardwood forests and maintain their connections to adjacent open habitats (e.g., marshes, shrub swamps), to benefit game and nongame species, furbearers, and breeding and migrating birds.
- For wildlife habitat value, maintain, enhance, and expand oak and aspen stands where this is practicable and does not conflict with other property objectives to benefit common wildlife species such as ruffed grouse, American woodcock, and white-tailed deer and uncommon species such as golden-winged warbler and black-billed cuckoo.
- Maintain the extent and enhance the quality of upland hardwoods with an emphasis on providing wildlife habitat and protecting aesthetic values, where this does not conflict with other property objectives.
- Maintain site hydrology for lowland forest types (bottomland hardwood, swamp hardwood); restore where feasible.
- Promote forest health by managing forest types to discourage invasion by and reduce loss from invasive species such as emerald ash borer, buckthorns, and reed canary grass and forest diseases.
- Encourage establishment of conifer components where opportunities are present.
- As appropriate, follow the Management Prescriptions by Cover Type provided later in this chapter.

Prescriptions

- Evaluate non-forested areas within or adjacent to larger blocks of forested habitat for suitability to convert to forest to increase block size. Convert these areas to a forest type appropriate to the site where feasible and where conversion does not conflict with other management objectives.
- Provide a diversity of size and age classes across the forest types that occur in the plan area.
- Retain snags, living and dead cavity trees, and coarse woody habitat whenever their retention does not conflict with other management objectives or pose a danger to loggers.
- Leave long-lived reserve trees as individuals or in groups to provide timber, wildlife, and aesthetic value whenever their retention does not conflict with regeneration and other forest management objectives.
- Salvage trees damaged by wind, ice, fire, insects, and disease as long as the salvage meets the overall objectives for the site and is economically feasible.

- Maintain and establish native white pine, encouraging development of super-canopy trees, and swamp conifers (e.g., tamarack, cedar, etc.) where opportunities are present.
- Follow Wisconsin's Forestland Woody Biomass Harvesting Guidelines when conducting forest management in cases where biomass harvesting is compatible with site objectives.
- Require loggers to utilize established best management practices for all aspects of conducting timber harvest and removal, and require logging equipment to be cleaned prior to entry to and exit of state lands in order to prevent the spread of invasive plants.

STATE NATURAL AREAS

The primary purpose of State Natural Areas (SNAs) is to protect outstanding examples of Wisconsin's native natural communities, significant geological formations, and archeological sites.

SNAs are valuable for research and educational use, the preservation of genetic and biological diversity, and for providing benchmarks for determining the impact of use on managed lands. They also provide some of the last refuges for rare plants and animals.

Sections 23.27-23.29 Wis. Statutes provide legislative authority and direction for the acquisition, designation, dedication, and management of SNAs. Section 23.27 (1) defines natural areas as "reserves for native biotic communities...habitat[s] for endangered, threatened, or critical species...or areas with highly significant geological or archaeological features". Section 23.28(1) provides authority to designate natural areas as SNAs, and Section 23.29 provides authority to legally dedicate and protect SNAs in perpetuity.

SNAs may be either stand-alone properties or embedded within another property type, such as a State Wildlife Area. In the latter case, the SNA is an overlay designation where management for the natural area values takes precedence on the designated area.

The existing SNAs on the GBPG properties are as follows:

- Bloch Oxbow
- Peshtigo Harbor Lacustrine Forest (within Peshtigo Harbor Unit of the GBWS WA)
- Peshtigo Harbor Delta Marshes (within Peshtigo Harbor Unit of the GBWS WA)
- Charles Pond (within Charles Pond Unit of the GBWS WA)

These are described in detail later in this chapter.

MANAGEMENT PRESCRIPTIONS BY COVER TYPE

The Department commonly uses several habitat classification systems when planning and performing management activities. The two that are used most in this plan are natural communities and cover types. Each has a different purpose, function, and scale. The natural community system is broader and ecologically defined, based on assemblages of plant and animal species that are repeated across the landscape in an observable pattern. It is a particularly useful tool for identifying interconnected, functional natural elements. The cover type system is more focused, generally looking at a finer scale. This system breaks out the primary vegetative types on the landscape and classifies them by the dominant vegetation present on a particular site. The cover type system was developed as a forest management tool, used to identify and apply management to different timber types and other types of vegetation. Specifically, a forest stand is designated as a certain cover type if $\geq 50\%$ of its basal area is dominated by a particular tree species or combination of species. Sites having $< 10\%$ trees are considered non-forested and are classified as various other habitat types (e.g., grassland, lowland brush, etc.) according to the predominant vegetation present. Forest reconnaissance data are collected using these cover types, and are stored in the Wisconsin Forest Inventory & Reporting System (WisFIRS).

Because the cover type system focuses on specific vegetation types, it is useful for directing and carrying out vegetation management activities. However, consideration of natural communities along with cover types is essential in planning and management to assure that the overall integrity and function of managed resources are maintained.

Forested Habitats

Bottomland and Swamp Hardwoods

Bottomland hardwoods in the plan area are dominated by silver maple and green ash, with elm, black ash, and cottonwood as associates. Swamp hardwoods are dominated by black ash, green ash, and red maple. White birch, aspen, and swamp white oak are occasional associates. Together, these two forest types comprise over 50% of the forested acreage on the GBPG properties. In general, swamp hardwoods will be managed to rotation age using even-aged techniques. Bottomland hardwoods will be managed with extended rotations to encourage large-diameter tree development, although even-aged harvests may be prescribed for some stands. Invasive exotic species, wet soil conditions, and high water tables can make timber management in these cover types a challenge. Also, deer browsing on seedlings and stump sprouts can hinder stand regeneration in some areas. With the arrival of emerald ash borer in Brown County, long-term perpetuation of ash-dominated stands, particularly in the southern portion of the plan area, may no longer be feasible.

Prescriptions

- Follow DNR Forestry management guidelines for emerald ash borer.

CHAPTER 2 – Section One:
Universal Elements for all Properties

- Encourage red maple, silver maple, swamp white oak, or other desirable non-ash associates.
- In ash-dominated stands lacking other hardwoods, succession to shrub or open wetland may occur with the absence of ash. Any management strategy should focus on preventing the site's conversion to exotic invasive species (e.g., reed canary grass, glossy buckthorn, *Phragmites*, etc.).

Red Maple

Red maple-dominated stands make up 20% of the forested acreage on the plan area properties. Green and black ash are common associates in lowland situations, while oak, aspen, and birch are common associates in uplands. Red maple is common on stands of intermediate fertility and average to above-average moisture. It is an aggressive competitor to oak and outlives aspen and birch. As a result, as aspen and oak stands decline with age, red maple becomes the dominant tree species. The red maple cover type is not as valued for wildlife habitat as the aspen/oak cover types, so conversion to aspen and oak through coppice cutting when possible is the preferred management alternative for these stands. When there is no opportunity for natural conversion in these stands, red maple may be maintained.

Prescriptions

- Use coppice cutting to convert to aspen and oak wherever possible.
- Where management for red maple is the primary objective, utilize even-aged management with a shelterwood cut at rotation age of 90 years.
- Retain a conifer component where present.

Aspen

Aspen is valuable wildlife cover type. Young aspen forests provide feeding and hiding cover for many game and non-game species, and may provide important post-fledging habitat for mature-forest-breeding birds where it occurs adjacent to mature forest. Aspen stands comprise 16% of forested acreage on the GBPG properties. This cover type generally is managed using even-aged techniques to promote early-successional wildlife habitat.

Prescriptions

- Use coppice cutting at rotation age to manage aspen.
- In mixed stands, retain a component of other tree species, particularly oak and conifers.

Oak

Oaks have very high wildlife value, providing food resources through mast production, nesting/denning habitat, and cover for a wide variety of game and nongame species. Oaks also host a high diversity and abundance of insect populations, particularly lepidopterans (butterflies and moths), making them a critical food resource for migrating landbirds. Red oak is the prevalent species on the GBPG properties, with occasional white, bur, and northern pin oaks. Mature oak stands are scattered throughout plan area, representing <10% of forest cover. Some stands have been impacted by drought and periodic gypsy moth defoliation, which has created some visible stress on tree health and quality. Generally, site disturbance is necessary to maintain or regenerate oaks. However, heavy competition from mesophytic species such as red maple, from invasive exotic plants (especially buckthorns), and deer browsing can greatly reduce regeneration success.

Prescriptions

- Rotation age for red oak should be determined by habitat type. Prior to rotation apply intermediate thinnings. Regenerate red oak by applying shelterwood harvests. Timing of harvests should coincide with years with good acorn crops, making sure crown closure targets are achieved.
- Artificial regeneration from seed or seedlings may be used to establish oak reproduction prior to or after harvest when natural regeneration is not adequate. Other management techniques that may be used to aid regeneration include soil scarification, herbicide treatments, and prescribed fire.
- If necessary, apply intensive pre- or post-harvest site treatments to ensure that successful regeneration of oak occurs, rather than conversion to red maple.
- Manage northern pin oak by clearcutting at rotation age based on habitat type.

Mixed Upland Hardwoods

Other hardwood cover types are uncommon on the GBPG properties. Several stands of northern hardwoods occur in the northern portion of the plan area, consisting largely of sugar maple mixed with other species including red oak, basswood, hemlock, red maple, white ash, and butternut. Scattered stands of white birch also exist, mixed with aspen, oak, or red maple. In general, these types are managed to provide a diversity of age classes and structural attributes for wildlife, aesthetic, and timber value.

Prescriptions

- Where northern hardwoods are to be maintained, generally schedule management entries at intervals of every 10-20 years. To develop a northern hardwood stand with many age classes, evaluate the regeneration, spacing, density and other stand conditions.

- Use selection harvest as the primary management tool for northern hardwoods, and vary harvest intensity according to site specific conditions and needs. Plan harvests to maintain or increase species diversity in these stands.
- Regenerate white birch by clearcutting stands, strip cutting, shelterwood harvest or by modified clearcuts that open up stands. Typically use ground disturbance during harvest, mechanical scarification, or prescribed fire to prepare the forest floor for white birch seed germination.

Non-forested Lowland Habitats

Emergent Marsh

Emergent marshes occur in areas with permanent water and low flow conditions. These communities develop in association with both natural water bodies and with impoundments and flowages where water levels may be controlled by pumps and control structures. Emergent marshes provide critical habitat for many wildlife species including waterfowl, waterbirds, shorebirds, and wetland furbearers. An equal mix of open water and emergent vegetation, often referred to as “hemi-marsh”, is considered optimal for many breeding migratory birds such as ducks, terns, and rails. Marshes on the GBPG properties are associated with the Green Bay coastal zone and are impacted by water levels in Green Bay and Lake Michigan, wave action, and ice scouring. In most cases, water levels are dependent on short- and long-term fluctuations in Green Bay water levels, and there is little or no opportunity for manipulation. Some marshes, such as at Oconto Marsh and Sensiba, are associated with impoundments where some artificial water control is possible.

Prescriptions

- Where possible, provide or maintain a 1:1 ratio of emergent vegetation to open water in a dispersed pattern using drawdowns, mowing, prescribed fire, or herbicide.
- Maintain or restore the original hydrology of wetlands where feasible and where it does not conflict with other management objectives.
- Remove woody encroachment and exotic invasive plants through mowing, cutting, burning, herbicide treatment, biological control, or a combination of these. Species of particular concern include *Phragmites*, non-native/hybrid cattail, reed canary grass, and purple loosestrife.
- Maintain dikes and water control structures in good condition.

Sedge Meadow

Sedge meadows support many wildlife species, including birds (waterfowl, herons, bitterns, rails, sedge wrens, etc.) and rare herptiles such as Blanding’s turtle. Today, these open wetlands are much less abundant than they once were, although they remain

fairly common in the plan area. Historically, fire played a key role in maintaining these open habitats. The lack of fire in the present landscape has allowed the encroachment of woody species. Many of these wetlands have been lost or severely degraded by drainage, flooding, lack of fire, or invasive species. As with emergent marshes, sedge meadows on the west shore are associated with the Green Bay coastal zone and are affected by Green Bay water levels, turbidity, and wave or ice erosion. Long-term water level fluctuations as well as practices such as ditching and grazing have allowed exotic invasive plants, particularly *Phragmites*, reed canary grass, and buckthorn to become dominant in many sedge meadows. These species replace native plants, often forming monotypes with drastically reduced wildlife habitat value. Continuing research on cost-effective, environmentally safe methods for removing these invasives from sedge meadows may provide future tools to accomplish restorations.

Prescriptions

- Control woody vegetation and invasive species using the best available and economical methods, including prescribed fire, mechanical cutting, herbicide treatment, or biological control agents.
- Restore the site's original hydrology where possible and compatible with other objectives.

Shrub Wetlands

Most lowland shrub communities on the GBPG properties are shrub carrs dominated by red-osier dogwood and various willows. There are some areas of alder thicket which is dominated by alders, particularly speckled alder, although dogwood, willows, and other shrubs may be present. Shrub wetlands provide valuable breeding and wintering habitat for species such as American woodcock, golden-winged warbler, and white-tailed deer. Shrub carrs may encroach on sedge meadows and other open wetlands due to lack of disturbance and altered hydrology. Periodic management treatments often are required to maintain the health and vigor of the shrub community and prevent encroachment on other wetland types.

Prescriptions

- Use prescribed fire, mowing, tree cutting, and herbicide treatments to maintain shrub carr habitat.
- Cut alder on a 20-year rotation to regenerate stands. Mow or shear strips that are 50-100 feet wide. Alder may be cut in blocks if necessary.
- Position strips so that every 5 years, an adjacent strip can be cut. If near a water source, orient strips perpendicularly in order to provide a soil moisture gradient for woodcock feeding opportunities.
- Cutting of alder may be implemented by loggers as part of a timber sale.

- Leave some areas of uncut alder for breeding golden-winged warblers, especially in sites adjacent to mature forest, as this species prefers tall shrubs for nesting.

Non-forested Upland Habitats

Grasslands

Upland grasslands are scattered throughout the GBPG properties, and consist of native or planted warm-season grasses. Many of these parcels are small in size (<50 acres), although some larger ones exist. These areas do not represent major management opportunities for grassland species, but they do provide some habitat for nesting grassland and grass-shrub birds and other species, and will be maintained for that purpose.

Prescriptions

- Use prescribed fire, herbicide treatments, mowing, and shearing to maintain grassland habitat with an emphasis on control of invasive and woody species.

Upland Brush

This habitat can include desirable native shrubs and trees such as dogwoods and mast species, and often occurs interspersed among other habitat types. Game species such as deer and woodcock will use brush for cover, feeding, and nesting. However, these communities can also become infested with exotic invasive shrubs such as honeysuckle and buckthorns.

Prescriptions

- Manage upland brush on a 20-year cycle using heavy-duty mowers, prescribed fire, or other techniques. Strive to cut strips or blocks every 5 years to provide a variety of age classes.
- Where brush communities are infested with invasive species, use fire, herbicides, cutting, or other techniques to control invasives and favor native species.
- Focus brush management in areas where it helps to create a transition or a “soft edge” between forested and open habitat types.

GENERAL RECREATION MANAGEMENT AND USES

All Department-owned lands within GBPG properties, except for refuges that are closed to hunting during the waterfowl season, closed to hunting and trapping during the waterfowl season, and fish refuges closed to entry during fish spawning periods, are open to traditional outdoor recreational uses including hunting, fishing, and trapping. Other activities allowed on these lands include wildlife viewing, hiking, paddling, cross country skiing, snowshoeing, and nature study. Edible fruits and nuts, wild mushrooms, wild asparagus, and watercress may be removed by hand without a permit for the purpose of personal consumption by the collector. Cutting of willow branches is allowed with a permit from the property manager. Collection of seeds, roots, or other plant parts is prohibited.

Access or use restrictions may be applied to SNAs to protect endangered or threatened species or unique natural features.

Foot travel is allowed on all service roads, dikes, berms, and firebreaks unless restricted during habitat management activities (e.g., temporary closure during a prescribed burn) or due to safety concerns (e.g., flooding). Motorized vehicle access is restricted on all GBPG properties to designated public access roads and parking lots. There are some allowances for motorized use by individuals with mobility impairments under the power-driven mobility device regulations of the Americans with Disabilities Act. Please refer to specific language under “Disabled Accessibility” in the General Administration Management Policies and Provisions section of this chapter.

Prohibited activities include:

- Horseback riding.
- Mountain biking, ATV use, and model aircraft and rocketry use.
- Paintball, airsoft, and similar activities.
- Snowmobiles, except on trails and roadways designated for their use. Snowmobile trails that are part of regional networks are allowed on WAs at the discretion of the property manager. Snowmobile trails are not allowed on SNAs unless the trail was in place prior to parcel acquisition.
- Collection of animals, non-edible fungi, rocks, minerals, fossils, archaeological artifacts, soil, downed wood, or any other natural material, alive or dead (with the exception of willow branches). Collecting for scientific research requires a permit issued by the DNR.
- Collection of plants including seeds, roots, or other parts of herbaceous plants such as wildflowers or grasses (with the exception of wild edibles, noted above).
- Camping and campfires.
- Wheeled dog sleds.

- Geocaching (on SNAs).

Information on rules governing public use of Department-owned lands is found in Chapter NR 45, Wisconsin Administrative Code.

Recreation and Public Use Objectives

- Provide high-quality hunting, trapping, and fishing opportunities.
- Provide opportunities for high-quality, nature-based, non-hunting-related recreational activities, such as hiking, paddling, cross country skiing, and wildlife viewing, as compatible with the properties' capabilities and the primary objective, above.
- To the degree practicable, accommodate incidental outdoor recreational uses such as nature study and berry-picking (incidental uses are uses that are not specifically managed for on the properties).
- Accommodate research and educational activities that are consistent with the primary management purposes of the properties and with user safety.
- Maintain and improve accessibility and recreational opportunities for mobility-impaired individuals.

Recreation and Public Use Prescriptions

- Install, maintain, and monitor parking lots, access roads, boat access sites, and signage consistent with Department rules and policies.
- Post property boundaries with signs to assist visitors in finding and staying on state lands. Post other property regulatory and informational signs at parking lots and access points.
- Provide additional accessible wildlife viewing opportunities and new trails, hunting blinds, and shore fishing opportunities where practicable.
- Work with local partners to develop appropriate interpretive materials and provide educational opportunities on the properties.
- Accommodate pheasant stocking by private clubs participating in the Day-old Chick program where appropriate at the discretion of the property manager.
- Work with the Bureau of Parks and Recreation to acquire (if necessary) and develop non-motorized boat access and low-development water-based camping opportunities for Lake Michigan State Water Trail users in areas of identified access and use gaps (WDNR 2011), if appropriate and with consideration of other natural resource features. Identified gaps exist along the shoreline of the Peshtigo Harbor; Pecor Point; Pensaukee; Tibbet-Suamico; Bayside Road; Sensiba; Long Tail; and Peats Lake Units of the GBWS WA.

