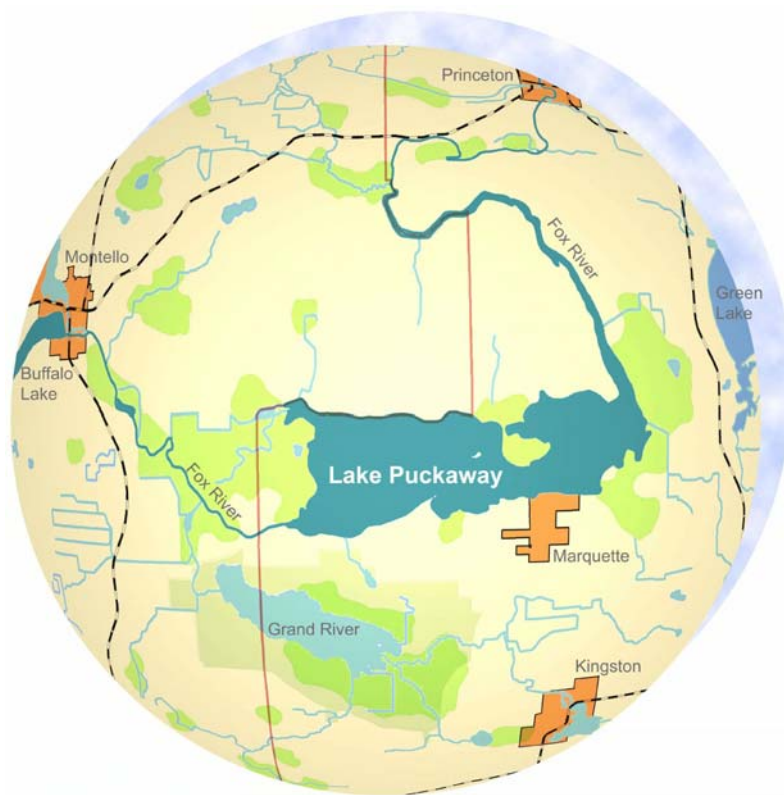


Final Version, June 5, 2004

Comprehensive Management Plan for Lake Puckaway

Approved at the LPPRD Annual Meeting on June 5, 2004



*Lake Puckaway Protection &
Rehabilitation District*

W591 Fox Court, Montello, Wisconsin 53949
www.lakepuckaway.com

Acknowledgements

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In particular, we'd like to acknowledge the many people who worked on the Issue Teams during the first grant period and the many more who attended the Open House to comment on the draft plan during the second grant period. We were pleased to note that overall feedback on the draft plan at the April 3, 2004 Open House was favorable. A report on the results of the public feedback is available by request from the Chair. Between 75% and 86% of attendees either agreed or strongly agreed with 19 of the 21 goals in the draft plan. The remaining 2 goals, both related to wildlife management, had only 19%-52% agreement or strong agreement. At the same time that there was agreement, there were many excellent comments made and concerns raised that contributed to revisions. This final version of the plan was approved by the membership at the annual lake district meeting on June 5, 2004.

Lake Puckaway Protection and Rehabilitation District Commissioners 2003-2004

Paul Gettelman	930 Hickory Lane Stoddard, WI 54650	Term: 2003-2006
Randy Schmidt	N9904 Hwy A Fox Lake, WI 53933	Term: 2003-2006
Rudy Winther (Chair)	Box 6 Marquette, WI 53947	Term: 2002-2005
Dave Ferge	W6268 Lakeview Dr. Markesan, WI 53946	Term: 2001-2004
Donn Dahlke	W873 North Shore Dr. Montello, WI 53949	Term: 2001-2004
Bernie Kasierski	W4280 Reetz Rd. Princeton, WI 54968	Term: Green Lake Co. LCD Appointee
Clayton Masters	W591 Fox Court Montello, WI 53949	Term: Standing Member, Mecan Twn, Marquette Co. Appointee

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Dave Ferge	W6268 Lakeview Dr. Markesan, WI 53946	Term: 2004-2007
Phil Malsack (Chair)	W781 Fox Court Montello WI 53949	Term: 2004-2007
Clayton Masters	W591 Fox Court Montello, WI 53949	Term: Standing Member, Mecan Twn, Marquette Co.
Howard Sell	N3415 Hwy 73 Markesan WI 53946	Term: Green Lake Co. LCD Appointee