CHAPTER 2 – Section One:
Universal Elements for all Properties

Unique, property-specific recreation management and public use prescriptions are included in the individual property sections of this chapter.

GENERAL ADMINISTRATION MANAGEMENT POLICIES AND PROVISIONS

The following section describes general property administration and management policies and provisions that apply to all state managed lands.

Funding Constraints

Implementation of the master plan is dependent upon staffing and funding allocations that are set by a process outside of the master plan. Funding for land acquisition can come from a variety of federal (e.g., Pittman-Robertson and others), state (e.g., Stewardship), local, and private (e.g., land trusts) sources as well as land donations. Capital and operational funding for the Department is established by the state legislature. Funds also are provided by federal programs and occasionally from private sources. Development projects similarly follow an administrative funding and approval process outside of the master plan. Many of the initiatives contained within the plan are dependent upon additional funding and staffing support. Therefore, a number of legislative and administrative processes outside of the master plan will determine the rate this master plan will be implemented.

Properties that have either been purchased or managed using funding from the Federal Aid in Wildlife Restoration Act (also known as the Pittman-Robertson Act) or the Federal Aid in Sport Fish Restoration Act have additional management constraints that must be considered. The statutes and applicable regulations prohibit a state fish and wildlife agency from allowing recreational activities and related facilities that would interfere with the purpose for which the State acquired, developed, or is managing the land.

Facility Management

All infrastructure used for habitat management and public access shall be inspected and maintained as required in program guidance and manual codes. This infrastructure includes, but is not limited to, dikes, spillways, water control devices, roads, gates, parking lots, boat launches and buildings.

The property manager may relocate or temporarily close road and trail segments or other public use facilities as deemed necessary after appropriate authorization by normal Department approval processes. The location and design of new roads or trails must be consistent with the land classification requirements (NR 44) and the management objectives for the area in which they are to be located.

Dikes and water control structures are essential for controlling water levels in flowages and enhancing emergent marsh habitats. The following routine activities apply to the maintenance of dikes and water control structures:

- Conduct dike maintenance and approved water manipulation activities.
- Maintain dikes to secondarily provide pedestrian access for hunters and trappers.
- Control beaver and muskrat populations to mitigate burrowing and damming.

- Plan and implement major maintenance of dikes on approximately 20-year rotations.

Public Health and Safety

All facilities will comply with federal, state, and local health and sanitation codes. The property manager has the authority to close trails and other facilities on the property when necessary due to health, safety, or environmental damage concerns. In designated public use areas, such as designated parking lots and designated trails, trees or other natural elements that are deemed public hazards will be removed. Safety inspections are done at least twice per year.

Refuse Management

Visitors are required to carry out any refuse they bring in because no designated refuse or recycling receptacles are available. Burying of refuse is not allowed anywhere on the properties.

Road Management Plan and Public Vehicle Access Policy

State properties typically have a network of primitive, lightly, or moderately developed roads that are used for management purposes and public access. Except for roads that lead to public parking lots or boat access sites, all roads are closed to public vehicle access except for permitted use of power-driven mobility devices by the mobility-impaired. Closed roads are gated or signed.

All Department-maintained service roads that are not open to public vehicles will be maintained as primitive or lightly developed roads (NR 44.07(3), Wis. Admin. Code). On primitive roads, which are seasonal and not regularly maintained, ruts and downed trees may be present. Maintenance is done on primitive roads as needed. Public access roads managed by the Department shall be constructed and maintained as lightly developed or moderately developed roads. The property manager may determine which of these road standards to apply on a case by case basis.

The following management prescriptions apply to Department managed roads:

- Maintain permanent service roads and public access roads in a sustainable condition according to Wisconsin Forestry's Best Management Practices for Water Quality.
- Maintain parking areas.
- Regularly inspect active roads, especially after heavy storm events. Clear debris as needed from the road surfaces, culverts and ditches to decrease unsafe conditions and prevent damage.

- Maintain stable road surfaces to facilitate proper drainage and reduce degradation from traffic during wet or soft conditions; or close the road when these conditions exist.
- Monitor soil disturbance and take measures to prevent excessive damage.
- Restore roads used in timber harvests to non-erosive conditions, in accordance with Wisconsin Forestry's Best Management Practices for Water Quality.

The Department will collaborate with municipal, town and county roadside maintenance crews to protect and enhance the quality of roadside easement areas, especially to control the spread of invasive species.

Public Access on Service Roads and Dikes

The public may use service roads and dikes to gain access to the properties for all approved recreational activities. This infrastructure is not designed, designated, or maintained as hiking trails, but users are free to walk anywhere on the properties unless posted closed to the public. Hiking trails may also be used by hunters, trappers and anyone else wishing to use these trails on properties open to hunting.

Disabled Accessibility

The Department is committed to providing exceptional outdoor recreation opportunities for people of all abilities around the state. All new construction and renovation of infrastructure will follow guidelines set forth within the Americans with Disabilities Act and also be done in a manner consistent with NR 44 standards of the land use classification of the site where the development is located.

The property manager has the authority to make reasonable accommodations for people with disabilities, consistent with the requirements of the area's land use classification. Property managers also may allow the use of power-driven mobility devices on trails consistent with a March 15, 2011 U.S. Department of Justice (DOJ) ruling. Approval may depend on various factors including: the physical characteristics of the device; the volume of pedestrian traffic at the location; the design and operational characteristics of the site; safety considerations; and whether the proposed use creates substantial risk of serious harm to environmental, natural or cultural resources.

Endangered, Threatened and Species of Special Concern Protection

Individuals of all endangered, threatened, special concern species and populations of SGCN will be protected. All known critical habitat for these species will be protected or maintained through management which incorporates guidance from staff specialists, research and current literature, and consultation with the Bureau of Natural Heritage Conservation. The Natural Heritage Inventory (NHI) will be checked prior to any

management activity to ensure that any adverse impacts associated with listed species are avoided or minimized to the greatest extent practical.

Protection of Cultural Resources

Due to a long history of human occupation in the area, numerous cultural sites (both archaeological sites and historic structures) are known from the GBPG properties. Resources include prehistoric campsites, villages, burial areas of both Native Americans and Euro-American settlers, trading posts, remnants of logging camps, and a lighthouse.

All sites occurring on public lands are protected against unauthorized disturbance under provisions of various federal and/or state laws, and burial sites (including cemeteries and mound sites) are protected on private lands as well.

Management policy requires that any activities with potential to disturb archaeological sites will only be undertaken after consultation with the Departmental Archaeologist. Any sites with cultural or historical value identified on the LWRBNRA or acquired with future land purchases will be managed in accordance with Department guidance and statutory requirements (see Wis. Stats. 44.40 and Manual Code 1810.10). Archaeological and other cultural resource investigations may be necessary before a project is approved, and projects should designate funds for required investigations as a component of the project budget.

Water Quality Issues

Healthy aquatic ecosystems start with good water quality. Water quality on large-river systems such as the Peshtigo, Pensaukee, Little Suamico, Suamico, and Oconto Rivers and Duck Creek can range from very good to poor depending on several factors, including time of year, precipitation events, land use practices, hydroelectric dam operations and recreational use. The main problems with water quality on these rivers are fluctuating water flows and water levels, erosion, contaminants, nonpoint source pollution and turbidity. Erosion adds to sediment transport which can smother fish eggs and mussel beds. It can lead to large sediment deposits downstream, cutting off flows and spring water exchange. Build-up of siltation in the river channel can lead to navigation problems for recreational boaters. Turbidity can hamper sight-feeding fish and detracts from the aesthetic quality of the river. Water quality problems in Green Bay primarily stem from PCB contamination, nonpoint source pollution from agricultural practices, and invasive species. PCB contamination from the Fox River that accumulates in fish and wildlife species has led to population-level concerns and human consumption advisories for several species. Invasive species like zebra mussels, common carp, and *Cladophora* also have negatively impacted the water quality of Green Bay.

Best management practices (BMP's) for agriculture (buffer strips along waterways, leaving crop residue on fields, plowing in spring instead of fall, contour plowing, etc.) greatly reduce sediment transport and turbidity problems. Construction BMP's (seeding and mulching, silt fencing, straw bales, detention ponds, etc.) should be used for the same

reasons on any construction project. All forest management activities will comply with the most recent version of Wisconsin Forestry's BMPs for Water Quality. Maintenance of natural shorelines and a minimum of a 30-ft-wide associated buffer should be encouraged on state lands to protect water quality and maintain the aesthetic quality of the river for recreational boaters. Buffer strips on developed lots should be encouraged to intercept the runoff from lawns, which can carry excess nutrients, fertilizers, herbicides and pesticides directly to the water.

Forest Certification

In 2004, Wisconsin State Forests gained dual Forest Certification from the Forest Stewardship Council (FSC) and Sustainable Forestry Initiative (SFI). In 2009, State Forests were re-certified under FSC and SFI and the balance of DNR-owned land was added to the certification. Independent, third-party certification means that management of Wisconsin's DNR-owned land meets strict standards for ecological, social, and economic sustainability. Forest certification helps Wisconsin remain competitive in global markets that increasingly demand certified raw materials. Management of multi-use lands involves balancing the goals of conserving forestland, supporting economic activities, protecting wildlife habitat, and providing recreational opportunities. Objective review is also instrumental in improving how we care for the land we manage.

Prescribed Fire

Prescribed fire is a management tool that mimics natural fire disturbance and helps control many woody plants and invasive weeds, improves the quality of wildlife habitat, reduces fuels to lessen wildfire hazard, and liberates nutrients tied up in dead plant material. It can help regenerate forest cover types such as oak, and create or maintain grassland/prairie and savanna/barrens habitat. Upland nesting cover used by grouse, waterfowl and songbirds is more productive if periodically burned. Wetlands also benefit from fire. Prescribed fire may be used as a management tool where feasible and safe except when restricted by management area prescription.

Fire Suppression

As stated in Wisconsin Statutes 26.11, "The Department is vested with power, authority and jurisdiction in all matters relating to the prevention, detection and suppression of forest fires outside the limits of incorporated villages and cities in the state except as provided in sub (2), and to do all things necessary in the exercise of such power, authority and jurisdiction." Wildland fire suppression actions will consider the property management goals and the threats of the fire to life and property. Appropriate techniques will be used in each event to provide effective fire suppression while minimizing resource damage.

Forest Pest Control

Wisconsin Statute 26.30 states, “It is the public policy of the state to control forest pests on or threatening forests of the state...”. Any significant forest pest events will be evaluated with consideration given to the property management goals and the potential threat of the pest to other landowners. Infestations will be managed according to the relevant management plan, if such exists. Responses to significant infestations from pests (e.g., emerald ash borer) include timber salvage or pesticide treatments. Any response to a significant pest outbreak or threat of a significant pest outbreak will be evaluated by an interdisciplinary team of scientists and communicated through press releases and notices to interested parties. If necessary, an immediate emergency response to prevent a major outbreak may be authorized by the State Forester.

Authorized Response to Catastrophic Events

Catastrophic events are rare, but allowances must be made to provide management flexibility when such events occur. These events may include severe flooding, ice and wind storms, insect and disease infestations, wildfires, or other catastrophic occurrences. The immediate management responses to these events will follow existing Department protocols. If management objectives and prescriptions need to be revised, a variance to the master plan must be approved by the Natural Resources Board.

Wildfires, tree diseases and insect infestations shall be controlled to the degree appropriate to protect the values of each management area. However, emergency actions may be taken to protect public health and safety, or as directed by the State Forester to prevent a catastrophic incident from spreading to adjacent forest lands.

Management responses to catastrophic events are determined on a case-by-case basis. Salvage of trees damaged by wind, fire, ice, disease, or insects may occur if consistent with the objectives and prescriptions for the management area. Salvage also may occur as part of an emergency response plan authorized by the State Forester.

Control of Invasive Species

Invasive non-native species are a major threat to the integrity of most of our native plant communities, and can significantly harm the habitat and recreational value of Department lands. These species have the ability to invade natural systems and proliferate, often dominating a community to the detriment and sometimes the exclusion of native species. Invasive species can alter natural ecological processes by reducing the interactions of many species to the interaction of only a few species. Best Management Practices (BMPs) for Invasive Species will be incorporated into management practices on the GBPG properties. If detected, invasive species may be controlled using appropriate and effective methods, including but not limited to the use of bio-control, herbicides, cutting, smothering, hand removal, or fire. Control methods may be restricted in certain sensitive management areas. Before initiating control measures, the management prescriptions for the area being treated will be referenced.

The rules set forth in Chapter NR 40 of the Wisconsin Administrative Code create a comprehensive, science-based system with criteria to classify invasive species into two categories: "Prohibited" and "Restricted". These rules are aimed at preventing new invasive species from getting to Wisconsin, and enabling quick action to control or eradicate those here but not yet established. The rules also include preventive measures that are not species-specific but instead address common pathways that may allow invasives to spread.

In addition to control of terrestrial invasives, rules aimed at preventing the introduction and spread of aquatic invasive species also are important to the GBPG properties, where boating and fishing are so popular. These rules include: cleaning and disinfecting boats and equipment before transport to another waterbody; prohibitions on transporting live fish or spawn away from waters; and rules governing transportation of bait species and surface water between waterbodies. These rules, if followed by all lake and river users, will greatly slow the introduction and spread of undesirable aquatic species.

Chemical Use

Herbicides and pesticides may be used for various purposes such as the control of invasive plants, controlling plant competition in vegetation regeneration areas, or insect control except as restricted in the management prescriptions in this master plan. All Department procedures and herbicide and pesticides label requirements will be followed.

Non-metallic Mining Policy

The Department may use gravel, sand, fill dirt or other fill material from Department-owned lands for Department use. Under certain circumstances other government bodies or agencies may also have access to these materials. Section 23.20 of the Wisconsin Statutes states, "the Department may permit any town, county, or state agency to obtain gravel, sand, fill dirt or other fill material needed for road purposes from any department-owned gravel pit or similar facility if this material is unavailable from private vendors within a reasonable distance of the worksite. The Department shall charge a fee for this material commensurate with the fee charged by private vendors."

Nonmetallic mining is regulated under the requirements of NR 135 Nonmetallic Mining Reclamation, Wis. Adm. Code, except for sites that do not exceed one acre in total for the life of the mining operation. Site reclamation under NR 135 is administered by the county. NR 135 requires mining sites to be located appropriately, operated in a sound environmental manner, and that all disturbed areas be reclaimed according to a reclamation plan. New sites will not be considered where they would impact geological or ecological features of significance or within any designated State Natural Area.

Department of Transportation (DOT) projects are exempt because of project reclamation requirements.

Real Estate Management

Acquisition Policies

It is the policy of the Natural Resources Board and the Department to acquire lands from willing sellers only. As required by state and federal laws, the Department pays just compensation (i.e., estimated fair market value based on an appraisal) for property. At times, it is in the interest of the Department and the landowner for the Department to acquire only part of the rights to a property, or an easement. The Department has a number of easement options available to address these situations. Fisheries easements provide access for anglers, protection of riparian habitat, and control of land to conduct habitat development or management projects. This option should be pursued on streams and rivers to protect critical or unique habitat when fee acquisition is not feasible due to costs, local concerns, or an owner's desire to retain fee title to the land.

Staff may periodically contact landowners within the property boundary to explain the Department's land acquisition program and to see if they have an interest in selling their property. Acquisition priorities for the properties vary from year to year and are based on a number of factors, such as resource management or recreation needs and available funding, which may be from a variety of sources.

The following are some criteria typically used to assess the conservation and recreation merits of property being offered by willing sellers:

- Lands greater than 40 acres with no or low-value improvements.
- Lands containing high-quality wildlife habitats, including critical habitat for SGCN or natural communities identified as rare within the Northern and Central Lake Michigan Coastal Ecological Landscapes.
- Lands that could provide high-quality hunting, trapping, and fishing experiences as well as opportunities for other compatible nature-based outdoor activities.
- Lands adjacent to current state lands or other protected lands, particularly if they can provide a buffer from existing or future incompatible land uses.
- Lands that currently affect the hydrology of important conservation lands (e.g., spawning marshes).
- Lands affected by wetland restoration projects (i.e., private lands affected by raising water levels).

Portions of properties not needed for conservation purposes may be sold/leased back for agricultural or other compatible uses, though the state may retain development and public access rights.

Project boundary adjustments often follow roads or natural features (e.g., streams or rivers). This approach greatly facilitates providing public access to lands that may be

acquired in the future, and makes it easier to depict boundaries on maps. Nearly all project boundaries encompass more land than their respective acreage goals. This provides the Department and partners with flexibility when negotiating the purchase, sale or trade of land for recreation and conservation purposes.

Using roads as boundaries will bring some developed parcels (e.g., homes, farmsteads and other improvements) into project boundaries. The DNR does not seek to acquire parcels with improvements. Acquisition criteria reduce the scores of parcels with substantial improvements. When buildings are purchased as part of a larger land holding, the buildings are typically split from the larger parcel and sold according to and consistent with local ordinances. An occasional purchase/easement across developed parcels may be sought to provide public access to an isolated portion of a property.

Project boundary changes of 40 acres or more require approval by the Natural Resources Board. Wisconsin Administrative Code, Chapter NR 44 provides a plan amendment process that may be used to make adjustments in the project boundary after the master plan is approved. Where land purchase or easements are being considered, the Department can acquire land under the various authorities described in S. 23.09, Wisconsin Statutes.

Aids in Lieu of Taxes

State law requires the Department to make payments in lieu of property taxes (PILT). The Department uses an automated process for collecting information and calculating PILT payments. The process is determined by statute with little room for interpretation or calculation by the Department. There are two separate statutes and several formulas under each statute that dictate the amount of each individual payment.

Wisconsin statute s. 70.113 Stats. applies to land acquired by the Department prior to January 1, 1992. Payments under this statute are made directly to the taxation district in which the land is located. Schools, VTAE (Vocational, Technical, and Adult Education) institutions, and counties do not receive any payment under this law.

Wisconsin statute s. 70.114 Stats. governs payments in lieu of property taxes for all lands purchased by the Department after January 1, 1992. This law has been amended several times, so the specific formula used by the Department to determine each specific payment varies depending on when the property was acquired and how. Payments are made to each taxing district in January, similar to the way a private citizen would pay property taxes, and each taxing district then makes payments to all taxing jurisdictions in the taxing district.

For detailed information on how the Department pays property taxes, visit <http://dnr.wi.gov> and search “PILT”.