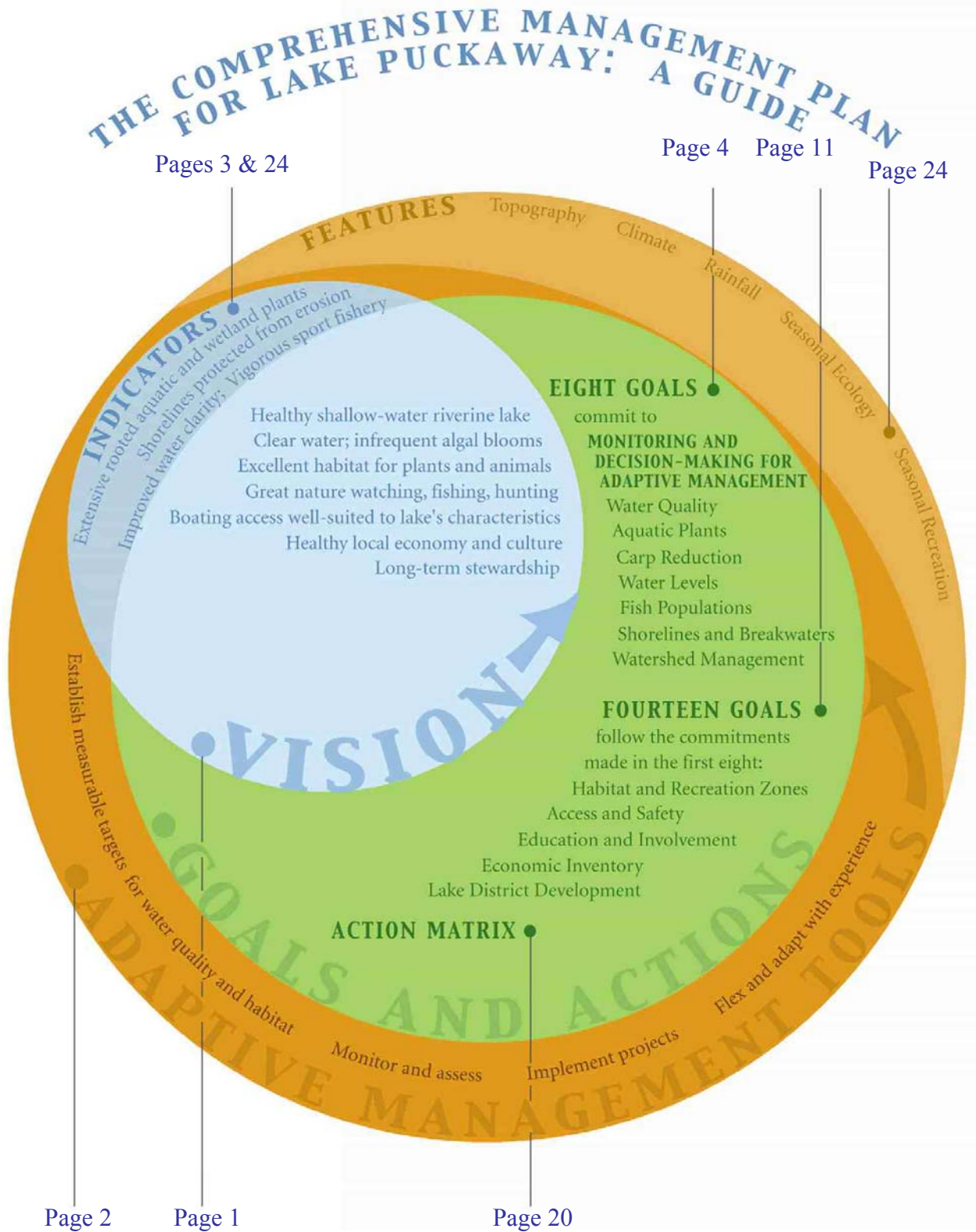


Table of Contents

Acknowledgements	<i>i</i>
The Comprehensive Management Plan: A Guide	<i>ii</i>
Mission and Vision	1
Commitment to Adaptive Management & Flexibility for the Future	2
Priority Goals and Actions for Adaptive Management	4
Goal 1. Monitoring and decision-making for adaptive management.....	5
Goal 2. Water quality.....	6
Goal 3. Aquatic plants.....	6
Goal 4. Carp reduction.....	6
Goal 5. Water levels.....	7
Goal 6. Fish populations.....	8
Goal 7. Shorelines and breakwaters.....	8
Goal 8. Watershed management.....	9
Additional Goals and Actions	11
Goal 9. Habitat and recreation zones.....	11
Goal 10. Recreational access and safety.....	12
Goals 11-13. Fish and wildlife population management.....	13
Goals 14-18. Information, education, and public involvement.....	14
Goal 19. Economic inventory.....	17
Goals 20-22. LPPRD organizational development.....	18
Implementation of this Plan	20
Action Matrix (for annual work planning and budgeting).....	20
Appendices	21
I. Lake Planning Grant Tasks and Timeline.....	21
II. Criteria for Writing Goals and Actions for the Plan.....	22
III. Explanation of the Alternatives Considered.....	23
IV. Team Charter for Adaptive Management: Some Guidelines.....	28
V. Lake Puckaway: Past, Present, and Future Fact Sheet	*
VI. Fish Fact Sheet	
VII. Lake District Fact Sheet	
VIII. The Princeton Dam Fact Sheet	
IX. Water Clarity: The Battle of the Plants Fact Sheet	
X. Lake Puckaway User's Survey: 2001 Findings Report	

*** If Appendices V. – X. are not attached, they are available on www.lakepuckaway.com or by request from the LPPRD Chair.**

Mission Statement – Our Purpose

The Mission of the Lake Puckaway Protection and Rehabilitation District is to:

- Protect and enhance the quality of Lake Puckaway's fish and wildlife values;
- Promote ecologically balanced water levels, water clarity, and shoreline habitat;
- Preserve the recreational and economic value of the resource for the enjoyment of its residents and visitors, now and into the future;
- Promote the history and proper management of the lake;
- Promote the education, research, and information sharing between organizations, individuals, government bodies and the general public for the protection, preservation and improvement of Lake Puckaway.

Vision Statement – Our Desired Future

A Vision Statement communicates how we would like things to be in the future. The Vision that will guide the implementation of this Comprehensive Plan is:

*Lake Puckaway is a healthy shallow-water riverine lake with clear water;
infrequent algal blooms; excellent habitat for plants and animals;
great nature watching, fishing, and hunting;
and boating access well suited to the lake's characteristics.
Community pride in the lake supports a healthy local economy and culture
and a commitment to long term resource stewardship.*

More specific aspects of this Vision and *the way we would like things to be in the future are:*

Place in the Community

- Lake Puckaway is recognized as one of the region's highest quality shallow lakes and is a source of pride to the residents and communities that surround it.
- Community pride in the lake supports property values and attracts residents and businesses and supports a healthy local economy.
- Those who live, work, or visit in the Lake Puckaway area understand the lake's ecology and enjoy the recreational uses that it serves.
- New growth and development occurs within a planned approach that protects the lake and sustains our urban and rural communities.

Water Quality

- Water clarity is excellent within the bounds of this nutrient-rich, shallow lake system.
- Algal blooms seldom occur.
- Turbidity due to wave action and shoreline erosion is reduced.

Fishing, Hunting, and Nature Observation

- Vigorous populations of sport fish such as walleye, northern pike, bass, and panfish provide great fishing opportunities.
- Successful migratory bird nesting and extensive late summer and fall habitat for adult and migrating birds of all kinds ensure excellent bird watching and waterfowl hunting.
- A variety of in-lake, wetland, shoreland, and adjacent wetland habitats support an impressive array of plants and animals that are important to a healthy environment and are enjoyed by people.

Education and Awareness

- Citizens of all ages and walks of life understand the lake's ecological and cultural history and the rationale for how it is managed.
- Citizens understand that fluctuating water levels are a component of the lake's natural condition as a riverine system and support a flexible water level management strategy based on monitoring of the lake's health.

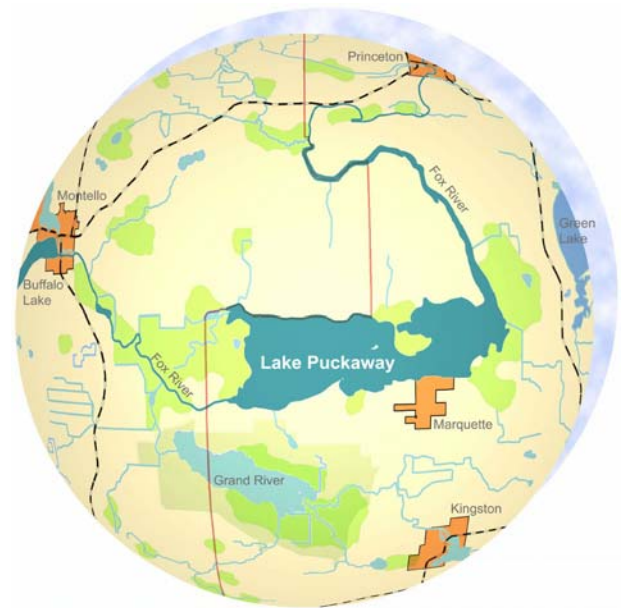
Lake District

- The LPPRD Board provides leadership to ensure effective coordination and communication among all individuals, groups, and agencies with an interest in the lake and its watershed.
- The LPPRD board, members, and partners advocate and assist in efforts to reduce nonpoint source pollution from upstream sources and the watershed.

Commitment to Adaptive Management and Flexibility for the Future

Puckaway is a shallow riverine lake within the historic upper Fox River corridor and a prime example of Wisconsin's numerous shallow water lakes. The lake is a highly valued community and regional natural resource with many ecological, recreational, economic, and scenic values.