Future Boundary Adjustment Process

From time to time adjustments in property boundaries are needed. In some cases parcels of land are removed from the boundary to allow alternative, necessary public uses by local governments. In other cases it may be desirable to add small parcels adjacent to the property so they can be purchased for resource protection or to meet expanding recreational needs. Property boundary changes of 40 acres or more require approval by the Natural Resources Board. Wisconsin Administrative Code Ch. NR 44 provides a plan amendment process that may be used to make adjustments to property boundaries after a master plan is approved.

Easements, Access Permits, and Land Use Agreements

Easements, access permits, land use agreements, and leases provide access across state property for utilities, public roads, or other public-benefit infrastructure, access to private ownership within a property boundary, and provide for a variety of temporary uses on a Department property (e.g., marsh hay cutting). Such arrangements require consultation and joint action by the affected program and the Bureau of Facilities and Lands, Real Estate Program staff. While such situations may serve a public purpose (e.g., a utility corridor or a road) they can adversely affect a management unit by:

- Restricting the Department's future management options;
- Limiting the public's full use and enjoyment of a property;
- Preventing natural succession of cover types;
- Introducing exotic and invasive species to the property;
- Introducing additional herbicides and other contaminants to the property; and
- Creating liability concerns.

The conveyance of easements and other agreements is subject to sections NR 1.48 and NR 1.485, Wis. Adm. Code. Before any rights are conveyed, the Bureau of Facilities and Lands Real Estate staff must determine if federal funds were used to acquire the land and, if so, obtain the appropriate approvals.

PUBLIC OUTREACH

The public and other governments are provided opportunities to have ongoing involvement both in the development of this Master Plan and in its implementation after the plan is approved by the Natural Resources Board (NRB). During the development of the Master Plan, stakeholders and the general public are invited to provide input through a public comment period and public meetings at two points in the planning process: after the completion of the Draft Regional and Property Analysis and preliminary Vision and Goals, and after the completion of the Draft Master Plan.

Once the Master Plan is approved by the NRB, the Department communicates periodically with the public regarding activities and developing issues on the GBPG properties, and provides information on how the public will be notified of opportunities

for involvement when significant new issues related to management of these properties arise. The three main avenues for this public outreach are the Master Plan Implementation Monitoring Report, the individual property Web pages, and the Master Plan variance or amendment notification.

The Master Plan Implementation Monitoring Report is a document prepared and released annually that summarizes for the past year the primary management and development activities that were completed as well as other significant issues that were addressed.

The Department will also use the individual property Web pages on its Web site to update the public regarding any planned management and development activities and any changing management actions or approaches. The individual property Web pages may also include other information of interest to the public on various topics related to management and use of the properties. Examples of additional types of information that may be included from time to time are: the status of forest insect or disease problems; storm damage; new information on endangered or threatened species; recreational management problems or new opportunities; and recreational use changes or trends.

A plan variance or amendment notification is released only if the Department is considering a change to the Master Plan. A variance is a relatively minor change to the plan, for example a new management activity or change to an activity or public use authorized in the plan that is consistent with the plan's land management classifications and objectives. An amendment is a more significant change to the plan, for example a change in land management classification. In the event the Department considers a variance or amendment to the Master Plan, the public will be informed of the proposal and the review and comment process. As appropriate, news releases will be used to announce Master Plan amendment/variance proposals and review procedures. The Department also will maintain a contact list of persons, groups, and governments who have requested to be notified of potential plan changes.

WDNR CONTACT PERSONS

The following Department staff may be contacted regarding questions about the GBPG properties or the master plan. At the time of this publication, the contact information is:

General GBPG or State Wildlife Area questions:

John Huff, Area Wildlife Supervisor
715-582-5047
john.huff@wisconsin.gov

Wildlife Areas in Marinette, Oconto, and Brown counties:

Dave Halfmann, Wildlife Biologist
715-856-9160
david.halfmann@wisconsin.gov

Fisheries Management questions:

Tammie Paoli, Fisheries Biologist
715-582-5052
tammie.paoli@wisconsin.gov

SECTION TWO: INDIVIDUAL PROPERTY ELEMENTS

This section provides a description of each property in the GBPG as well as the management and development specific to each property.

Note: A variety of DNR, federal and county sources were used to estimate the cover types and land uses on or adjacent to the GBPG properties. They include existing DNR Wildlife, Fisheries, and Facilities and Lands records, Forestry WisFIRS database, Water Division Wetland acreages and WISCLAND cover types. These data sources use different criteria for assessing habitat types and land uses, so different estimates may be developed depending on the source(s) used. Also small inclusions of different cover types may be embedded within a more dominant cover type in the following acreage descriptions and related maps.

LITTLE RIVER REARING POND & STATEWIDE PUBLIC ACCESS

Project Boundary:	N/A
Managed Land:	50 acres

Property Description

The Little River Rearing Pond is a 40-acre site located on the Little River approximately 2 miles south of the City of Marinette and 0.64 miles inland from the Green Bay shoreline in Marinette County (Map C-1). It consists of lowland conifers, shrub swamp, open water, and a small amount of grassland. A 0.25-acre pond was constructed on the property in the 1960's with the original intent to rear coho salmon that would imprint into the Little River. Coho salmon were raised here beginning in 1969 and chinook salmon were added in 1973. Use of the pond for salmon rearing was discontinued in 1979 due to law enforcement and trespass issues associated with large salmon runs on the river. The property's main use currently is recreation, mostly from local users, for hunting (especially by archers) and other non-motorized nature-based activities such as hiking (undesignated trails only), bird-watching, and berry-picking.

The Little River boat access consists of two parcels located on the shoreline where the Little River flows into Green Bay, approximately 1.5 miles south of the City of Marinette in Marinette County (Map C-1). The site was acquired in 1970 under the authority of the Statewide Public Access program. The smaller parcel (3 acres), located just south of where the Little River flows into Green Bay, contains a paved boat launch with parking and a vault toilet. A second, larger, parcel (7 acres) is located north of the river, across Shore Drive (CTH BB), and extends north to Edwards Avenue. This parcel, consisting largely of swamp hardwoods with a small area of upland hardwoods, is appropriate for activities such as hiking (undesignated trails only) and bird-watching.

Existing land cover for the Little River parcels is shown on Map C-2 and infrastructure is shown on Map C-3.

Table 2.4. Little River parcels: Current and Desired Future Cover Types.

Cover Type	Current		Predicted 50 year	
	Acres*	% cover	Acreage Objective*	Future % cover
Forested Wetland				
Lowland Conifer	16	32	16	32
Lowland Hardwoods	5	10	5	10
Non-forested Wetland				
Lowland Brush	26	51	26	51
Forested Upland				
Upland Hardwood	1	3	1	3
Non-forested Upland				
Grassland	<1	1	<1	1
Other				
Developed	2	3	2	3
Total	50	100	50	100

*Cover type acreages are estimated from a variety of spatial databases and may differ from the acreages represented in property deed legal descriptions. Acreages also may change depending on water level fluctuations in Green Bay.

Land Use Classification

The Little River Rearing Pond and the northern parcel of the Little River Statewide Public Access are classified as Habitat Management Area. The smaller parcel of the Little River Statewide Public Access, hosting the boat landing, is classified as Special Management Area (Map C-4).

Resource Management, Development, and Protection

Habitat Management Area

Objective

- Manage in accordance with the general wildlife, fisheries, and forestry habitat management objectives and prescriptions and the Management Prescriptions by Cover Type described in Section One of this chapter.

Prescriptions

- Follow the applicable general wildlife, fisheries, and forestry prescriptions and Management Prescriptions by Cover Type provided in Section One of this chapter.

Special Management Area

Objective

- Continue providing a site for public boat access on the Little River.

Prescriptions

- Continue the management agreement with Marinette County to maintain the Little River boat access site.

Public Use Management and Development

The following prescriptions support the general recreation and public use objectives and prescriptions presented in the Universal Elements section at the beginning of this chapter.

Prescriptions

- Maintain the path off Little River and Krause Roads to access the Little River Rearing Pond.

Boundary Modifications

No modifications were pursued for these parcels.

BLOCH OXBOW STATE NATURAL AREA

Project Boundary:	N/A
Managed Land:	597.5 acres

Property Description

The Bloch Oxbow SNA is located on a level sandy upland a few feet above the floodplain of the Peshtigo River, two miles upstream from its confluence with Green Bay, in the Township of Peshtigo, Marinette County. It is adjacent to and northeast of the Peshtigo Harbor Unit of the Green Bay West Shore WA (Map D-1). This SNA protects one of the best remaining examples of Northern Dry-mesic Forest, a type formerly widespread in northeastern Wisconsin but now reduced to small, often degraded remnants. It also contains other upland and lowland forest types as well as small areas of grassland.

The Northern Dry-mesic Forest is dominated by red oak and red maple in the canopy, with supercanopy white pines up to 36 inches DBH. Characteristic shrubs include hazelnut, witch hazel, huckleberry, blueberry and Northern wild-raisin, an uncommon species. Prevalent herbaceous plants are bracken fern, interrupted fern, Canada mayflower, wild sarsaparilla, and large-leaved aster. Bordering the Peshtigo River, at the extreme northeastern edge of its range in Wisconsin, is a Floodplain Forest. Dominants here include silver maple with green ash, elm, basswood, bitternut hickory, cottonwood, and black willow. Shrubs, emergent aquatics, and wet meadow vegetation, including sedges, rushes, and bluejoint grass, dominate the adjacent wetlands. Pockets of more mesic forest with hemlock and American beech are found in the southern portion of the site, while in the north is a xeric woodland dominated by Hill’s, red, and white oaks, bigtooth aspen, and white, red, and jack pines. The groundlayer is primarily bracken fern with ericaceous species and Pennsylvania sedge. Existing cover types are shown on Map D-2.

Widely scattered, very old charred stumps are evident in the area, possibly remnants from the historic Peshtigo Fire of 1871. Recent bank slumping along the river exposed another historical marker: the skeleton of an American bison, dated at 2,000 years in age. Bloch Oxbow provides critical habitat for several sensitive bird species including bald eagle, Caspian and Forster’s terns, red-shouldered hawk, and osprey. A great blue heron rookery and a large colony of bank swallows also are found here. Bloch Oxbow is included in the Lower Peshtigo River Important Bird Area (Steele 2007).

Hunting, fishing, wildlife viewing, and swimming are the main recreational uses at Bloch Oxbow. This property has experienced problems with recreational uses that can be hazardous or damaging to habitat (jumping off sandbanks into the river) or illegal (littering, campfires, underage drinking), but enforcement activity is limited by access. The Department maintains three gravel parking areas along CTH BB, which traverses the

CHAPTER 2 – Section Two:
Individual Property Elements – Bloch Oxbow State Natural Area

property (Map D-3). There is no other infrastructure, nor maintained facilities, on this property.

Acquisition at Bloch Oxbow began in 1990 with the purchase of 128 acres from the Bloch family, for whom the property is named. Bloch Oxbow is SNA Number 234, and was designated in 1990.

Table 2.5. Bloch Oxbow State Natural Area: Current and Desired Future Cover Types.

Cover Type	Current		Predicted 50 year	
	Acres*	% cover	Acreage Objective*	Future % cover
Forested Wetland				
Bottomland Hardwood	208	33	208	33
Lowland Conifer	23	4	23	4
Swamp Hardwood	28	4	28	4
Non-forested Wetland				
Water	50	8	50	8
Forested Upland				
Oak	86	14	86	14
Upland Conifer	94	15	94	15
Upland Hardwood	37	6	37	6
Non-forested Upland				
Grassland	93	15	93	15
Other				
Developed	7	1	7	1
Total	626	100	626	100

*Cover type acreages are estimated from a variety of spatial databases and may differ from the acreages represented in property deed legal descriptions. Acreages also may change depending on water level fluctuations in Green Bay.

Land Use Classification

This entire property is classified as Native Community Management Area (Map D-4).

Resource Management, Development, and Protection

Objectives

- Maintain the site as a reserve for Northern Dry-mesic Forest and Floodplain Forest, as an aquatic reserve, and as an ecological reference area.
- Natural processes largely will determine the structure of the forest.

Prescriptions

- Allow opportunities for research and education on the highest quality Northern Dry-mesic Forest and Floodplain Forest.
- Allow the forest to age naturally primarily through passive techniques.

- Allow the dry-mesic forest to convert over time to a more mesic condition.
- Allow the open area between the two patches of dry-mesic forest to succeed to forest to reduce fragmentation.
- Limit active management to control of invasive exotic species and forest diseases, access to control fires, and maintenance of warm-season grasses planted in the oldfield to the east and along the riverbank.
- While salvage of trees generally is not considered compatible with management objectives for this area, this may be re-evaluated in the event of certain disturbances (e.g., EAB, wind storms, etc).
- Maintain and enhance wood turtle nesting areas near the Peshtigo River through restoration and/ or creation of the proper habitat. Maintenance also may involve nest protection by fencing or other means.

Public Use Management and Development

The following prescriptions support the general recreation and public use objectives and prescriptions presented in the Universal Elements section at the beginning of this chapter.

Prescriptions

- Maintain three parking areas on the property.

Boundary Modifications

No modifications were pursued for this property.

BADGER GIFT LANDS

Property Description

The Badger Gift Lands are located along the Peshtigo River approximately two miles south of the City of Peshtigo, in the Township of Peshtigo, Marinette County. They are directly north and northwest of, and contiguous with, the Bloch Oxbow SNA and the Peshtigo Harbor Unit of the GBWS WA (Map D-1).

In 2001 and 2002, the parcels comprising the Badger Gift Lands were gifted to the Department as part of a 2002 consent decree with the Fort James Operating Company (now Georgia Pacific). This decree was part of the Natural Resources Damage Assessment for the Fox River. Some of this acreage was incorporated into Bloch Oxbow SNA and the Peshtigo Harbor Unit of the GBWS WA, but the majority (757 acres) is outside existing project boundaries, adjacent to and north of the Peshtigo Harbor Unit. This parcel is now known as the Badger Gift Lands, after Badger Paper Mills, Inc., who formerly owned the land.

The Badger Gift Lands are dominated by stands of bottomland and swamp hardwoods along the Peshtigo River, with smaller areas of shrub swamp. The uplands contain some fairly significant stands of oak as well as mixed upland hardwoods, and smaller areas of upland shrub, grasslands, and scattered aspen stands. There is one small area of plantation red pine. A small forest opening along the Hemlock Curve Nature Trail populated with the invasive spotted knapweed is maintained as a propagation area for insects being used in knapweed biocontrol. Existing cover types are shown on Map D-2.

The Department maintains five parking areas on the Badger Gift Lands. There also are a trail and a shooting range (Map D-3). The Hemlock Curve Nature Trail, completed in 2005, is located off Badger Road. It was developed in partnership between WDNR, Marinette County Land and Water Conservation, and UW-Extension, with funding from the Wisconsin Coastal Management Program. The Peshtigo River Trail (described below) and the Woods Road Ski Trail on the GBWS WA, Peshtigo Harbor Unit also were developed as part of this effort. The Hemlock Curve Nature Trail is a 2.4-mile interpretive walking trail with two loop options that takes users through fields and forest stands along the Peshtigo River. A trail guide available at the trailhead provides information about nature stops along the way. The trail also is open to cross-country skiing and snow-shoeing, though not groomed. The shooting range is located near the end of Badger Road. The range was developed by a group of employees at Badger Paper Mills, Inc., when the land was owned by that company. They maintained the site for recreational and competitive shooting. Two sets of shooting stands currently exist on the site, and target backstops allow shooting at ranges from 25 to 100 yards with an additional backstop approximately 250 yards from one of the shooting stands. Renovations being considered for the range involve relocating some shooting stands, further developing the target backstops, and developing side berms.

CHAPTER 2 – Section Two:
Individual Property Elements – Badger Gift Lands

A portion of the Peshtigo River Trail, a self-guided interpretive water trail established on the Peshtigo River, traverses the Badger Gift Lands. The trail was completed in 2004 and is 11 miles long. It begins at the boat launch in the City of Peshtigo and follows the river through the Badger Gift Lands and Peshtigo Harbor Unit. A brochure available at the launch provides interpretive information about features of the river, which are marked along the trail by numbered wooden posts.

Hunting, fishing, trapping, target shooting, hiking, wildlife viewing, and paddling are the main recreational uses of the Badger Gift Lands.

Table 2.6. Badger Gift Lands: Current and Desired Future Cover Types.

Cover Type	Current		Predicted 50 year	
	Acres*	% cover	Acreage Objective*	Future % cover
Forested Wetland				
Bottomland Hardwood	281	33	281	33
Swamp Hardwood	107	13	107	13
Non-forested Wetland				
Lowland Shrub	66	8	66	8
Water	118	14	118	14
Non-forested Upland				
Aspen	7	<1	7	<1
Oak	96	11	96	11
Upland Conifer	7	<1	7	<1
Upland Hardwood	102	12	102	12
Non-forested Upland				
Grassland	38	4	38	4
Upland Shrub	11	1	11	1
Other				
Developed	24	3	24	3
Total	857	100	857	100

*Cover type acreages are estimated from a variety of spatial databases and may differ from the acreages represented in property deed legal descriptions. Acreages also may change depending on water level fluctuations in Green Bay.

Land Use Classification

The majority of this property is classified as Habitat Management Area. The shooting range is classified as Special Management Area (Map D-4).

Resource Management, Development, and Protection

Habitat Management Area

Objectives

- Manage the Badger Gift Lands as part of the Peshtigo Harbor Unit of the GBWS WA.
- Maintain the 7-acre spotted knapweed biocontrol agent propagation area along the Hemlock Curve Nature Trail.

CHAPTER 2 – Section Two:
Individual Property Elements – Badger Gift Lands

- Provide opportunities for additional sturgeon spawning and nursery areas along the Peshtigo River.

Prescriptions

- Maintain the spotted knapweed biocontrol agent propagation area as a forest opening populated with spotted knapweed.
- Conduct yearly monitoring of spotted knapweed and biocontrol insects using photo-points and sweep-net sampling.
- Utilize population of biocontrol insects as a source to control spotted knapweed on other infested properties.
- Identify and develop sturgeon spawning and nursery areas along the Peshtigo River.
- Manage red pine plantations to rotation age, while working towards natural conversion to oak.

Special Management Area

Objective

- Continue to provide a facility for recreational shooting.

Prescriptions

- Maintain the shooting range on Badger Road and seek funding to make improvements, including relocating shooting stands, improving target backstops, and developing side berms.

Public Use Management and Development

The following prescriptions support the general recreation and public use objectives and prescriptions presented in the Universal Elements section at the beginning of this chapter.

Prescriptions

- Maintain five parking areas on the property.
- Maintain the Hemlock Curve Nature Trail in cooperation with Marinette County.
- Maintain the numbered wooden posts along the Peshtigo River associated with the Peshtigo River Trail in cooperation with Marinette County.
- Work with Fisheries to identify and develop shore fishing opportunities.

CHAPTER 2 – Section Two:
Individual Property Elements – Badger Gift Lands

- Seek partnership and funding opportunities to develop additional non-motorized, nature-based recreational activities on the Badger Gift Lands.

See the Special Management Area section, above, for public use prescriptions related to the shooting range.

Boundary Modifications

Boundary expansion of the Peshtigo Harbor Unit of the GBWS WA to encompass the Badger Gift Lands was approved as part of the master plan (Map D-5; see Peshtigo Harbor property section for a full description of this expansion). The Badger Gift Lands will become part of the Peshtigo Harbor Unit and redesignated as Wildlife Area.

GREEN BAY WEST SHORE WILDLIFE AREA

Project Boundary:	15,787 acres
Managed Land:	9,283.5 acres
Within boundary:	8,788
Outside boundary:	495.5

Property Description

The Green Bay West Shore (GBWS) WA is located on the west shore of Green Bay in Brown, Oconto, and Marinette counties (Map B). It consists of 11 separate, non-contiguous units scattered along the west shore, extending for approximately 42 miles from just south of Duck Creek in Brown County to the mouth of the Peshtigo River in Marinette County. Communities located near the WA include Green Bay, Howard, Suamico, Little Suamico, Pensaukee, Oconto, Peshtigo, and Marinette.

This is an area with abundant natural resources and a long history of human occupation, both by Native Americans and by a succession of European and Euro-American explorers, traders, missionaries, and immigrants. This is evidenced by a rich legacy of archaeological sites, including campsites, villages, burial areas, trading posts, and remnants of logging camps, among others, known from throughout the west shore. Native Americans, who may have inhabited the area as early as 7,000 BC, navigated along the rivers and shoreline and utilized the resources of the Bay and adjacent land. Abundant waterfowl and large game provided ample hunting opportunity. Productive wetlands, wild rice, spawning nurseries, and open-water forage habitat contributed to abundant fish populations and excellent fishing.

The first European explorer, Jean Nicolet, arrived in 1634. Shortly thereafter, the French laid claim to the area and made a profitable business out of trading furs with Native Americans. Missions and trading posts were established at several locations on the shore during this time. Various local place-names still echo their French origins today. The British took control of the area in 1763. Fur trading, centered at Green Bay, continued as the primary economic activity, peaking in the 1830s. In 1836 the Britain ceded the territory to the U.S. Government, which quickly surveyed the land and opened it up for sale. Euro-American immigrants began pouring into the area, creating new settlements and expanding existing population centers. Farming became established in the area, though poorly drained soils and water level fluctuations have always presented challenges for agriculture along the west shore.

Railroads arrived in the area in the 1860s, facilitating full exploitation of the region’s abundant timber resources. By the late 1870s, the mouth of every log-producing river in the Green Bay region, including the Peshtigo, Oconto, and Pensaukee rivers, was lined with lumber mills. Fishing also was an important industry. At one time, Green Bay supported the largest commercial fishery in Wisconsin. This industry continues to this day, though at a much smaller scale.

The properties of the GBWS WA contain critically important wetland habitats. Though greatly diminished from their historical extent, these wetlands are rich and productive. They represent approximately 50% of all wetlands remaining on Lake Michigan, and therefore have high conservation value. The GBWS WA properties provide breeding and migratory stopover areas for many species of birds, spawning areas for fish, and support populations of rare plants and animals. All the properties are encompassed by two Wisconsin Important Bird Areas (IBAs): the Lower Peshtigo River IBA and the Green Bay West Shore Wetlands IBA. IBAs are sites that protect critical habitat for birds. These sites were identified as IBAs in recognition of their high-quality wetland and riparian forest habitats and the value of these habitats to migrating, foraging, and breeding birds, including many species of conservation concern (Steele 2007).

The GBWS WA properties also represent an important recreational resource for the public, especially for the traditional outdoor pursuits of hunting, fishing, and trapping, but also for other nature-based activities such as boating, cross-country skiing, and wildlife viewing. The southernmost units of the GBWS WA, closer to Green Bay, receive greater pressure for human use, while the more northern units tend to have a wilder character. The habitats on these properties face continuing threats from development, disrupted hydrology, poor water quality, and invasive species.

Government involvement in the conservation of the west shore began in the 1930s with the establishment of a National Wildlife Refuge on Long Tail Point which was eventually terminated and turned over to the state for inclusion in the GBWS WA. Land acquisition by the state began in 1948 in the Sensiba Unit. Other units were established in 1954 (Peshtigo Harbor), 1956 (Pensaukee), 1962 (Rush Point), 1965 (Charles Pond) and 1967 (Oconto Marsh). In 1965, all the west shore properties in Marinette and Oconto Counties were placed under one project. In 1978, the project was expanded to include state acquisition of relevant properties within Brown County. Management has focused on wildlife habitat and wildlife-based recreation, with emphasis on waterfowl, wetland-dependent wildlife, migratory birds, and forest game species.

Because the shore zone is vitally important to the fish assemblage of Green Bay, land has been acquired under authority of the Scattered Fishery Habitat acquisition program. The GBWS WA properties have a hydrologic connection to the Bay and provide fish spawning and nursery habitat for a variety of fish species, particularly Northern pike. Protection of these sites and enhancement of fish habitat and spawning substrate are the primary fish management activities.

The 11 units of the GBWS WA are listed below by county, and each is described in more detail in the following sections.

Marinette County:

- Peshtigo Harbor Unit (4,812 acres)

Oconto County:

- Rush Point Unit (386 acres)

CHAPTER 2 – Section Two:
Individual Property Elements – Green Bay West Shore Wildlife Area

- Oconto Marsh Unit (931 acres)
- Pecor Point Unit (89 acres)
- Pensaukee Unit (515 acres)
- Charles Pond Unit (97 acres)
- Tibbett-Suamico Unit (308 acres)

Brown County:

- Bayside Road Unit (243 acres)
- Sensiba Unit (637 acres)
- Long Tail Unit (317 acres)
- Peats Lake Unit (510 acres)

GREEN BAY WEST SHORE WILDLIFE AREA—PESHTIGO HARBOR UNIT

Project Boundary:	6,934 acres
Managed Land:	5,649 acres
Within boundary:	5,569
Outside boundary:	80

Property Description

The Peshtigo Harbor Unit is the northernmost and largest of all the GBWS WA units. It is located approximately four miles south of the City of Peshtigo in the Township of Peshtigo, Marinette County. It lies at the mouth of the Peshtigo River and upstream along both sides (Map D-1). The Bloch Oxbow SNA is contiguous with this property to the northeast, and the Badger Gift Lands are contiguous to the north.

This area has a long history of human occupation. A village and sawmill once existed at the mouth of the Peshtigo River, and pilings from old wharfs are still visible in Green Bay. The lands of the wildlife area were once cultivated and the marshes mowed for hay. Prior to settlement and development by Europeans, the river, coastal wetlands, and adjoining uplands were heavily used by Native Americans.

Acquisition by the state in the Peshtigo Harbor Unit began in 1956 with a land trade between the Department and Marinette County. An 80-acre parcel located directly adjacent to Peshtigo Harbor’s southwest corner, which protects a stream corridor connected to Green Bay, has been acquired under authority of the Scattered Fishery Habitat program. Two SNAs, Peshtigo Harbor Lacustrine Forest and Peshtigo River Delta Marshes, were designated within the Peshtigo Harbor Unit in 2008.

The lower two miles of the Peshtigo River form an extensive delta, with beach and sand bar features and river channels winding through extensive emergent marshes and sedge meadows. Upstream along the river are bottomland hardwoods at the extreme northeastern edge of their range in Wisconsin, swamp hardwood stands, and oxbow lakes. Slightly more than half the property is vegetated with a mixture of oak, aspen, and red maple. Native and restored warm-season grasslands are maintained on the property. Existing cover types are shown on Map D-2.

This Unit receives high use by migrating birds and is considered to be a highly important stopover site. The Peshtigo River and its associated bottomland forests, open marshes, and wetlands are rare elsewhere in the local landscape and provide a good prey base to support high numbers of both migratory and resident raptors such as bald eagle and red-shouldered hawk. The wetland complex is the most diverse and least disturbed on the west shore and provides high quality habitat for both migrating and breeding birds.

The Peshtigo Harbor Unit can be accessed from either side of the Peshtigo River. Harbor Road, Hale School Road, and Spitzmacher Road provide access from the south side of the river, and CTH BB provides access from the north side.

The Peshtigo Harbor Unit has the most infrastructure of all the plan area properties (Map D-3). The Department maintains 22 parking areas, many of them along Harbor Road, which traverses the property from northwest to southeast. A boat landing on CTH BB provides access to the Peshtigo River upstream from the mouth on the north side. Another boat landing at the mouth of the Peshtigo River on the south side provides access to the river and to Green Bay. There is an access to Winegar Pond, a bay at the mouth of the Peshtigo River, which can be used to launch small boats when water levels in Green Bay allow. This access is located on Pond Road.

Two areas along Harbor Road in the northern portion of the property have been designated as Class 2 dog training areas. A 460-acre waterfowl closed area is located along the Peshtigo River near its mouth.

There are two service roads used for management access to the property. One, known as the “dike road” or “Birding Trail”, extends west and south off Harbor Road for approximately a half-mile and ends at a parking area. The second, Woods Road, traverses the property for approximately 1.5 miles between Hale School Road and Spitzmacher Road in the far western portion of the property. Both are gated but are opened for public use during some portions of the year.

A network of unimproved woods trails connected to Woods Road has been used to develop the Woods Road Ski Trail. This is a ungroomed cross-country skiing, snowshoeing, and hiking trail that was developed in partnership between WDNR, Marinette County Land and Water Conservation, and UW-Extension, with funding from the Wisconsin Coastal Management Program (The Peshtigo River Trail, described below, and Hemlock Curve Trail on the Badger Gift Lands also were developed as part of this effort). The 6-mile trail was completed in 2006 and features various loop options. Nine interpretive stations located along the trail provide information on the various wildlife species that use the area. Trail brochures are available at the trailhead and on the trail at boxes placed at intersections.

A self-guided interpretive water trail, known as the Peshtigo River Trail, has been established on the Peshtigo River. The trail was completed in 2004 and is 11 miles long. It begins at the boat launch in the City of Peshtigo and follows the river through the Badger Gift Lands and Peshtigo Harbor Unit. A brochure available at the launch provides interpretive information about features of the river, which are marked along the trail by numbered wooden posts.

An observation platform in the property’s far eastern corner overlooks Winegar Pond. It was completed in 2012 through the efforts of the Chappee Rapids Audubon Society out of Marinette. The platform, which can be accessed from Pond Road, provides viewing

opportunities for both water birds and forest birds. This is a particularly good site during migration as birds travel along the Bay and concentrate in the area.

The major recreational uses of this property are hunting, fishing, trapping, dog training, cross-country skiing, paddling, and wildlife viewing. The area is a popular destination for deer, small game, and waterfowl hunting. Trappers pursue furbearers, mostly mink, weasel, and muskrat but also some coyote and fox, particularly in the coastal marshes at the mouth of the river. The Peshtigo River is a relatively popular canoe destination during the warm months. The Woods Road Trail is frequented by hikers, dog-walkers, cross-country skiers, and snow-shoers. It receives daily use when conditions are appropriate.

Currently, wetland, grassland, and forest management are all important activities on the Peshtigo Harbor Unit, with the goal of maintaining a diverse mix of game and nongame wildlife species. Prescribed fire is used regularly to maintain and to control woody invasion in both planted and natural grasslands as well as in wetland habitats. An active forestry program maintains a variety of forest types on the property. Bottomland and swamp hardwoods receive primarily even-aged management with periodic thinnings and some uneven-aged management (group selection) to maintain age class diversity. Oak and aspen are maintained through even-aged management. A 1,200-acre Demonstration Area for the Upper Great Lakes Young Forest Initiative was established on the property in 2012. It is located between Woods Road and Harbor Road, and is managed using commercial and non-commercial forestry practices and other vegetation management activities, including prescribed burns, alder shearing, and management to control invasives.

Common, glossy, and hybrid buckthorns, reed canary grass, purple loosestrife, spotted knapweed, and *Phragmites* are all problematic invasives on Peshtigo Harbor. A variety of techniques are employed to control infestations of these species, including cutting and stump-treating, prescribed burns, herbicide application, and bio-control. Stands of *Phragmites* have been treated by aerial herbicide spraying as part of a Great Lakes Restoration Initiative (GLRI)-funded control effort along the entire west shore during 2011 and 2012.

Table 2.7. GBWS WA, Peshtigo Harbor Unit: Current and Desired Future Cover Types.

Cover Type	Current		Predicted 50 year	
	Acres*	% cover	Acreage Objective*	Future % cover
Forested Wetland				
Bottomland Hardwood	99	2	99	2
Swamp Hardwood	706	14	706	14
Non-forested Wetland				
Emergent Vegetation	469	10	469	10
Lowland Shrub	2,130	43	2,130	43
Water	248	5	248	5
Forested Upland				
Aspen	327	7	327	7

CHAPTER 2 – Section Two:
Individual Property Elements – GBWS WA, Peshtigo Harbor Unit

Cover Type	Current		Predicted 50 year	
	Acres*	% cover	Acreage Objective*	Future % cover
Oak	181	4	181	4
Upland Conifer	35	<1	35	<1
Upland Hardwood	561	11	561	11
Non-forested Upland				
Grassland	140	3	140	3
Other				
Developed	38	<1	38	<1
Total	4,934	100	4,934	100

*Cover type acreages are estimated from a variety of spatial databases and may differ from the acreages represented in property deed legal descriptions. Acreages also may change depending on water level fluctuations in Green Bay.

Land Use Classification

The majority of this property is classified as Habitat Management Area. The two SNAs are classified as Native Community Management Area (Map D-4).

Resource Management, Development, and Protection

Habitat Management Area

Objectives

- Manage in accordance with the general wildlife, fisheries, and forestry habitat management objectives and prescriptions and the Management Prescriptions by Cover Type described in Section One of this chapter.
- Maintain the approximately 1,200-acre Young Forest Initiative demonstration area in the northwest portion of the property as an area to showcase management techniques that benefit early-successional species.

Prescriptions

- Follow the applicable general wildlife, fisheries, and forestry prescriptions and Management Prescriptions by Cover Type provided in Section One of this chapter.
- Adjust the boundary of the Young Forest Initiative demonstration area to better conform to forest stand boundaries.
- Manage the habitats in the Young Forest Initiative demonstration area using techniques that promote and maintain early seral stages, including commercial timber sales, non-commercial vegetation management, prescribed burning, creation and maintenance of openings, and invasive species control.
- Conduct wildlife surveys in the Young Forest Initiative demonstration area to document responses to management.
- Maintain bat roosting structures on Harbor Road.

- Maintain deer enclosure on Woods Road.

Native Community Management Area

Peshtigo Harbor Lacustrine Forest State Natural Area

This site represents one of the least disturbed and best remaining examples of the hardwood swamps that formerly dominated this area along the west shore of Green Bay. Large-diameter green ash (up to 28 inches DBH) and red maple (up to 34 inches DBH) dominate the fairly dense canopy. The ground and shrub layers are intact with virtually no invasive species present. Species include maple-leaved viburnum, mountain holly, alder, impatiens, fowl manna grass, blue-joint grass, brome-like sedge, sensitive fern, northern bedstraw, American starflower, naked miterwort, and maidenhair fern. Bird life is varied and includes the state-threatened cerulean warbler. Other breeding birds include pileated woodpecker, Eastern wood-pewee, least flycatcher, veery, ovenbird, American redstart, Canada warbler, and scarlet tanager. This SNA is managed as a Southern Hardwood Swamp, an aquatic preserve, a wetland protection site, and an ecological reference area. Management is primarily passive, allowing natural processes to determine the ecological characteristics of the site, with exceptions for invasive species control and access to suppress wildfires. Peshtigo Harbor Lacustrine Forest is SNA Number 562 and was designated in 2008.

Objectives

- Maintain the site as a Southern Hardwood Swamp reserve, as an aquatic reserve and wetland protection site, and as an ecological reference area.
- Natural processes largely will determine the structure of the forest.

Prescriptions

- Allow the forest to age naturally primarily through passive techniques.
- Allow opportunities for research and education in the highest quality hardwood swamp stands.
- Identify and enhance the development of young hemlock and white pine stands by conducting overstory removal of other species. Where applicable, and with considerations for minimizing damage to understory plants, animals, and invasive species risk, utilize ground scarification techniques to promote seed germination or underplanting to aid regeneration.
- Limit other active management to control of exotic invasive species and access to control fires.
- Do not salvage trees after a major wind event, as this is not considered compatible with the management objectives for this area.

Peshtigo Harbor Delta Marshes State Natural Area

This site is an extensive sedge meadow and marsh complex bordering the mouth of the Peshtigo River. It supports a willow and dogwood Shrub-Carr that becomes more open toward its southern end where the quality Southern Sedge Meadow is found. Tussock sedge and bluejoint grass dominate the meadow, with cordgrass, marsh fern, sensitive fern, northern tick-seed sunflower, spotted Joe-pye weed, orange jewelweed, turtlehead, marsh cinquefoil, blue skullcap, and marsh bellflower also present. Slender willow dominates the shrub layer, which also contains alder, red-osier dogwood, and white meadowsweet. Osprey and American bittern are known from the surrounding area. This SNA is managed as a Southern Sedge Meadow, an aquatic preserve, a wetland protection site, and an ecological reference area. Management activities include control of woody vegetation through tree harvest, brushing, and fire to mimic natural disturbance, as well as invasive species control and access to suppress wildfires. Peshtigo River Delta Marshes is SNA Number 563 and was designated in 2008.

Objective

- Maintain the site as a Southern Sedge Meadow reserve, as an aquatic reserve and wetland protection site, and as an ecological reference area.

Prescriptions

- Use prescribed burning and control of woody invasion through brushing and tree harvest to manage the sedge meadow species.
- Allow opportunities for research and education in the highest quality sedge meadows.
- Other allowable activities include control of exotic invasive plants and access to control fires.

Public Use Management and Development

The following prescriptions support the general recreation and public use objectives and prescriptions presented in the Universal Elements section at the beginning of this chapter.

Prescriptions

- Maintain 22 parking areas and three boat access sites on the property.
- Maintain Class 2 dog training areas on Harbor Road.
- Maintain the 460-acre waterfowl closed area near the mouth of the Peshtigo River (NR 11.03(1)(a), Wis. Admin. Code).
- Maintain the Woods Road Ski Trail in cooperation with Marinette County.