The Comprehensive Management Plan for Lake Puckaway has been a long time in coming, in large part due to the differences between the protection or restoration of the lake's health and the desired water levels for lake use. This plan represents a carefully crafted compromise between the range of perspectives that the Commissioners, lake district members and users, agency representatives, and others brought to the table (See Appendix III for an explanation of the alternatives considered for the vision statement and approaches to water level management). It establishes goals and actions to implement an *Adaptive Management approach that incorporates the results of a new monitoring program into management action in order to adapt and learn over time.*



Lake Puckaway within the upper Fox River Corridor, Wisconsin

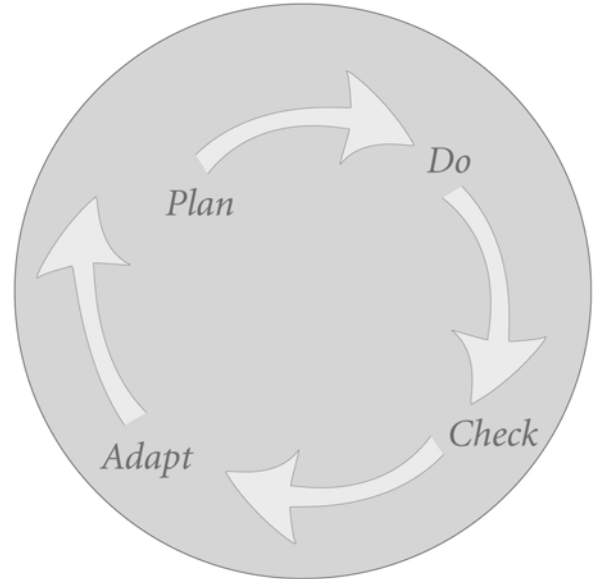
The Adaptive Management approach represents a long-term lake district commitment to a monitoring and decision-making process for the routine evaluation of Lake Puckaway's health. An Adaptive Management Committee (see Goal 1) will oversee a science-based monitoring program, evaluate the condition of the lake, and make management recommendations to the LPPRD membership each year. The monitoring program will help set a new baseline for the lake's condition, and it will also allow comparisons of current to past conditions and of the lake to conditions in similar shallow water lakes elsewhere.

The management tools that will be considered for Lake Puckaway over the years will include the full range of methods and options that generally apply to shallow lake systems. These include monitoring (see below), integrated carp management, aquatic plant management, water level management, shoreline and breakwater development and maintenance, and watershed management.

No water level management reductions or drawdowns are scheduled at this time. The Adaptive Management approach includes the possibility of planned water level adjusts that would lower the lake level for a growing season to stimulate important aquatic plant and fish habitat and make improvements in water clarity.

What is Adaptive Management?

It's a way of planning, doing, monitoring, and improving over time.



Monitoring the Health of Lake Puckaway

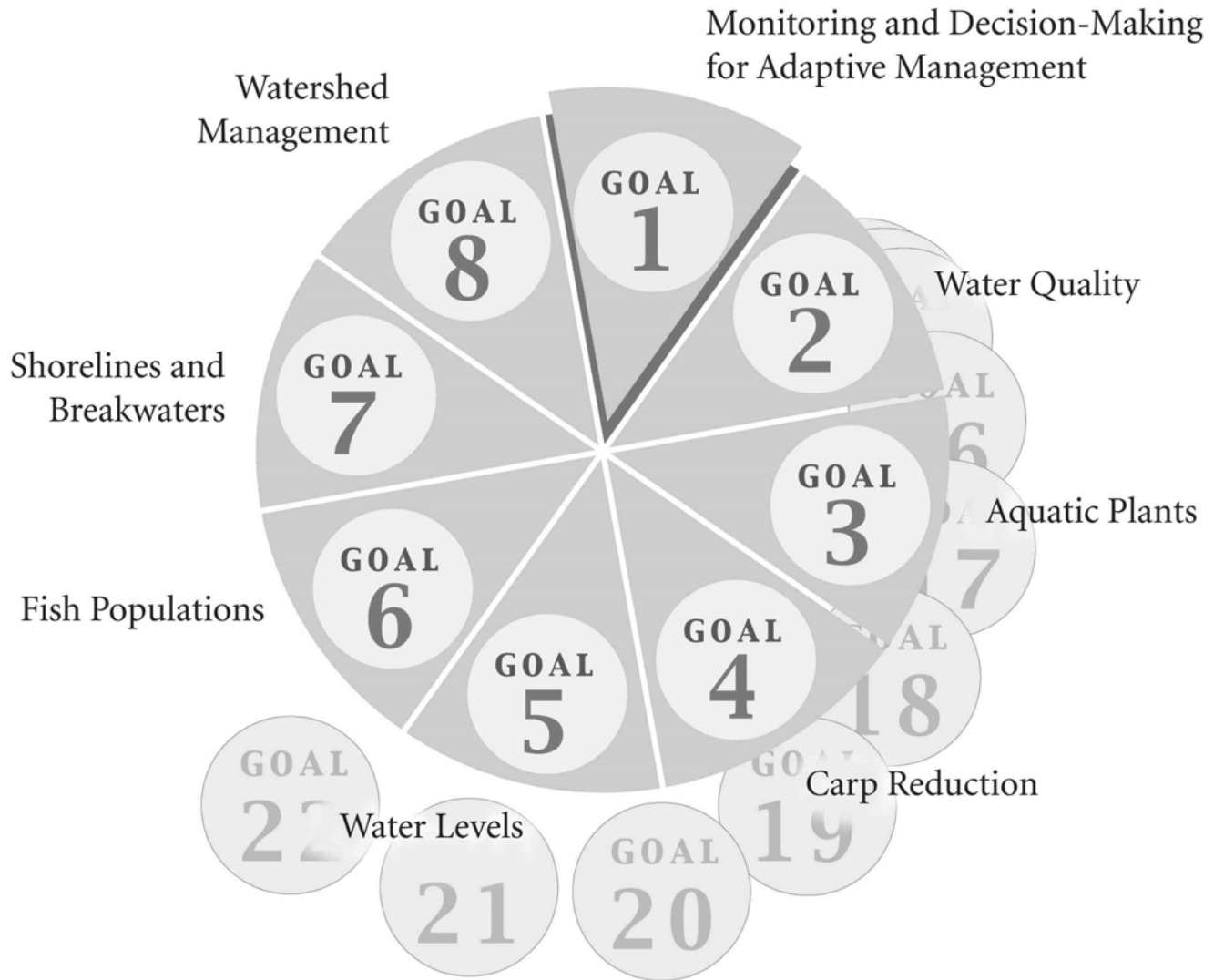
The Adaptive Management Committee will oversee a program to measure and report on the following indicators and use the results to make recommendations.

- Water quality – e.g., chlorophyll, total phosphorus, clarity (Secchi)
- Quantity and quality of aquatic habitat – e.g., total area covered and relative abundance of species
- Depth contours – map the lake bottom to model how different water levels affect depth and habitat
- Fish population surveys
- All existing qualitative and quantitative information from the past, in addition to the results of new monitoring

Priority Goals and Actions for Adaptive Management

Eight Key Goals for Lake Health

While all 22 goals in the plan are important, attention to these first 8 *in combination* will have the most effect on long-term lake health.





Monitoring and Decision-Making

Establish an Adaptive Management Committee to a) measure and report on the health of the lake and recommend actions for its protection and restoration and b) help foster an effective partnership between LPPRD, WDNR, and others.

Timeline	Action:
Year 1	Establish the Adaptive Management Committee [1] and direct it to: <ol style="list-style-type: none"> a. Adopt a Committee Charter [2] for Board approval that specifies how the Committee operates. The Charter should require that members commit to the Mission, Vision, and Goals of the Comprehensive Plan. b. Design and provide oversight for a science-based monitoring program for water quality, habitat quality and quantity, fisheries, water level, shoreline and breakwaters, and watershed management (See Goals 2 - 8 below). c. Compile and summarize all existing qualitative and quantitative baseline inventory information for water quality, habitat quantity and quality, depth contours, fish populations, and water levels. d. Recommend specific targets for lake health. Sample targets might be a specific range of water clarity (Secchi reading) measurements through the year or re-established emergent plant coverage in selected locations.
Every year	The Adaptive Management Committee will: <ol style="list-style-type: none"> a. Summarize and evaluate data from past and present monitoring and prepare annual status reports with management recommendations. b. Advise the LPPRD on the contracts awarded for monitoring activities. c. Advise the LPPRD on grants and funding the monitoring program (See Goal 21). d. Review, evaluate, and improve the Committee's effectiveness.

[1] The Committee will be comprised of two LPPRD Commissioners, two DNR staff, and three lay persons, with staggered terms of appointment. The Committee may call upon other experts as needed for assistance. The LPPRD bylaws state committee members serve at the pleasure of the Chair and can be appointed or replaced at the time of the Annual Meeting each year. The Committee will make recommendations to the Board of Commissioners, who will present them to the membership at the LPPRD Annual Meeting for approval.

[2] See Appendix IV. Team Charter for Adaptive Management: Some Guidelines

GOAL
2

Water Quality

Monitor, maintain, and improve water quality.

Timeline	Action:
Year 1 and ongoing	<ul style="list-style-type: none"> a. Analyze the current year’s water quality measures, historical data and trends to support Adaptive Management (Goal 1). b. Implement the Expanded Self-Help Monitoring, to include measurement of total phosphorus, chlorophyll, and water clarity/secchi disk. c. Contract with the U.S.G.S. for water quality monitoring of temperature, dissolved oxygen, total phosphorus, water clarity/secchi disk, chlorophyll, pH, total nitrogen to estimate the nitrogen: phosphorus ratio. d. Set “targets” for desired water quality measures.

GOAL
3

Aquatic plants

Monitor, maintain, and improve healthy beds of native aquatic plants and coordinate the management of invasive non-native plants.