- Maintain the wildlife viewing platform on Pond Road in cooperation with the Chappee Rapids Audubon Society.
- Maintain the numbered wooden posts along the Peshtigo River associated with the Peshtigo River Trail in cooperation with Marinette County.
- Maintain and improve the ‘Birding Trail’ service road off Harbor Road as a hiking and wildlife viewing opportunity.
- Work with Fisheries to identify and develop shore fishing opportunities.
- Seek partnership and funding opportunities to develop additional non-motorized, nature-based recreational activities on Peshtigo Harbor.
- Work with the River Road Riders Snowmobile Club to route a snowmobile trail across the far western portion of the property that connects with the regional trail network and provides access to Green Bay. Develop a trail agreement with the club that establishes trail building and maintenance responsibilities and addresses routing and safety concerns.

Boundary Modifications

The following boundary modifications were approved for the Peshtigo Harbor Unit (Map D-5):

- **Expansion of the boundary to encompass the Badger Gift Lands (1,193 acres, 757 already DNR-owned).**
 - Lands are part of the Natural Resources Damage Assessment for the Fox River and are already owned by the Department.
 - Expansions will follow existing roads for ease of management and public access.
 - Gift land acreage will be redesignated as Wildlife Area.
- **Expansion of the boundary to encompass the ‘doughnut-hole’ of land between Peshtigo Harbor and Bloch Oxbow SNA (44 acres).**
 - Will block in Department ownership if acquired.
 - Expansion contains SNA-quality habitats, and would help buffer the river.
 - If acquired, acreage will be designated as part of Bloch Oxbow SNA.
- **Expansion of the boundary out to CTH BB in the eastern portion of the Unit to provide a better connection between Bloch Oxbow and Peshtigo Harbor (164 acres).**
 - Will block in Department ownership and improve access for recreation and management if acquired.
 - Includes valuable and regionally rare floodplain forest habitat.

- **Expansion of the boundary in the southwest corner of the property to encompass the land between the wildlife area and the Scattered Fishery Habitat parcel (69 acres).**
 - Will block in Department ownership if acquired.
 - Contains valuable coastal marsh habitat.
 - Includes a waterway connected to Green Bay that has had significant Northern pike use in the past, and could be used to enhance spawning opportunities.

GREEN BAY WEST SHORE WILDLIFE AREA—RUSH POINT UNIT

Project Boundary:	1,002 acres
Managed Land:	398 acres

Property Description

The Rush Point Unit of the Green Bay West Shore WA is located approximately seven miles northeast of the City of Oconto in Oconto County (Map E-1). This Unit was established in 1962. Some of the land within the current Rush Point project boundary was farmed at one time, but poor soils and a high water table make this area marginal for agriculture.

Rush Point hosts a variety of habitat types, ranging from coastal marshes along the shore of Green Bay to mature swamp hardwoods. Lowland brush communities occur throughout the property, as well as scattered stands of aspen. General cover types are shown on Map E-2.

Thomas Slough flows through the Rush Point Unit and into Green Bay. This watercourse drains and provides access to the County Line Swamp, an extensive mosaic of forested and open wetlands on mostly county-owned lands located on both sides of the Marinette-Oconto county line. This is an important connection to Green Bay as fish populations in the Bay are dependent on coastal wetlands for spawning and nursery habitat.

This property can be accessed from CTHs Y and A. There are no parking areas or other infrastructure maintained on the property (Map E-3). The main recreational uses at Rush Point are hunting, fishing, and trapping. Hunting is especially notable for deer and small game. The unit provides access to the Bay where waterfowl hunting is available. Some fishing takes place where Thomas Slough crosses CTH Y. Wildlife viewing, especially bird-watching, is a use that is increasing in popularity.

Table 2.8. GBWS WA, Rush Point Unit: Current and Desired Future Cover Types.

Cover Type	Current		Predicted 50 year	
	Acres*	% cover	Acreage Objective*	Future % cover
Forested Wetland				
Lowland Conifer	<1	<1	<1	<1
Swamp Hardwood	203	51	203	51
Non-forested Wetland				
Emergent Vegetation	10	2.5	10	2.5
Lowland Shrub	72	18	72	18
Forested Upland				
Aspen	85.5	21.5	85.5	21.5
Non-forested Upland				
Grassland	23	6	23	6
Upland Shrub	2	<1		

CHAPTER 2 – Section Two:
Individual Property Elements – GBWS WA, Rush Point Unit

Cover Type	Current		Predicted 50 year	
	Acres*	% cover	Acreege Objective*	Future % cover
Total	396	100	396	100

*Cover type acreages are estimated from a variety of spatial databases and may differ from the acreages represented in property deed legal descriptions. Acreages also may change depending on water level fluctuations in Green Bay.

Land Use Classification

This entire property is classified as Habitat Management Area (Map E-4).

Resource Management, Development, and Protection

Objectives

- Manage in accordance with the general wildlife, fisheries, and forestry habitat management objectives and prescriptions and the Management Prescriptions by Cover Type described in Section One of this chapter.

Prescriptions

- Follow the applicable general wildlife, fisheries, and forestry prescriptions and Management Prescriptions by Cover Type provided in Section One of this chapter.

Public Use Management and Development

The following prescriptions support the general recreation and public use objectives and prescriptions presented in the Universal Elements section at the beginning of this chapter.

Prescriptions

- Explore opportunities to improve access to this property.

Boundary Modifications

The following boundary modification was approved for the Rush Point Unit (Map E-5):

- **Expansion of the boundary out to the shoreline in the southeast portion of the Unit, east of CTH Y (56 acres).**
 - Will improve access to the Green Bay shoreline for recreation (e.g., waterfowl hunting) if acquired.
 - Contains undeveloped and undevelopable yet ecologically valuable coastal marsh habitat.

GREEN BAY WEST SHORE WILDLIFE AREA—OCONTO MARSH UNIT

Project Boundary:	1,505 acres
Managed Land:	931 acres
Inside boundary:	929
Outside boundary:	2

Property Description

The Oconto Marsh Unit is located approximately one mile northeast of the City of Oconto in Oconto County (Map F-1). The marsh is an important stopover area for migrating waterfowl and other wetland-dependent birds and a very productive breeding area for dabbling ducks.

The Unit was established in 1967. In 1965, the Oconto County Sportsmen’s Club transferred 254 acres of land within the city limits of the City of Oconto to the Department. This land became part of the Oconto Marsh Unit. In accordance with the terms of the transfer, an impoundment was created, a pump installed, and a waterfowl refuge established on the transferred acres in 1969. These improvements, completed in 1969, are required to remain in place for a 50-year period according to the terms of the transfer.

The 220-acre impoundment in the southern portion of the property contains emergent marsh, lowland shrubs, and open water. Surrounding this area are coastal wetlands consisting of sedge meadow and shrub-carr. In the central and northern portions of the property, bottomland hardwoods and swamp hardwoods are interspersed with wet openings along the edges of the coastal wetlands. There also are areas of aspen. General cover types are shown on Map F-2.

The main access to the Oconto Marsh Unit is along CTH Y. The Department maintains one parking area on CTH Y in the southern portion of the property (Map F-3). A pump and two water control structures are used to manage water levels in the impoundment. A waterfowl closed area has been established on the entire impoundment to provide a resting area for waterfowl during the fall migration period. No hunting or trapping is allowed within the impounded area during periods when waterfowl hunting seasons are open.

The main recreational uses at Oconto Marsh are hunting, fishing, and trapping. Hunting is especially notable for deer and upland game. The dike on the impoundment is used by hikers and cross-country skiers. Construction began on an observation platform on the impoundment dike in 2012 in cooperation with Oconto’s Promise, a local youth/adult partnership, and was completed in early 2013. Educational materials and programs about the marsh have been developed and presented and a local educator’s class maintains a website about the marsh.

Water level control and vegetation management of the marsh provides habitat for wetland-dependent wildlife and opportunities for hunting and trapping. Water levels are controlled by means of the pump and the water control structures on the north dike of the impoundment. Periodically, the marsh vegetation is managed with mowing or prescribed fire to control woody invasion. Timber management is applied using sustainable forestry practices on upland portions of the unit to enhance opportunities for deer and small game hunting. Biological control of purple loosestrife has been employed within this unit. Areas within the marsh have been treated with herbicide to control *Phragmites* and glossy buckthorn.

Table 2.9. GBWS WA, Oconto Marsh Unit: Current and Desired Future Cover Types.

Cover Type	Current		Predicted 50 year	
	Acres*	% cover	Acreage Objective*	Future % cover
Forested Wetland				
Bottomland Hardwood	31	3	31	3
Swamp Hardwood	288	30	288	30
Non-forested Wetland				
Emergent Vegetation	275	29	275	29
Lowland Shrub	163	17	163	17
Water	17	2	17	2
Forested Upland				
Aspen	165	17	165	17
Non-forested Upland				
Upland Shrub	11	1	11	1
Other				
Agriculture	1	<1	1	<1
Total	951	100	951	100

*Cover type acreages are estimated from a variety of spatial databases and may differ from the acreages represented in property deed legal descriptions. Acreages also may change depending on water level fluctuations in Green Bay.

Land Use Classification

This entire property is classified as Habitat Management Area (Map F-4).

Resource Management, Development, and Protection

Objectives

- Manage in accordance with the general wildlife, fisheries, and forestry habitat management objectives and prescriptions and the Management Prescriptions by Cover Type described in Section One of this chapter.
- Adhere to the terms of the deed restrictions for the life of the transfer agreement with the Oconto Sportsmen’s Club.

Prescriptions

- Follow the applicable general wildlife, fisheries, and forestry prescriptions and Management Prescriptions by Cover Type provided in Section One of this chapter.
- Maintain the impoundment as a waterfowl refuge according to the terms of the deed.
- Maintain the pump and dike system.

Public Use Management and Development

The following prescriptions support the general recreation and public use objectives and prescriptions presented in the Universal Elements section at the beginning of this chapter.

Prescriptions

- Maintain one parking area on the property.
- Explore the possibility of adding an additional parking area on Red Cedar Road.
- Maintain the 220-acre seasonal game refuge on the main impoundment (NR 15.04(1)(a), Wis. Admin. Code).
- Maintain the wildlife viewing platform on the impoundment dike in cooperation with Oconto's Promise.
- Work with the City of Oconto and other partners to develop additional nature-based recreational opportunities on the impoundment dike.

Boundary Modifications

The following boundary modification was approved for the Oconto Marsh Unit (Map F-5):

- **Expansion of the boundary out to the shoreline in the northeast portion of the Unit, east of CTH Y, contiguous with Rush Point expansion (50 acres, 2.18 already DNR-owned).**
 - Will improve access to the Green Bay shoreline for recreation (e.g., waterfowl hunting) if acquired.
 - Contains undeveloped and undevelopable yet ecologically valuable coastal marsh habitat.

GREEN BAY WEST SHORE WILDLIFE AREA—PECOR POINT UNIT

Project Boundary:	1,095 acres
Managed Land:	137 acres

Property Description

The Pecor Point Unit is located approximately two miles northeast of the Town of Pensaukee in Oconto County (Map G-1). This unit was established in 1981. The Department-owned Beaver Meadow Creek fish spawning area and a Department of Transportation (DOT)-owned wetland mitigation site, known as the Sikma site, are adjacent to the Pecor Point Unit. These sites contain similar wetland habitats and add complementary management opportunities to the Pecor Point property. The Department manages the Sikma mitigation site through a verbal agreement with DOT.

Pecor Point is predominantly shrub-carr and sedge meadow. There are areas of swamp hardwoods and upland hardwoods on the southernmost parcel of the Unit. The Beaver Meadow Creek spawning marsh (48 acres) contains lowland brush and wet meadow habitat. This site has a water control structure which is open in the spring to allow for fish passage and closed in the summer and fall to hold water on the site. The Sikma mitigation site has emergent marsh grading into wet meadow and lowland brush. Water control structures on the Sikma site allow water to flow either into the marsh or through a Northern pike spawning area that runs adjacent to Pecor Point Lane. General cover types are shown on Map G-2.

Access to the property is along CTH S and Pecor Point Lane (Map G-3). There is a small gravel parking area on Pecor Point Lane close to the intersection with Dittman Lane that serves the Beaver Meadow Creek spawning marsh. The end of Pecor Point Lane is used by waterfowl hunters as an access point to Green Bay, but this access has been greatly reduced by low water levels and an infestation of *Phragmites*. The main recreational uses at Pecor Point are hunting, fishing, and trapping. Hunting is especially notable for deer, waterfowl, and upland game.

The Pecor Point Unit, Beaver Meadow Creek spawning marsh, and the Sikma mitigation site are managed for wetland wildlife and for Northern pike spawning and nursery habitat. Invasive species control, primarily for *Phragmites* and glossy buckthorn, and maintenance of fish passage are the main management activities. Prescribed burns have been conducted on marsh vegetation at the DOT site and Beaver Meadow Creek to enhance waterfowl nesting opportunities in the area. Swamp and upland hardwoods are maintained using sustainable forestry practices.

Table 2.10. GBWS WA, Pecor Point Unit: Current and Desired Future Cover Types.

Cover Type	Current		Predicted 50 year	
	Acres*	% cover	Acreage Objective*	Future % cover
Forested Wetland				
Swamp Hardwood	21.5	16	21.5	16
Non-forested Wetland				
Emergent Vegetation	32	24	32	24
Lowland Shrub	28.5	21	28.5	21
Forested Upland				
Upland Conifer	3	2	3	2
Upland Hardwood	23	17	23	17
Non-forested Upland				
Grassland	8	6	8	6
Upland Shrub	17	13	17	13
Total	133	100	133	100

*Cover type acreages are estimated from a variety of spatial databases and may differ from the acreages represented in property deed legal descriptions. Acreages also may change depending on water level fluctuations in Green Bay.

Land Use Classification

This entire property is classified as Habitat Management Area (Map G-4).

Resource Management, Development, and Protection

Objectives

- Manage in accordance with the general wildlife, fisheries, and forestry habitat management objectives and prescriptions and the Management Prescriptions by Cover Type described in Section One of this chapter.
- Maintain the Beaver Meadow Creek site as a Northern pike spawning and nursery area.

Prescriptions

- Follow the applicable general wildlife, fisheries, and forestry prescriptions and Management Prescriptions by Cover Type provided in Section One of this chapter.
- Maintain the habitat at Beaver Meadow Creek in sedge meadow.
- Remove water control boards at ice-out in the spring to allow spawning pike to access the marsh and replace them after adults have finished spawning and returned to Green Bay.
- Remove water control boards in early June to flush any young-of-year pike out of the marsh and then replace them.

Public Use Management and Development

The following prescriptions support the general recreation and public use objectives and prescriptions presented in the Universal Elements section at the beginning of this chapter.

Prescriptions

- Maintain one parking area on the property.

Boundary Modifications

The following boundary modifications were approved for the Pecor Point Unit (Map G-5):

- **Expansion of the boundary west to CTH S to capture the Sikma DOT mitigation site (125 acres).**
 - This land already is state-owned and DOT has expressed interest in transferring it to DNR.
 - DNR is already managing the land through a verbal agreement with DOT.
- **Expansion of the boundary northeast along CTH S then east (219 acres, 46 already DNR-owned).**
 - Encompasses the Beaver Meadow fish spawning marsh which is already DNR-owned.
 - Expansion will follow existing roads to improve access.
 - If acquired, acreage will protect the watershed for the Beaver Meadow pike spawning marsh, including additional waterways used by pike, and create a larger, contiguous block of habitat.

GREEN BAY WEST SHORE WILDLIFE AREA—PENSAUKEE UNIT

Project Boundary:	553 acres
Managed Land:	515 acres

Property Description

The Pensaukee Unit is located along both sides of CTH S just south of the Town of Pensaukee in Oconto County (Map H-1). This Unit was established in 1956. Potholes for waterfowl use were developed in the coastal marsh. Dredge spoil islands off the property were important breeding areas for Green Bay colonial nesting birds during high water years but recent low water levels have reduced the use of these areas. The property offers some spawning opportunities for Northern pike, and some value as a resting and refueling site for migratory birds, including songbirds, gulls, terns, and shorebirds, as the move on to higher quality sites.

A large coastal marsh dominates the portion of the property east of CTH S, with sedges, emergent vegetation, shrub carr, and bottomland hardwoods. There also is a native grass field. West of CTH S, ridges forested with oak are interspersed with swamp hardwoods, shrub-carr, and marsh. A remnant Pleistocene sandy beach ridge contains a Hill’s oak-dominated forest (currently typed as a Great Lakes Barrens) that provides habitat for the rare crinkled hair grass (*Deschampia flexuosa*). General cover types are shown on Map H-2.

CTH S traverses the entire Pensaukee Unit and provides the main access route (Map H-3). The Department maintains three parking areas on the property, two along CTH S and one along a short access road in the southeast corner of the property. A boat access site associated with this third parking area provides access to Lake Michigan. This boat launch is unimproved and suitable only for small boats or skiffs. Current water levels in Green Bay have reduced its utility. The main recreational uses at Pensaukee are hunting, fishing, and trapping. Deer, turkey, upland game, and waterfowl are all hunted on this property. Wildlife viewing, especially bird-watching, is a use that is increasing in popularity.

Today, the native grasses have been managed through the use of prescribed fire to provide nesting cover for waterfowl and grassland birds. Pheasants are stocked on Pensaukee in some years by local sportsmen’s clubs participating in the Department’s Day-old Chick Program. Timber sales on the unit have maintained and enhanced habitat for forest wildlife, particularly for the many species benefitting from oak. A recent project to remove dredge spoils from the marsh has created better conditions for fish spawning and for waterfowl by removing a dredge spoil bank that was channeling water directly through to Green Bay. This widened a watercourse flowing through the marsh and now allows seasonal water flows to spread through the emergent wetlands rather than

run straight to the Bay. The shoreline of the Pensaukee Unit has been treated to control *Phragmites* as part of a GLRI-funded control effort along the entire west shore.

Table 2.11. GBWS WA, Pensaukee Unit: Current and Desired Future Cover Types.

Cover Type	Current		Predicted 50 year	
	Acres*	% cover	Acreage Objective*	Future % cover
Forested Wetland				
Bottomland Hardwood	19	4	19	4
Swamp Hardwood	118	23	118	23
Non-forested Wetland				
Emergent Vegetation	178	35	178	35
Lowland Shrub	115	22	115	22
Water	4	<1	4	<1
Forested Upland				
Oak	35	7	35	7
Upland Hardwood	<1	<1	<1	<1
Non-forested Upland				
Grassland	16	3	16	3
Upland Shrub	18	3	18	3
Other				
Urban/Developed	16	3	16	3
Total	519	100	519	100

*Cover type acreages are estimated from a variety of spatial databases and may differ from the acreages represented in property deed legal descriptions. Acreages also may change depending on water level fluctuations in Green Bay.

Land Use Classification

The majority of this property is classified as Habitat Management Area. A 47-acre site containing a Great Lakes Barrens/Oak Woodland community has been classified as Native Community Management Area (Map H-4).