Timeline	Action:
Year 1 and ongoing	<ul style="list-style-type: none"> a. Analyze the current year’s plant monitoring data, historical data and trends to support Adaptive Management (Goal 1). b. Develop and implement an aquatic plant monitoring survey. Schedule both aerial and transect surveys. Monitor and map the locations and abundance of both native and invasive exotic plants. c. Evaluate the aquatic plant response to the current management strategy. d. Develop and implement aquatic plant restoration and management actions.
Year 2 and ongoing	Identify potential plant restoration areas and set lakewide targets for emergent, submergent, and floating leaf habitats.

GOAL
4

Carp Reduction

Integrate carp management as one component of a balanced strategy to improve water quality.

Timeline	Action:
Year 1	Continue to use LPPRD funds for annual carp removal (suggested target of 300,000-500,000 lbs/year). Operate the electric barrier at the Princeton Dam during the (<i>specify months or guidelines</i>).

Year 2 and ongoing	<ul style="list-style-type: none"> a. Monitor the number of carp present by age group (year class) and select removal methods that effectively reduce the population. b. Set targets for carp removal each year based on the results of current data on population size and relative year class strength.
Year 3	<p>Include an experimental or pilot approach to carp removal as one of several integrated lake improvement strategies.</p> <ul style="list-style-type: none"> ▪ Consider doing a year class assessment at the time of carp removal, using a sample gear with smaller size mesh along side the commercial operation. ▪ Consider moving carp removal activities to the spring and provide the incentives needed to accomplish this. (Make sure that costly removal efforts are not just growing a harvest for the commercial catch and with little ecological effect).
Every year and ongoing	Advocate for statewide research to determine proactive strategies for long term carp management.



Water levels

Establish clear and consistent agreements between LPPRD and WDNR to operate and improve the Princeton Dam.

Timeline	Action:
Year 1	<ul style="list-style-type: none"> a. While the monitoring and decision-making program to document lake health is being established, operate the Princeton Dam under a 3-year interim agreement between the LPPRD and WDNR, basing water level management in part on the recommendations of the Adaptive Management Committee (Goal 1). b. WDNR re-initiates contact with the U.S. Army Corps of Engineers to inform them of progress being made towards ecological management and of the steps and timeline set forth in this Comprehensive Plan.
Years 2-3 and ongoing as needed	<ul style="list-style-type: none"> a. As the Adaptive Management Committee is successfully implemented and effective ecological management is underway, WDNR will actively re-engage the U.S. Army Corps of Engineers to determine what repairs or modifications are needed to manage water levels at the Princeton Dam. b. At the same time, WDNR and LPPRD will advocate to address issues of public safety and fish passage at the dam.
Years 3-5	<ul style="list-style-type: none"> a. Design and implement the repairs or modifications to the Princeton Dam identified above. b. Negotiate a long-term agreement with the DNR for operation of the Princeton Dam.

GOAL
6

Fish Populations

Monitor fish populations to help measure the success of habitat protection and restoration and to determine the success of natural reproduction.

(Note: This goal applies to fish population surveys that help measure the health of the lake for the Adaptive Management Committee. All other fish and wildlife management actions are covered in Goals 11-13.)

Timeline	Action:
Year 1	<ul style="list-style-type: none"> a. Review and summarize results of past fisheries surveys on the lake for use in monitoring and assessment. b. Write letters of support as needed for a Comprehensive Fish Population Survey to be included in WDNR's 2005-07 biennial budget and work plan.
Year 2	Conduct a Comprehensive Fish Population Survey (including carp). See Goal 4 Compile a survey report, including a long-term summary to reveal trends, and make management recommendations.
Year 3 and ongoing	<ul style="list-style-type: none"> a. Conduct annual population surveys on selected species as needed. b. Conduct Comprehensive Fish Population Surveys at intervals of 4 to 6 years. c. Compile summary reports and make management recommendations. d. Implement fisheries restoration projects, consistent with the aquatic plant habitat protection and restoration results, to enhance the number and size of areas for spawning and year class recruitment (Goal 11).

GOAL
7

Shorelines and Breakwaters

Develop and implement projects to protect in-lake areas from wind and wave erosion, prevent erosion on public and private shorelines, and provide information and incentives for shorelines to be protected all around the lake.

Timeline	Action:
Year 1	<ul style="list-style-type: none"> a. Outline a 10-year program to develop demonstration projects and incentives for private landowners to protect and restore upland, wetland, and aquatic shoreline habitats. Determine what regulatory permits are needed for each approach. b. Implement one shoreline/buffer demonstration project. c. Gather information on the alternatives and feasibility of erosion protection for shallow bays and the Fox River shoreline for future reference. d. Consider the feasibility of repairs and/or enhancements to the existing dredge spoil island.
Years 2-5	<ul style="list-style-type: none"> a. Implement the 10-year plan through at least one new shoreline/buffer project per year. b. Consider the feasibility of other breakwaters, including on the east dredge bank.
Years 5-10	Evaluate the response of emergent plants to the new water level management strategy. If the response has been less than desired, consider the design of new in-lake breakwaters or other erosion control techniques.