Resource Management, Development, and Protection

Habitat Management Area

Objectives

- Manage in accordance with the general wildlife, fisheries, and forestry habitat management objectives and prescriptions and the Management Prescriptions by Cover Type described in Section One of this chapter.

Prescriptions

- Follow the applicable general wildlife, fisheries, and forestry prescriptions and Management Prescriptions by Cover Type provided in Section One of this chapter.
- Continue working with partners to identify, establish, and enhance Northern pike spawning habitat on this property.

Pensaukee Oak Barrens/Woodland Native Community Management Area

Objectives

- Restore and protect the Great Lakes Barrens/Oak Woodland community that exists on the southern portion of this property.

Prescriptions

- Manage Great Lakes Barrens/Oak Woodland community using prescribed fire, mowing, timber management and invasive species control.

Public Use Management and Development

The following prescriptions support the general recreation and public use objectives and prescriptions presented in the Universal Elements section at the beginning of this chapter.

Prescriptions

- Maintain three parking areas and one boat access site on the property.

Boundary Modifications

The following modification was approved for the Pensaukee Unit (Map H-5):

- **Contraction of the boundary in the southwest corner to exclude acreage west of the railroad right-of-way (51 acres).**
 - Access to this parcel is poor and unlikely to improve.
 - Railroad corridor creates a permanent canopy interruption.
 - Parcel is small, isolated, and unlikely to contribute substantially to habitat and wildlife management goals.

GREEN BAY WEST SHORE WILDLIFE AREA—CHARLES POND UNIT

Project Boundary:	127 acres
Managed Land:	97 acres

Property Description

The entire Charles Pond unit consists of the Charles Pond SNA. It is located along CTH S approximately five miles south of the Town of Pensaukee in Oconto County (Map I-1).

The Charles Pond Unit was acquired in 1965, and designated as a SNA in the same year. It is SNA Number 39. Portions of the unit were purchased under Wildlife Area authority and portions under State Natural Area authority. Management on the Unit is consistent with both designations. Charles Pond formerly was a baymouth bar lake with a narrow outlet to Green Bay, surrounded by extensive shrub-carr and shallow marsh. West of the pond was a well-developed lacustrine hardwood forest, but high water levels during the 1980's obliterated all of the marshland and a large portion of the forest. The remainder of the site is affected by Green Bay seiches, tide-like rising and falling of lake water due to wind action. The main value of the site now is for monitoring long-term geological processes and the effects of the fluctuating water levels of Green Bay.

The lacustrine forest near the shore consists of mature basswood, maples, and ash. There are areas of central hardwoods and red maple in the uplands. The character of site changes depending on water levels in Green Bay. When water levels are high, Charles Pond becomes a small bay. During periods of low water, a shallow-water marsh may develop. Much of the shoreline contains the invasive common reed (*Phragmites*). General cover types are shown on Map I-2.

Access to the Charles Pond Unit is poor. CTH S passes very close to a corner of the property, and walk-in access is available there. There are no parking areas or other maintained infrastructure on this property (Map I-3).

The main recreational uses at Charles Pond are hunting, fishing, and trapping. Deer is the main species hunted, but waterfowl and small game hunters make some use of the property.

Table 2.12. GBWS WA, Charles Pond Unit: Current and Desired Future Cover Types.

Cover Type	Current		Predicted 50 year	
	Acres*	% cover	Acreage Objective*	Future % cover
Forested Wetland				
Swamp Hardwood	56	51	56	48
Non-forested Wetland				
Emergent Vegetation	39	35	46	39

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Individual Property Elements – GBWS WA, Charles Pond Unit

Cover Type	Current		Predicted 50 year	
	Acres*	% cover	Acreage Objective*	Future % cover
Lowland Shrub	16	14	16	13
Total	111	100	118	100

*Cover type acreages are estimated from a variety of spatial databases and may differ from the acreages represented in property deed legal descriptions. Acreages also may change depending on water level fluctuations in Green Bay.

Land Use Classification

This entire property is classified as Native Community Management Area (Map I-4).

Resource Management, Development, and Protection

Objectives

- Maintain the site as a reserve for the baymouth bar geological feature.
- Natural processes will determine the ecological characteristics of the aquatic species.

Prescriptions

- Manage the aquatic species through passive techniques.
- Use prescribed burning and control of woody invasion through brushing and tree harvest to manage the native wetland species.
- Other allowable activities include control of exotic invasive plants and access to control fires.
- The roadside easement area may be managed sporadically by the township.

Public Use Management and Development

The following prescriptions support the general recreation and public use objectives and prescriptions presented in the Universal Elements section at the beginning of this chapter.

Prescriptions

- Explore opportunities to improve access to this property.

Boundary Modifications

The following boundary modifications were approved for the Charles Pond Unit (Map I-5):

- **Expansion of the boundary north and south to encompass existing Department-owned SNA parcels currently outside the boundary (51 acres), and then north along CTH S to connect the central parcel to the northern one (21 acres).**

CHAPTER 2 – Section Two:
Individual Property Elements – GBWS WA, Charles Pond Unit

- Expansion along the road provides the potential to immediately improve access to this Unit, which currently suffers from very poor access.
- Will connect existing ownership and help buffer the SNA feature if acquired.
- Lands are ecologically similar to currently owned parcels.
- **Adjustment of the boundary along the coast (60 acres of contraction).**
 - This adjustment is due to recent re-digitizing of the property deed to more accurately reflect ownership under current Green Bay water levels.

GREEN BAY WEST SHORE WILDLIFE AREA—TIBBET-SUAMICO UNIT

Project Boundary:	2,131 acres
Managed Land:	387 acres
Inside boundary:	308
Outside boundary:	79

Property Description

The Tibbet-Suamico Unit is located approximately one mile east of the Town of Little Suamico in Oconto County (Map J-1). The largest of the two parcels within this Unit is south of Lade Beach Road and west of Rost Road, and the second, smaller, parcel is south of Rost Road. The Tibbet-Suamico Unit was established in 1994, the last of the 11 units of the GBWS WA to be established. Additional land was purchased here in 2005. The property provides important habitat for resident and migrating birds.

Two Statewide Habitat Area parcels are located outside the project boundary near the southern edge of this Unit, close to the Oconto-Brown county line. The southernmost parcel, purchased in 2003, is approximately 45 acres in size and located NW of the intersection of Brown Road and Bayside Road. Just north of this is the second parcel, acquired in 2006. It is approximately 30 acres in size and is located at the terminus of Bayside Road, where there is a short foot-travel-only easement. Both were purchased to protect fish spawning habitat. During spawning, Northern pike migrate from the Bay to utilize the small stream that bisects the northern parcel, while the southern parcel borders a ditch that pike use for navigation to spawning grounds farther inland.

This Unit is comprised of emergent vegetation, shrub carr, black ash swamp, and areas of aspen and mature maple-basswood forest. Much of the shoreline consists of the invasive common reed (*Phragmites*). The southernmost Statewide Habitat Area parcel is an oldfield currently succeeding to shrub-carr, and the northern parcel is mostly shrub-carr with a small amount of emergent vegetation and some upland hardwoods. General cover types are shown on Map J-2.

The northernmost parcel within this Unit can be accessed from Lade Beach Road, where the Department maintains a small gravel parking area (Map J-3). Waterfowl hunters access the Bay and shoreline frontage on the Unit from the end of Lade Beach Road. A foot-travel-only easement extends east from the intersection of Ball Park Road and Grosse Road to the Unit’s southern parcel, providing access. A stipulation of the easement prohibits hunting on the easement. The two Statewide Habitat Area parcels can be accessed from Brown Road and Bayside Road. The nearest parking for both these parcels is a parking area on the northernmost parcel of the Bayside Road Unit, just southeast of the intersection of Brown Road and Bayside Road.

The main recreational uses at Tibbet-Suamico are hunting, fishing, and trapping. Hunting is notable for deer, turkey, waterfowl, and small game.

Sustainable forestry practices are used to maintain current timber types on the property and to enhance habitat for forest wildlife. Wetlands management consists largely of controlling invasive species, chiefly *Phragmites* and buckthorn. The Statewide Habitat Area parcels are managed to maintain and enhance fish spawning habitat.

Table 2.13. GBWS WA, Tibbet-Suamico Unit: Current and Desired Future Cover Types.

Cover Type	Current		Predicted 50 year	
	Acres*	% cover	Acreage Objective*	Future % cover
Forested Wetland				
Swamp Hardwood	107	40	107	40
Non-forested Wetland				
Emergent Vegetation	74	28	74	28
Lowland Shrub	66	24	66	24
Forested Upland				
Aspen	22	8	22	8
Total	269	100	269	100

*Cover type acreages are estimated from a variety of spatial databases and may differ from the acreages represented in property deed legal descriptions. Acreages also may change depending on water level fluctuations in Green Bay.

Land Use Classification

This entire property is classified as Habitat Management Area (Map J-4).

Resource Management, Development, and Protection

Objectives

- Manage in accordance with the general wildlife, fisheries, and forestry habitat management objectives and prescriptions and the Management Prescriptions by Cover Type described in Section One of this chapter.

Prescriptions

- Follow the applicable general wildlife, fisheries, and forestry prescriptions and Management Prescriptions by Cover Type provided in Section One of this chapter.

Public Use Management and Development

The following prescriptions support the general recreation and public use objectives and prescriptions presented in the Universal Elements section at the beginning of this chapter.

Prescriptions

- Maintain one parking area on the property.

- Provide signage for the easement that extends from the corner of Ball Park Road and Grosse Road and for the one at the north end of Bayside Road.

Boundary Modifications

The following boundary modification was approved for the Tibbet-Suamico Unit (Map J-5):

- **Expansion of the boundary north from the corner of Brown and Bayside Roads (319 acres).**
 - This expansion will provide the potential to sustain essential inputs to two adjacent DNR-owned fish spawning areas and protect the larger watershed that feeds these sites if acquired. One waterway in the northern half of the expansion area is connected to Green Bay and is currently used by pike to access one of the spawning areas.
 - Expansion along the road provides potential to improve access to the southern portion of this unit.
 - Several external partners, including Ducks Unlimited, The Nature Conservancy, and Oconto County have expressed support for this expansion and could actively contribute to its protection and management. TNC has developed an online mapping tool that identifies parcels representing the highest valued wetland protection and restoration opportunities; this area is one of those highlighted by the tool. Oconto County already is working with private landowners in this area to construct wetland scrapes for pike spawning habitat and water quality using Great Lakes Restoration Initiative (GLRI) funds.

GREEN BAY WEST SHORE WILDLIFE AREA—BAYSIDE ROAD UNIT

Project Boundary:	911 acres
Managed Land:	243 acres

Property Description

The Bayside Road Unit is located approximately three miles north of the Village of Suamico in Brown County, between Brown Road East and Norfield Road and east of Bayside Road (Map K-1). This Unit was established in 1979. Land acquisition has continued, with the most recent purchase occurring in 2001. Little Tail Point currently is owned by a sportsman’s club that uses the land primarily for deer and waterfowl hunting.

Most of this property is dominated by sedge meadow and shrub-carr. There are scattered small areas of mixed lowland hardwoods and one larger tract adjacent to a former agricultural field, now succeeded to shrubs, in the northwest corner of the property. Landscaping activities which occurred in the northwest corner of the property during private ownership created shallow scrapes which have now developed wetland characteristics. Problematic invasives on the property include common reed (*Phragmites*), glossy buckthorn, and reed canary grass. General cover types are shown on Map K-2.

The Bayside Road Unit can be accessed along Brown Road East, Bayside Road, and Hook Road (Map K-3). Two small gravel parking areas were added in 2012 to improve access. One is on the east side of Bayside Road near its intersection with Brown Road, and the second is on the south side of Hook Road near its intersection with Bayside Road.

The main recreational uses at Bayside Road are hunting and trapping. Hunting is notable for deer, turkey, and small game in the uplands and waterfowl along the shoreline. Trappers pursue wetland-associated furbearers as opportunity permits. Muskrat trapping can be good during periods of higher water when production is higher. Other recreational uses are restricted by the lowland vegetation which dominates the property. Only upland areas are accessible throughout the year. The wetland areas are only accessible during the winter.

Current management at Bayside Road focuses on protecting and maintaining the wetland communities and associated species while controlling invasives and providing opportunities for hunting, fishing, and trapping. The sheltered wetlands on Bayside Road provide spawning habitat for yellow perch and Northern pike. The Brown County Land and Water Conservation Department made habitat improvements in 2012 to a ditch that runs along the northern border of the property, along Brown Road, and west onto private lands that offer additional Northern pike spawning habitat. However, there are no water manipulation opportunities on Bayside Road, and successful spawning depends on

natural precipitation and water level fluctuations to create the flooding and water movement necessary to transport fish inland.

Management of the wetlands is largely passive. Long-term fluctuating water levels of the Bay strongly affect vegetation structure in the wetlands. Periods of higher water favor open wetlands, while low water years tend to shift the community towards shrub swamp. Forest stands are actively managed using sustainable forestry techniques. The oldfields in the northwest corner have currently succeeded to shrub-carr. Various restoration options are being considered. Stands of *Phragmites* were treated by aerial herbicide spraying as part of a GLRI-funded control effort along the entire west shore in 2011 and 2012.

Table 2.14. GBWS WA, Bayside Road Unit: Current and Desired Future Cover Types.

Cover Type	Current		Predicted 50 year	
	Acres*	% cover	Acreage Objective*	Future % cover
Forested Wetland				
Bottomland Hardwood	51	21	51	21
Non-forested Wetland				
Emergent Vegetation	37	15	37	15
Lowland Shrub	110	46	110	46
Water	2	<1	2	<1
Forested Upland				
Upland Conifer	1	<1	1	<1
Non-forested Upland				
Grassland	40	16	40	16
Other				
Agriculture	1	<1	1	<1
Total	242	100	242	100

*Cover type acreages are estimated from a variety of spatial databases and may differ from the acreages represented in property deed legal descriptions. Acreages also may change depending on water level fluctuations in Green Bay.

Land Use Classification

This entire property is classified as Habitat Management Area (Map K-4).

Resource Management, Development, and Protection

Objectives

- Manage in accordance with the general wildlife, fisheries, and forestry habitat management objectives and prescriptions and the Management Prescriptions by Cover Type described in Section One of this chapter.

Prescriptions

- Follow the applicable general wildlife, fisheries, and forestry prescriptions and Management Prescriptions by Cover Type provided in Section One of this chapter.

Public Use Management and Development

The following prescriptions support the general recreation and public use objectives and prescriptions presented in the Universal Elements section at the beginning of this chapter.

Prescriptions

- Maintain two parking areas on the property.

Boundary Modifications

The following boundary modification was approved for the Bayside Road Unit (Map K-5):

- **Expansion of the boundary west along Norfield Road, then south, then east (320 acres).**
 - Will provide additional watershed protection for valuable fish spawning marshes and encompass additional fish spawning habitat if acquired.
 - Expanding the boundary along Norfield Road provides potential to improve.
 - Much of this land is undevelopable lowland forest.

GREEN BAY WEST SHORE WILDLIFE AREA—SENSIBA UNIT

Project Boundary:	1,265 acres
Managed Land:	762.5 acres

Property Description

The Sensiba Unit is located approximately one mile east of the Village of Suamico in Brown County, north of the Suamico River, between Resort Road and Sunset Beach Road (Map L-1). Only ten miles north of the City of Green Bay, Sensiba is in close proximity to this large populated area. There are various residential developments near the property, including immediately adjacent to the south and east.

Sensiba was the first of the GBWS WA units to be established. The first parcel, totaling 450 acres, was purchased in 1948 from Lucille Sensiba, for whom the unit is named. Much of the property was unsuitable for farming and has remained forested for the past two centuries. In 1959, in an effort to create waterfowl habitat, a one-mile dike was constructed along the shoreline of the property, creating a 150-acre impoundment in a former slough of the Suamico River. A lift-type pump was installed to pump water from the Suamico River into the impoundment. In 1965 a small 35-acre sub-impoundment was created. Another sub-impoundment was created shortly thereafter, with water control structures installed to allow water to be stepped down into the main impoundment.

In response to high Lake Michigan water levels in the late 1970s, repairs were made to the main dike along the shoreline in 1979, including armoring with rip-rap. However, water levels continued to rise to unprecedented levels into the 1980's and the lake overtopped the dike. Several breeches formed in the sub-impoundment dikes and the pump, which was no longer needed to pump water into the main impoundment, fell into disuse and was eventually disconnected. In 1996, major work was completed on the main dike, with reconstruction sufficient to withstand a 100-year flood event. Since that time, the main impoundment has been redesigned with several water control structures to better manage water levels, as well as to restore Northern pike spawning areas that were lost when the impoundment was created in 1959. A new pump, to be installed by September, 2013, has an improved design that allows water to be pumped both in and out, and also can be configured to allow water to drain or fill through natural forces.

In 2011, the Wisconsin DOT transferred to the Department 212 acres of wetland mitigation in the northwest corner of Sensiba and directly adjacent (125.5 acres of this fall outside the project boundary). Much of this mitigation site has been transformed into two separate wetland basins on the north and south sides of Resort Road, each with its own water control structure and each utilizing a separate drainage system. On the north side, a tributary that crosses Bayside Road currently provides Northern pike spawning

habitat. On the south side, hydrologic connectivity to the former DOT mitigation site will be through a newly-created waterway that runs through Sensiba to Green Bay.

Adjacent to the Green Bay shoreline, Sensiba has coastal wetlands that are a mixture of cat-tail-dominated emergent marsh and sedge meadow with smaller areas of lowland shrub. Farther inland, forests of lowland hardwoods and oak dominate the western portion of the property, with smaller areas of aspen and upland hardwoods. Several former agricultural fields are succeeding to shrubs and trees. Invasive plants are an ongoing issue on the property, with *Phragmites* and glossy buckthorn being the most problematic. Reed canary grass also is present. General cover types are shown on Map L-2.

The DOT wetland mitigation acres had been completely stripped to provide material for the Highway 41 reconstruction project. The liner drainage ditch was reshaped with meanders then replanted in 2011-2012 with a mesic meadow mix, areas of swamp hardwood tree species, and emergent wetland seed mixes. DOT has a ten-year management agreement to control invasives and ensure the infrastructure's integrity.

Resort Road provides access to the northern part of Sensiba and Sunset Beach Road to the southern portion. CTH J connects these two roads. Sensiba is served by three parking areas. One of these, on Sunset Beach Road, is maintained by Brown County through an agreement with the Department and is used as overflow parking for a very high-volume, county-owned boat access site just to the east. The other two parking areas, one on Resort Road and one on Bayside Road, are maintained by the Department. A Department service road, used for management access, is located in the northern portion of the property, off Resort Road, and connects to the northern portion of the dike around the main impoundment.

The Village of Suamico owns an unimproved boat access and park to the east of Sensiba off Sunset Beach Lane. This access is used primarily during the winter by ice anglers and in the fall by waterfowl hunters and has a small park and picnic area associated with it. Foot access to the lakeward portion of the main dike is available at the cul-de-sac of Sunset Beach Lane. This is a popular place to view wildlife.

A series of water control structures are used for wetland management on Sensiba. Five of these already exist and a sixth, a high-volume pump, will be installed by September, 2013. Once current reconstruction activities are complete, there will be approximately 2.5 miles of dikes, two main impoundments, and two sub-impoundments. There also is a 12'x10' tin storage shed near the pumphouse.

A waterfowl closed area was established on the main impoundment shortly after its completion in 1959 to provide a refuge for waterfowl while being hunted on the Bay. No hunting is allowed in the closed area during open waterfowl seasons, though trapping and other activities are still permitted. There also is a small fish refuge in the discharge area to the Suamico River, from the dike to the south end of the culvert under Sunset Beach

Road. This area is closed to fishing from March 1 to the date immediately preceding the opening of the general fishing season. Sensiba infrastructure is shown on Map L-3.

The former DOT site has limited parking access. There are no designated parking areas, but three driveways with culverts which allow equipment onto the property are often used for parking by visitors to the property. Two water control structures are used for wetland management and, when current reconstruction activities are complete, there will be 2.5 miles of dikes. The dikes divide the site into three basins north of Resort Road, two of which will provide pike spawning and waterfowl habitat. South of Resort Rd is a shallow water basin that drains out through private property to the Sensiba Unit.

Sensiba's close proximity to the Green Bay metropolitan area makes it heavily used for outdoor recreation. Hunting and trapping are the main uses of the property. Hunting is especially notable for waterfowl and upland game. When water levels are high, trapping for muskrat and mink can be bountiful. Coyote and fox also are trapped. While there currently are no designated trails on Sensiba, the dike tops are commonly used as walking paths. Many of the immediate neighbors enjoy daily hikes on the property. Wildlife viewing is growing in popularity. Birders and wildlife photographers are increasingly attracted by a colony of yellow-headed blackbirds that breeds annually here.

Recent reconstruction activity on the dikes' infrastructure has led to an interest in trail development by the Village of Suamico. As part of the implementation of their community strategic plan, they wish to create a walking trail on the dike tops. This project would create a loop about 3 miles in length that would extend and connect the dike tops. It would include connection to a boardwalk, construction of a viewing platform, an extension to the boat launch, and ADA-compliant development. There also is interest in creating a water trail linking Sensiba to Long Tail Point and expanding the trails on Sensiba to the former DOT mitigation site in the future.

Recreational use of the former DOT site has been light, though expected to increase as the public becomes more aware of it. Currently, goose and turkey are hunted on the property. Once water levels are managed and vegetation takes hold, the site will offer additional waterfowl hunting opportunity as well as trapping opportunity for mink, muskrat, and canids.

Management on Sensiba currently emphasizes wetland and forest management. Wetlands are managed primarily through water level manipulation to benefit waterfowl, spawning fish, and other wetland-dependent wildlife. Recent reconstruction of dikes and related infrastructure will improve the ability to manage water levels. The current focus is to expand hemi-marsh conditions (approximately equal proportions of emergent vegetation and open water) by increasing water levels. This will drown out woody encroachment and thin dense cat-tail stands by encouraging higher muskrat populations.

The reconstruction also has redirected water passage between the former DOT mitigation site and Sensiba, allowing water flowing in from upstream to be captured in either

impoundment or to bypass the impoundments altogether via a bypass ditch that has been created to restore connectivity to Green Bay.

The former DOT mitigation site has several deep-water pockets exclusively for waterfowl. Shallow scrapes with water control structures provide additional Northern pike spawning habitat. The creek crossing Bayside Road on the north portion of the site already provides pike spawning but a structure was added to retain water after adult pike have spawned and returned to Green Bay. The intent is to increase survivorship of fry once they reach Green Bay by allowing them to grow to a larger size in this protected nursery before they are released and flushed downstream to the Bay. A similar structure has been added to a spawning area in the southeastern portion of Sensiba.

Management to control invasive plants is ongoing. Wetland invasives such as *Phragmites* and reed canary grass are controlled through water level manipulation and chemical applications, most recently as part of a GLRI-funded effort to control *Phragmites* along the entire west shore. Forest management focuses on bottomland hardwoods in the lowland areas and oak in the upland areas. The goal is to maintain a mix of forest types and ages to provide habitat for a variety of resident and migratory wildlife. Former agricultural fields will be allowed to succeed to forest.

Table 2.15. GBWS WA, Sensiba Unit: Current and Desired Future Cover Types.

Cover Type	Current		Predicted 50 year	
	Acres*	% cover	Acreage Objective*	Future % cover
Forested Wetland				
Bottomland Hardwood	66	12	66	12
Swamp Hardwood	80	14	80	14
Non-forested Wetland				
Emergent Vegetation	170	30	170	30
Lowland Shrub	99	17.5	99	17.5
Water	28	5	28	5
Forested Upland				
Aspen	32	6	32	6
Oak	52	9	52	9
Upland Conifer	4	<1	4	<1
Upland Hardwood	22	4	22	4
Non-forested Upland				
Grassland	9	1.5	9	1.5
Other				
Agriculture	<1	<1	<1	<1
Developed	1	<1	1	<1
Total	563	100	563	100

*Cover type acreages are estimated from a variety of spatial databases and may differ from the acreages represented in property deed legal descriptions. Acreages also may change depending on water level fluctuations in Green Bay.

Land Use Classification

This entire property is classified as Habitat Management Area (Map L-4).

Resource Management, Development, and Protection

Objectives

- Manage in accordance with the general wildlife, fisheries, and forestry habitat management objectives and prescriptions and the Management Prescriptions by Cover Type described in Section One of this chapter.

Prescriptions

- Follow the applicable general wildlife, fisheries, and forestry prescriptions and Management Prescriptions by Cover Type provided in Section One of this chapter.
- Plan water control at the northwest corner of the diked area to direct flow and control access to the Northern pike spawning area south of Resort Road.
- Manipulate the water control structure on the north cell of the former DOT mitigation site (north of Resort Road) to allow adult Northern pike access to the reservoir, to hold water for a young-of-year pike nursery, and then to flush young-of-year pike out to Green Bay in early June.
- Coordinate pumping and water releases from the main impoundment in order to facilitate Northern pike production in the southeast pike spawning ditch.

Public Use Management and Development

The following prescriptions support the general recreation and public use objectives and prescriptions presented in the Universal Elements section at the beginning of this chapter.

Prescriptions

- Maintain the two parking areas on Resort Road and Bayside Road. Continue the management agreement with Brown County to maintain the parking area on Sunset Beach Road.
- Explore opportunities to improve access to the former DOT mitigation site.
- Maintain the 245-acre waterfowl closed area on the main impoundment (NR 11.03(1)(a), Wis. Admin. Code).
- Continue working with the Village of Suamico to develop recreational opportunities for this property.
- Work with Brown County to improve parking configuration in Sunset Beach Road parking area.
- Work with Brown County to define acceptable uses within the area covered by the lease agreement for the Sunset Beach Road parking area.

- Expand the approximately 1-acre fish refuge at the discharge to the Suamico River (NR 26.08(5)(c), Wis. Admin. Code) to encompass the new 37-acre southeast pike spawning ditch.
- Explore the possibility of providing a new ADA-compliant waterfowl hunting blind on this property in cooperation with partners.
- Provide a ditch-crossing for users to access the boat landing from the dike top.
- Maintain the small day-use area and DNR employee memorial at the Sunset Beach Road parking area.

Boundary Modifications

The following boundary modification was approved for the Sensiba Unit (Map L-5):

- **Expansion of the boundary in the northwest corner of the Unit west, north, and then east (366 acres, 125 already DNR-owned).**
 - Encompasses acreage of former DOT mitigation site, which is already in Department ownership. These acres will be reclassified from Fisheries Management to Wildlife Area.
 - Encompasses a potential land donation from Northeast Wisconsin Land Trust.
 - Will protect waterways currently used by spawning fish if acquired.
 - Much of this land is undevelopable lowland forest and emergent wetland.

GREEN BAY WEST SHORE WILDLIFE AREA—LONG TAIL UNIT

Project Boundary:	1,570 acres
Managed Land:	329 acres
Inside boundary:	317
Outside boundary:	12

Property Description

The Long Tail Unit is located approximately one mile east of the Village of Suamico in Brown County, south of the Suamico River (Map M-1). The main parcel is south of Riverside Drive. Other parcels are located on Longtail Beach Road and Longtail Beach Lane. This Unit also includes the southern portion of Long Tail Point, a sand-spit depositional feature projecting into Green Bay.

In 1936, a federal waterfowl refuge was established on 104 acres of Long Tail Point. This refuge was terminated in 1961 and the land turned over to the state to become the Long Tail Unit. Additional land was acquired in 1999 and 2002. Long Tail Point hosts several archaeological and historic sites, including the remnants of a lighthouse.

The mainland portions of the Long Tail Unit consist of emergent marsh, shrub-carr, and bottomland hardwoods, with small areas of oak and upland hardwoods. Long Tail Point itself is a narrow sand spit and associated embayment resting upon poorly drained sand lakeplain soils that stretch to the southeast for nearly four miles into lower Green Bay. The size and shape of the peninsula combined with the fluctuating water levels in lower Green Bay result in a very diverse assemblage of wetland flora and fauna.

The types and extents of habitats on Long Tail Point depend on water levels in Green Bay. Habitat types typically grade from emergent wetlands to sedge meadows, shrub-carr, and cottonwood copses. The water table is at or near the surface throughout the entire site. Patches of black willow and plains cottonwood thicket occupy the highest ground, grading to the west into sizable monotypic clones of common reed grass (*Phragmites*) and, finally, a large good-quality Emergent Marsh dominated by cat-tails, soft-stem bulrush, and common three-square bulrush. The invasives *Phragmites* and purple loosestrife are common associates here and threaten to displace the currently dominant native species. On the eastern side of the point is a sandy beach that is well developed during periods of low water. During high water level periods the point becomes a series of small islands. General cover types are shown on Map M-2.

Long Tail Point has been recognized as a high-quality migratory bird stopover site that provides shelter and protection from predation and food and water resources important to many birds (Grveles et al. 2011). Forested stands on site contribute important migratory stopover habitat for extremely high estimated numbers of songbirds, particularly those forest blocks that have high structural diversity with a strong oak component. Because agriculture, large expanses of open water, and urban development dominate the

surrounding landscape, these forest patches offer respite to exhausted birds traveling across mainly inhospitable terrain. This site also has supported breeding populations of state endangered birds (common tern and Forster's tern).

A small (12-acre) Scattered Fishery Habitat area is located on the Suamico River just west and slightly north of the Long Tail Unit, just upstream from the river crossing on CTH J. This site, known as the Rosnow parcel, protects a slough of the Suamico River and was once used as a fish-rearing pond. It has been restored by removing the remnants of weirs on either end of the slough to allow free passage to fish, and by dredging some material from a backwater area. The site consists mostly of emergent marsh with a small area of shrub swamp.

Riverside Drive, Longtail Beach Road, and Longtail Beach Lane provide access to the various parcels within the Long Tail Unit (Map M-3). The Department maintains two small parking areas on this property, one on the northernmost parcel, on Riverside Drive, and another on the parcel located on Longtail Beach Lane. The Rosnow parcel is served by one parking area located off CTH J. There is one Department-owned boat access site with parking on Harbor Lights Road in the northern portion of the property. This site also has a day-use picnic area and is maintained by the Village of Suamico through a lease agreement. The boat access is not suitable for large motor boats, and is used primarily by duck hunters, canoeists and kayakers, and ice anglers. Low water levels can reduce its utility.

Hunting, fishing, and trapping are the main recreational uses on the mainland portions of the Long Tail Unit. Hunting is especially notable for deer, waterfowl, and small game. Trappers pursue otter, mink, coyote, and, especially during periods of high water, muskrat. Fishing occurs in the embayment created by Long Tail Point and in the main waters of Green Bay, primarily in winter. Perch are taken in the early ice-fishing season. In the late season, when perch fishing closes to protect spawning fish, the focus turns to Northern pike.

Long Tail Point receives a considerable amount of day use, largely during the warm summer months, from recreational boaters launching from a variety of places in lower Green Bay. Concentrations of people in the shallows and along the beaches of Long Tail Point can have negative impacts on wildlife use of the area, primarily for nesting waterbirds during the breeding season.

There is cooperative interest between the Department and the Village of Suamico in developing the site of the historic lighthouse on Long Tail Point. The intent would be to create an interpretive water trail, launching from Harbor Lights Road, Bayshore Drive, or Sunset Beach Lane, that would direct paddlers along the lakeshore to points of historical, cultural, or natural interest or significance.

Management on Long Tail Point has focused on controlling invasive species, primarily *Phragmites*, which now dominates the Point. The area was treated recently with aerial application of herbicide as part of GLRI-funded control effort along the entire west shore.

CHAPTER 2 – Section Two:
Individual Property Elements – GBWS WA, Long Tail Unit

This will be followed by mowing and periodic spot treatments to help contain the invasive grass. A bald eagle nest and a heron rookery on the Point are monitored.

Other lands within the Unit are managed for wildlife and fishery benefits. Emergent wetland and shrub-carr along the lakeshore are affected by fluctuating water levels in Green Bay and managed mostly passively. Forested areas will be managed with sustainable forestry practices to maintain a diversity of size and age classes and to control invasives.

Table 2.16. GBWS WA, Long Tail Unit: Current and Desired Future Cover Types.

Cover Type	Current		Predicted 50 year	
	Acres*	% cover	Acreage Objective*	Future % cover
Forested Wetland				
Bottomland Hardwood	68	23	68	23
Non-forested Wetland				
Emergent Vegetation	117	40	117	40
Lowland Shrub	46	16	46	16
Forested Upland				
Aspen	1	<1	1	<1
Oak	7	2	7	2
Upland Hardwood	38	13	38	13
Non-forested Upland				
Grassland	13	5	13	5
Other				
Agriculture	<1	<1	<1	<1
Total	291	100	291	100

*Cover type acreages are estimated from a variety of spatial databases and may differ from the acreages represented in property deed legal descriptions. Acreages also may change depending on water level fluctuations in Green Bay.

Land Use Classification

This entire property is classified as Habitat Management Area (Map M-4).

Resource Management, Development, and Protection

Objectives

- Manage in accordance with the general wildlife, fisheries, and forestry habitat management objectives and prescriptions and the Management Prescriptions by Cover Type described in Section One of this chapter.

Prescriptions

- Follow the applicable general wildlife, fisheries, and forestry prescriptions and Management Prescriptions by Cover Type provided in Section One of this chapter.
- Restore hydrology on the western portion of the Rosnow parcel by reconnecting to the Suamico River.

Public Use Management and Development

The following prescriptions support the general recreation and public use objectives and prescriptions presented in the Universal Elements section at the beginning of this chapter.

Prescriptions

- Maintain two parking areas on the Long Tail Unit and one on the Rosnow parcel.
- Continue the lease agreement with the Village of Suamico to maintain the boat access site and day-use picnic area on Harbor Lights Road.
- Continue working with the Village of Suamico to explore developing the site of the historic lighthouse on Long Tail Point.

Boundary Modifications

The following boundary modifications were approved for the Long Tail Unit (Map M-5):

- **Contraction of the boundary to exclude developments south of Riverside Drive and Longtail Beach Road (248 acres).**
 - Contractions remove the potential for conflict over incompatible land uses.

GREEN BAY WEST SHORE WILDLIFE AREA—PEATS LAKE UNIT

Project Boundary:	1,531 acres
Managed Land:	592 acres
Inside boundary:	510
Outside boundary:	82

Property Description

The main portion of the Peats Lake Unit is located approximately one mile north of the City of Green Bay in Brown County, on either side of US Highway 41. Another parcel is located northeast of this along N. Lakeshore Drive/CTH J (Map N-1). The first acquisition for the Peats Lake Unit was in 1983. The most recent purchase was in 2004. The acquisition focus in this Unit has been to preserve valuable wetlands that are vital to the future management of waterfowl and recreational use along the Green Bay shore.

A 19-acre DOT parcel in the northeast portion of the Peats Lake Unit was transferred to the Department in late 2012 in exchange for several Department parcels along US Highway 41, needed for the reconstruction project on that highway.

Two Scattered Fishery Habitat parcels are located near this Unit, to the northwest outside the project boundary. One is along Lineville Road and the other is along Sunny Lane. Both were acquired for fish spawning habitat, and both support Northern pike spawning during periods of ample water.

Lower, wetter areas on the Peats Lake Unit consist of emergent marsh, sedge meadow, shrub wetlands of willow, dogwood, and alder, and bottomland hardwoods dominated by ash. Upland areas are a mixture of low-density aspen and oaks. The wetland complex around the mouth of Duck Creek (known as Duck Creek Delta) is situated in shallow water in lower Green Bay and is characterized by stands of emergent aquatic macrophytes on extensive mudflats. The invasive common reed grass (*Phragmites*) has formed large monotypic clones and dominates much of the area. Shrub-carr, dominated by meadow willow and red osier dogwood, occurs between this marsh and US Highway 41. General cover types are shown on Map N-2.

Wetland areas provide important stopover habitat for migratory waterfowl, waterbirds, shorebirds, and neotropical landbirds. Estimates of migratory bird use at Duck Creek Delta are high during both spring and fall migrations. Shorebirds utilize mudflats and low water areas of the delta for foraging, while landbirds focus on extensive fruit-producing shrubs. Upland areas host deer, squirrels, cottontail rabbits, and a variety of resident and migratory birds.

Invasive species are a major concern on this Unit. After the destruction of the Cat Island Chain due to sustained high lake levels in the late 1960s-70s, the productive wetlands of Peats Lake and Duck Creek slough were unprotected from storm surges and seiche

events, which destroyed and degraded much of the native wetland vegetation. Much of the shoreline is now infested with *Phragmites* and purple loosestrife. Lowland forest areas are choked with glossy buckthorn.

East and West Deerfield Roads, which serve as frontage roads to US Highway 41, provide the main access to the Peats Lake Unit (Map N-3). There is one Department-owned boat access site with parking, located on Bayshore Drive near the end of Lineville Road. This access is not suitable for large motor boats, and is used primarily by duck hunters, paddlers, and ice anglers. Low water levels can reduce its utility.

The Department maintains five other small gravel parking areas: two on N. Lakeshore Drive, one on Shore Heights Road, one on West Deerfield Avenue, and one on Riverview Drive. At the end of Bayshore Drive there is a very small Department-owned parcel past the terminus of the road. An ADA-compliant duck hunting blind was built here, and is maintained, by the Green Bay Duck Hunters Association. Another was built and is maintained by the same group at the end of Cottage Grove Avenue. Peats Lake infrastructure is shown on Map N-3.