Watershed Management¹

Support local, county, state, and federal policies and practices in the watershed that improve water quality in Lake Puckaway.

Actions (organized by Category, as illustrated in Figure 1).

Category 1: Direct Drainage Area and Shorelines on Lake Puckaway and the Fox River

- Identify and seek resources for implementing appraisals, Information & Education, and Best Management Practices (BMP)
- Develop Information & Education program buffers/restoration as topics
- Identify critical water quality/habitat areas for protection/restoration and prioritize
- Identify priority areas runoff management
- Implement shoreline and habitat restoration demonstration projects
- Integrate Puckaway Comprehensive Management Plan actions with Marquette and Green Lake County Land and Water Plans

Category 2: Lake Puckaway Sub-Watershed

- Appraise watershed and identify:
 - Critical areas of water quality functions for protection/restoration
 - Non-point sources and prioritize for BMPs
- Identify and seek resources for implementing appraisals and BMPs
- Implement BMPs

Category 3: Upper Fox River Watershed

- Support local, county, state and federal programs and practices where possible
- Advocate for lake management planning and practices for other lake systems in the watershed that affect Lake Puckaway (e.g., Buffalo Lake, Grand River Marsh, etc.)

¹ Although the LPPRD is not a watershed organization, it has a vested interest in the success of programs that reduce runoff of storm water and its associated sediments and pollutants to the lake from urban and rural sources.

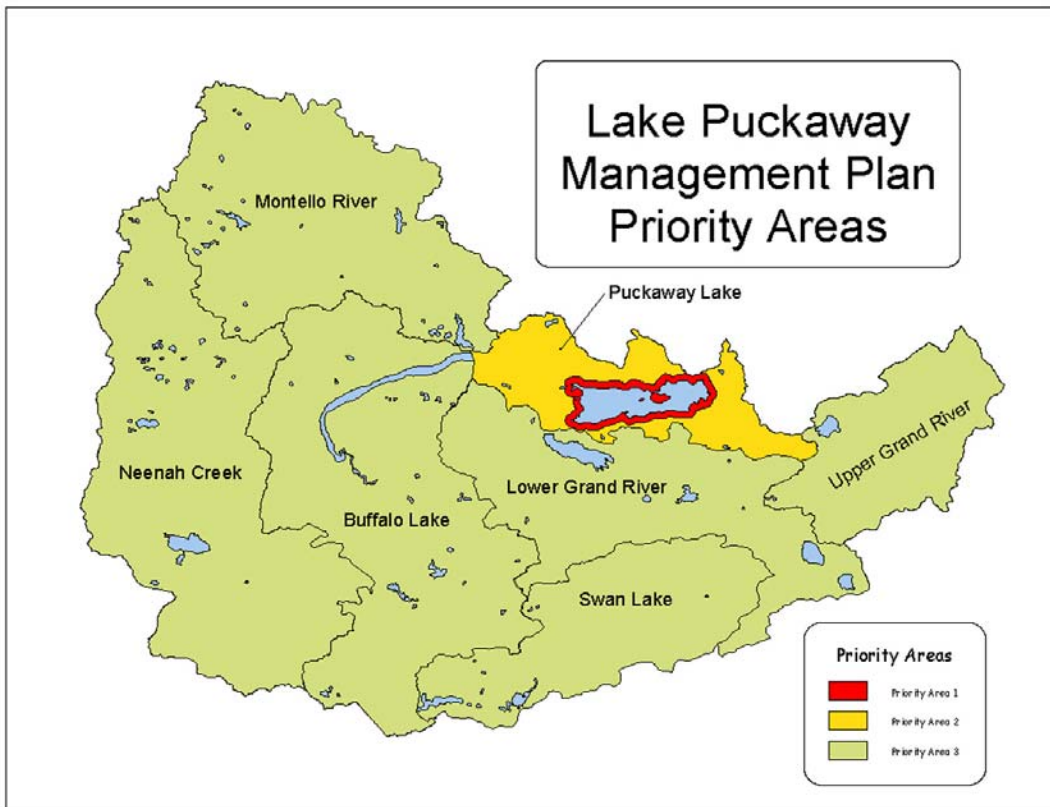
Figure 1. Categories for Watershed Protection Priorities for the Lake Puckaway Comprehensive Management Plan

(Map courtesy of the Green Lake Land and Water Conservation Department).

Priority Area 1: Direct Drainage Area and Shorelines on Lake Puckaway and the Fox River

Priority Area 2: Lake Puckaway Sub-Watershed

Priority Area 3: Upper Fox River Watershed



Additional Goals and Actions

The next fourteen goals follow the foundation of the commitments represented by the first eight goals above and are also extremely important in their own right.