The main recreational uses at Peats Lake are hunting, fishing, and trapping. Hunting is especially notable for deer, turkey, waterfowl, and small game. Large numbers of waterfowl hunters pursue puddle ducks at Peats Lake. Fishing for perch and pike was exceptional in Duck Creek during high-water years. Muskrat trapping is notable in the sloughs of Duck Creek.

Peats Lake is managed to support wetland-dependent wildlife and fish. Much of the management focuses on control of invasive species, notably *Phragmites*, purple loosestrife, and glossy buckthorn. The proximity of this Unit to major highways (US 41 and Interstate 43) creates some management challenges, particularly regarding the ability to conduct prescribed burns. A warm-season grass planting on the parcel west of West Deerfield Avenue has suffered from woody encroachment due to lack of prescribed fire, and also from root-rot due to high water levels.

Aspen and bottomland hardwood stands are maintained through sustainable forestry practices and managed to control invasives, especially glossy buckthorn. Stands of *Phragmites* have been treated with aerial application of herbicide as part of GLRI-funded control effort along the entire west shore.

The U.S. Army Corps of Engineers, Brown County Port and Solid Waste Department, and other partners are currently collaborating on a project to rebuild the Cat Island Chain, a series of small barrier islands and shoals extending into Green Bay across from the Duck Creek Delta. This key structural and habitat feature once protected over 1,400 acres of coastal wetlands along the southern Green Bay shore from high-energy waves and storm events. These wetlands along with the islands and shoreline comprise a very productive system that supported a diversity of fish, amphibians, furbearers, waterfowl, waterbirds, colonial nesting birds, and other migratory birds. Sustained high lake levels from the late 1960s into the mid-1970s and ongoing wave erosion and storm events resulted in the disappearance of the Cat Island archipelago. The ongoing project to

reestablish the island chain will involve a 2.5-mile wave barrier with 272 acres of original island footprint. Clean dredged materials from the lower Fox River and Green Bay will be used to rebuild the islands.

This project could have management implications for the Department in the future, as the hoped-for reestablishment of emergent wetlands behind the wave barrier could occur along the shoreline adjacent to the Peats Lake Unit.

Table 2.17. GBWS WA, Peats Lake Unit: Current and Desired Future Cover Types.

Cover Type	Current		Predicted 50 year	
	Acres*	% cover	Acreage Objective*	Future % cover
Forested Wetland				
Bottomland Hardwood	121	21	121	21
Non-forested Wetland				
Emergent Vegetation	65	11	65	11
Lowland Shrub	217	38	217	38
Water	83	14	83	14
Forested Upland				
Aspen	73	13	73	13
Oak	<1	<1	<1	<1
Non-forested Upland				
Grassland	11	2	11	2
Other				
Developed	1	<1	1	<1
Total	571	100	571	100

*Cover type acreages are estimated from a variety of spatial databases and may differ from the acreages represented in property deed legal descriptions. Acreages also may change depending on water level fluctuations in Green Bay.

Land Use Classification

This entire property is classified as Habitat Management Area (Map N-4).

Resource Management, Development, and Protection

Objectives

- Manage in accordance with the general wildlife, fisheries, and forestry habitat management objectives and prescriptions and the Management Prescriptions by Cover Type described in Section One of this chapter.

Prescriptions

- Follow the applicable general wildlife, fisheries, and forestry prescriptions and Management Prescriptions by Cover Type provided in Section One of this chapter.

Public Use Management and Development

The following prescriptions support the general recreation and public use objectives and prescriptions presented in the Universal Elements section at the beginning of this chapter.

Prescriptions

- Maintain six parking areas and one boat access site on the property.
- Continue partnership with the Green Bay Duck Hunters Association to maintain the accessible waterfowl hunting blinds at the end of Bayshore Drive and Cottage Grove Avenue.

Boundary Modifications

The following boundary modification was approved for the Peats Lake Unit (Map N-5):

- **Expansion of the boundary in the northern portion of the Unit to the west to encompass habitat between E. Deerfield Avenue and N. Lakeview Drive (190 acres).**
 - Will provide additional public recreation land in close proximity to a heavily populated area, buffer existing wetlands, and improve access if acquired.

CHAPTER THREE: SUPPORTING INFORMATION

This chapter presents an updated version of the Findings and Conclusions section from the *Green Bay Planning Group Regional and Property Analysis* (WDNR 2013), a document that lays out a foundation for the master plan by providing background information and describing how the properties fit into a larger regional context. Individuals interested in learning more about the GBPG properties and their ecological, socio-economic, and recreational contexts are encouraged to consult this document, as well as the *Rapid Ecological Assessment for the Green Bay West Shores Wildlife Area* (WDNR 2010).

INTRODUCTION

This chapter contains a revised version of the Findings and Conclusions from the *Green Bay Planning Group Regional and Property Analysis* (WDNR 2013). The Findings and Conclusions section is a summary and synthesis of all the regional and property-specific ecological, socio-economic, and recreational information contained in the RPA. The first two sub-sections summarize existing conditions and trends on the properties and in the region, including the ecological opportunities, limitations, and significance. The final sub-section presents the main findings and conclusions, highlighting major themes.

THE GBPG PROPERTIES

The GBPG includes 12 named properties and other state-owned lands located along the west shore of Green Bay in Brown, Marinette, and Oconto counties (Map A). The properties include one WA, four SNAs, a gift lands parcel, and several scattered fishery and wildlife habitat parcels. The Green Bay West Shore WA (8,845 acres) contains 11 separate, non-contiguous units scattered along the west shore, including three embedded SNAs (Map B). A stand-alone SNA, Bloch Oxbow (597.5 acres), comprises the twelfth named properties. There also is a 757-acre gift lands parcel in Marinette County, the Badger Gift Lands, several Scattered Fishery Habitat and Statewide Wildlife Habitat parcels, and some transferred DOT wetland mitigation acreage. In total, the GBPG encompasses 10,688 acres of state protected and managed land.

Open and forested wetlands are dominant natural features on the GBPG properties. Some of these habitats exist in tracts that are extensive, of high quality, or that are regionally rare or significant. Open wetlands, including emergent marshes, sedge meadows, and shrub swamps, are the most prevalent, comprising approximately 51% of land cover in the plan area. Forested wetlands, composed mostly of bottomland and swamp hardwoods, make up approximately 21.5%. Aspen, oak and other upland hardwoods, grasslands, upland brush, and agriculture make up the remainder.

The character of the plan area changes somewhat from south to north. The southern properties of the GBPG, in Brown and southern Oconto counties, are in close proximity to the heavily developed and densely populated Green Bay metropolitan area and receive more pressure for recreational use. The northern portions of the plan area are more sparsely populated, and the properties there tend to have a wilder character. While the populations of the three plan area counties are expected to grow, Brown and Oconto

counties are projected to increase at a significantly faster rate than Marinette County, with much of the growth expected in suburban and exurban areas associated with the City of Green Bay. This is likely to affect the GBPG properties, as regional population size and growth can be significant drivers of recreational demand on public lands. Brown County in particular has a very low proportion (0.7%) of public conservation land. Oconto and Marinette counties have much larger proportions of public lands (29.7% and 30.3%, respectively), but these are concentrated in the central and northern portions of both counties, at some distance from the major population centers and from the GBPG properties.

Economically, the plan area counties currently are in transition. There is movement away from manufacturing, construction, and extractive industries and towards an economy based more on services, including recreation and tourism.

ECOLOGICAL SIGNIFICANCE AND CAPABILITY

REGIONAL CONTEXT

Lake Michigan and its distinctive shoreline features are defining characteristics of both Ecological Landscapes—Northern Lake Michigan Coastal and Central Lake Michigan Coastal—that comprise the plan area. Extensive coastal marshes and other wetland communities, a river delta, sandspits, and embayments are regionally significant features for which the GBPG properties offer major management opportunity.

The coastal wetlands on the GBPG properties represent approximately 50% of all wetlands remaining on the shoreline of Lake Michigan. The entire plan area is included in the Green Bay West Shores Conservation Opportunity Area (COA), which is considered to be of global significance. The GBPG properties offer significant opportunity to manage for numerous rare species and natural communities, some of which are regionally rare. These include Emergent Marsh, Northern Sedge Meadow, Southern Sedge Meadow, Shrub-Carr, Floodplain Forest, and Great Lakes Beach. Floodplain Forest along the Peshtigo River is at the extreme northeastern edge of its range in Wisconsin. Great Lakes Barrens, a globally rare community known from very few sites in Wisconsin, is present on one of the GBPG properties. Forty-four rare animal species and 18 rare plant species have been documented on the plan area properties.

PROPERTY OPPORTUNITIES

Extensive Coastal Wetlands

Though greatly diminished and degraded from their historical extent, the coastal wetlands along the west shore of Green Bay continue to be a productive and critical resource. The GBPG properties encompass a significant amount of this wetland acreage. These wetlands, some of which are large and of high quality, provide important breeding and migratory stopover sites for waterbirds, spawning areas for fish, and habitat for many other species of wetland-dependent wildlife. They also support populations of rare plants

and animals, including invertebrates. The GBPG properties offer management opportunity for a variety of natural community types, including Great Lakes Beach, Riverine Mud Flat, Emergent Marsh, Southern Sedge Meadow, Shrub Carr, Southern Hardwood Swamp, Floodplain Forest, and Warmwater River.

Migratory Bird Stopover Habitat

The Great Lakes shoreline plays a crucial role for millions of migrating birds. The GBPG was identified as a high-quality Migratory Bird Stopover Site in a strategy to identify and protect migratory stopover habitats in the western Great Lakes (Grveles et al. 2011). The GBPG provides stopover habitat for an estimated up to 10,000 waterfowl, shorebirds, and other waterbirds; up to 1,000 raptors; and 10,000+ neo-tropical landbirds during the spring and fall migrations. Many factors contribute to the GBPG's ability to provide all of the resources (e.g., shelter, protection from predators, food, and water) needed by migrating birds, including its north-south orientation and variety of high-quality native habitats. The location of the GBPG in a landscape dominated by agriculture and urban settings makes the remaining natural habitats, especially those with high structural diversity near water, very important foraging and perching opportunities.

Fish Spawning Habitat

The coastal wetlands along the west shore of Green Bay have long been recognized for their importance to spawning fish (Brazner and Beals 1997; WDNR 2006a). Green Bay supports significant populations of smallmouth bass, walleye, yellow perch, Northern pike, and many nongame fish, which require flowing water and shallow wetlands with beds of emergent and submergent vegetation for spawning and fry-rearing habitat. The small perennial and interconnected streams and wetlands of the GBPG properties provide these critical nursery areas for many species of native fish. Although lake sturgeon spawn upriver from the plan area, the lower Peshtigo and Oconto rivers provide essential habitat for juveniles that ultimately increases their survival rate in Green Bay and accelerates lake sturgeon restoration.

LIMITATIONS AND CHALLENGES

Development pressure, altered hydrology, impaired water quality, and invasive species all represent major challenges to maintaining the ecological significance of the GBPG properties.

Many wetlands along the west shore of Green Bay already have been destroyed through conversion to agricultural use and industrial, residential, and recreational developments. Such conversions often are accompanied by hydrological modifications (e.g., ditching, diking, etc.) and infrastructure (roads, culverts, power lines, etc.) that degrade existing wetlands by disrupting hydrology, serving as a source of pollutants, facilitating the spread of invasive species, and creating physical barriers to movement of some species. Development pressure is expected to increase in the plan area with projected population

growth, particularly in Brown and Oconto counties. This may affect the viability of remaining wetland areas.

Water quality has been compromised, particularly in lower Green Bay, by industrial and municipal contaminants and wastewater discharges, and also by agricultural runoff. Longer-term water level changes in Green Bay have dramatically affected the extent and quality of wetland vegetation in coastal marshes. Historic low- and high-water fluctuations over the past three decades greatly contributed to the explosion in populations of several invasive wetland plants, notably *Phragmites* and non-native cattails, which has degraded habitat quality and reduced populations of native wetland wildlife, particularly birds.

Many other invasive plant and animal species pose significant management challenges. These include purple loosestrife, reed canary grass, glossy buckthorn, Eurasian water-milfoil, rusty crayfish and common carp. Invasive plants and forest pests, along with fluctuating water levels, threaten the health, viability, and regeneration of forests on the properties. Reed canary grass and glossy buckthorn adversely affect tree generation, as does herbivory by white-tailed deer. Forest pests of concern include the emerald ash borer, which is expected to have a significant impact on the ash resource, as well as gypsy moth and oak wilt which already have impacted much of the oak.

Encroaching development also may limit or preclude the use of certain management practices. Prescribed fire is an important management tool for the maintenance of open wetland and upland grassland habitats. The ability of managers to use fire as a management tool already has been, and will continue to be, challenged by the proximity of residential developments and major highways, particularly in the southern portion of the plan area.

RECREATIONAL SIGNIFICANCE AND CAPABILITY

REGIONAL CONTEXT

Recreationally, the region of northeast Wisconsin where the GBPG properties are located is notable for its association with the Lake Michigan shoreline, rivers such as the Menominee, Oconto, Pike, Popple, and Peshtigo, and other water resources that draw many residents and visitors for water-based activities such as fishing and boating. It is also notable for the urban center of Green Bay, which impacts the surrounding area with its suburban growth and cultural resources. This is reflected in the variety of recreational activities with high participation rates in this region, which include activities characteristic of both developed (e.g., golf; skateboarding) and undeveloped (cross-country skiing; off-road 4-wheel driving) settings, and many water-based pursuits (e.g., fishing in the Great Lakes; scuba diving; wind surfing).

Brown County, the southernmost plan area county, reflects the urban influence of Green Bay, with an emphasis on serving urban/suburban recreational pursuits in more developed settings and very little public recreation land providing more rural or nature-

based activities such as hunting. In contrast, Oconto and Marinette counties contain large tracts of public lands and offer much greater opportunity for activities such as hunting, trapping, cross-country skiing, horseback riding, ATV riding, and snowmobiling.

Projected population growth, particularly in Brown and Oconto counties, likely will lead to increased demand for outdoor recreational opportunities, and increased usage of public lands. A generally aging population may increase demand for physically less demanding pursuits such as wildlife viewing and accessible infrastructure.

PROPERTY USES, CAPABILITIES, AND LIMITATIONS

The GBPG properties' location in close proximity to the City of Marinette, City of Peshtigo, City of Oconto, and, most notably, the City of Green Bay is significant from a recreational perspective. The plan area properties provide the closest public land to these population centers. This is true even for Oconto and Marinette counties, whose extensive tracts of county and federal lands are concentrated in the central and northern portions of the counties, at some distance from these populated areas. The GBPG properties, therefore, are and will continue to be important providers of public outdoor recreational opportunities close to where people live.

The main recreational uses of the GBPG properties are the traditional outdoor pursuits of hunting, fishing, and trapping. The properties receive fairly heavy hunting use, especially for deer hunting but also for waterfowl and upland game. They offer access to the Green Bay shoreline for waterfowl hunters, ice anglers, and boaters. Trappers pursue muskrat, mink, and canids in the properties' coastal marshes. The properties also are used to a lesser extent for wildlife viewing, hiking, paddling, and cross-country skiing and snowshoeing. These nature-based pursuits are very compatible with the properties' primary purpose, dominant wetland vegetation communities, and mostly rural character, as well as with the physical limitations imposed by topography and soils.

Some potential exists on the GBPG properties to enhance existing recreational opportunities or develop additional ones, particularly in cooperation with external partners. Examples may include interpretive features, accessible viewing platforms, hunting blinds, and trails, shore fishing opportunities, improvements to an existing shooting range, walking trails on dike tops, and water trails. Kayaking and stand-up paddling/paddleboarding both are activities projected to show increasing demand in Wisconsin over the next five years, and the GBPG properties may offer opportunity to meet some of this demand. The Department is initiating a State Water Trails program, which will assist state and local government and conservation partners in the development and operation of a variety of water trail facilities and dissemination of water trails information. The GBPG properties will be evaluated for potential to be included in this program.

The plan area properties are not suited, however, to meeting most of the activities projected in the 2011-2016 SCORP (WDNR 2012) to have increasing demand in Wisconsin (e.g., adventure racing; developed/RV camping; visit a dog park; soccer

outdoors; climbing), nor to addressing the regional nature-based supply shortages (campsites, parks, and land-based trails) identified in the 2005-2010 SCORP (WDNR 2006b). Recreational activities in developed settings, camping, and the majority of land-based trails (biking; horseback riding; ATV; snowmobile) generally are not permitted on WAs and SNAs as they are incompatible with the primary purposes of those properties. Most of the plan area soils are wet, poorly drained, permanently or seasonally inundated, or subject to blowing and consolidation when exposed. In addition, the water table is close to the surface in many areas, particularly during periods of heavy precipitation. Soil ratings for trail suitability indicate that the great majority of acreage on the GBPG properties has very limited suitability for trail development.

Other state, municipal, county, and federal lands in the plan area counties, especially the Marinette and Oconto County Forests and the Chequamegon-Nicolet National Forest, offer diverse camping and trail opportunities. The Brown County parks system is the chief purveyor of urban/suburban recreational activities in developed settings, such as playgrounds, ball fields, enclosed shelters, and dog parks.

SUMMARY

The GBPG properties contain a highly ecologically significant assemblage of natural communities, including diverse emergent wetlands, shrub swamps, and lowland forests. They contain some 50% of all coastal wetlands remaining on the shoreline of Lake Michigan, provide valuable fish spawning and migratory bird stopover habitat, and host populations of rare animals and plants. The entire plan area is included in the Green Bay West Shores Conservation Opportunity Area, considered to be of Global Significance due to its association with the shoreline of the Great Lakes.

Recreationally, the properties are important providers of public recreation land in close proximity to regional population centers. Deer, waterfowl, and upland game hunting, wetland furbearer trapping, and fishing are popular pursuits. The properties also are used for wildlife viewing, especially for waterfowl, cranes, herons, rails, and other wetland birds. Other activities include dog training, target shooting, hiking, paddling, and cross-country skiing. These activities are compatible with the properties' physical characteristics and mostly rural character. There is some potential to accommodate additional lightly-developed opportunities such as viewing platforms, water trails, and walking trails on dike tops. However, wet soils severely limit development of most trails and other recreational infrastructure. Low-impact, outdoor, nature-based activities are and will continue to be these properties' best and most appropriate recreational use.

With projected increases in population growth and development pressure, particularly in the southern part of the plan area, recreational demand on these properties will increase. Thoughtful planning and management will be needed to protect and maintain ecological values while providing a high-quality recreational experience for an increasing number of users.

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