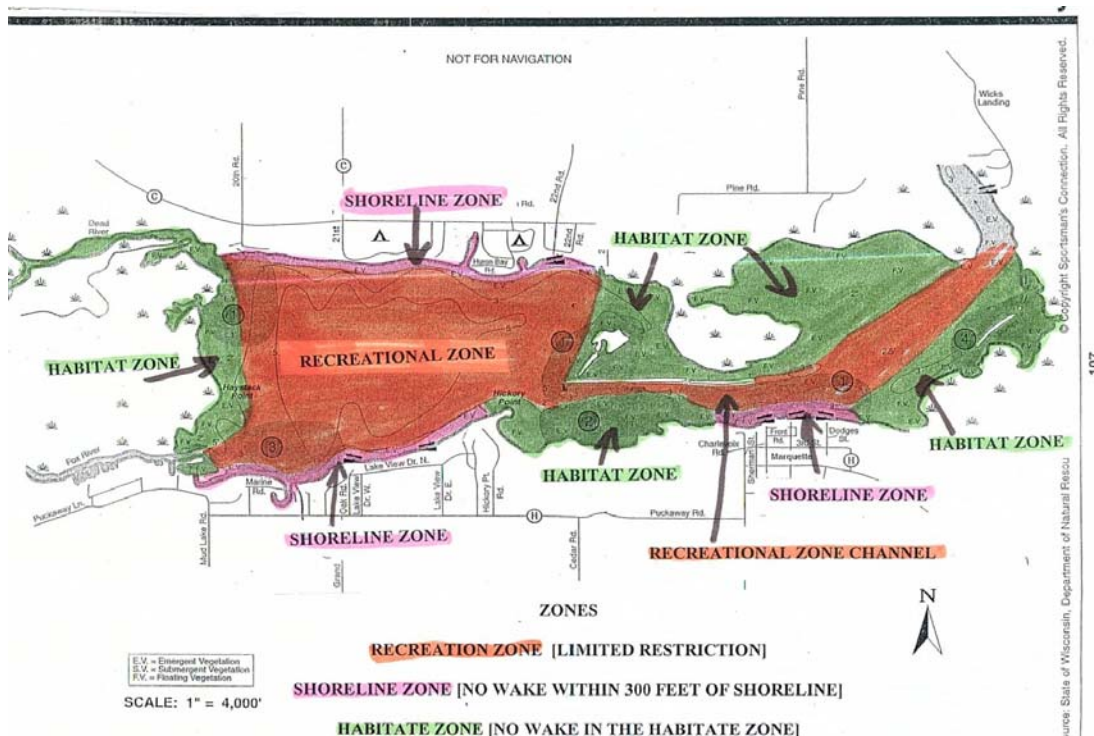
Recreation (Goals 9 and 10). Various forms of recreation and access to Lake Puckaway from public boat landings and private properties are key to people's enjoyment of the lake. Goals 9 and 10 focus on ways to improve the lake's habitat and recreation zones and to improve access and safety during the open water season and during ice cover.

GOAL 9

Habitat and Recreation Zones

Use and improve the Habitat and Recreation Zone map (Figure 2) to guide lake users and lake managers in an integrated approach to habitat protection and recreational experience.

Figure 2. Habitat and Recreational Zones Map



Timeline	Action:
Each Year	Use the results of monitoring for water quality and aquatic plant habitats (see Goals 1, 2, 3) to improve the accuracy and effectiveness of the Habitat and Recreation Zone map.
Year 1	Mark the zones as needed with buoys and continue to communicate and implement the existing zones as outlined in the map.
Year 2 and as needed	Survey the users' experience with the buoys and the zoning map to identify possible improvements.



Recreational Access and Safety

Develop and implement strategies to improve motorized and non-motorized boating access and safety.

Timeline	Action:
Year 1	<p>Identify areas for attention and study the feasibility of the following. Determine what regulatory permits are needed for each approach.</p> <ul style="list-style-type: none"> ▪ Identify needed road and lake access improvements for implementation by local governments. ▪ Dredging navigation channels to access to deeper water from shore ▪ Adding buoys and channel markers throughout the lake as navigation aids ▪ Providing adequate depth at launch and staging area to launch and remove boats ▪ Installing and maintaining (early install – ice out, and late removal) a disabled accessible pier at all boat landings ▪ Providing maintained rest rooms at all Public Access areas ▪ Providing maintained garbage areas at all Public Access areas ▪ Providing safer boating navigation on the whole Puckaway System, for example: <ul style="list-style-type: none"> – Channel markers from the end of Bird Island directly east to the mouth of the Fox River allowing safe powerboat navigation – Install and maintain channel markers at all boat landings – Instructing users on safe navigation for installation and removal of watercraft ▪ Review the comments on recreational use in the 2001 User Survey (Appendix X) and the results of feedback on the Draft Comprehensive Plan in April 2004 and propose solutions, including a system of voluntary guidelines that reduce user conflicts. ▪ Eliminate the dangerous roller wave behind the Princeton dam.
Year 2	Prioritize the above actions and create a schedule for funding and implementing them over the next few years.
Year 3 and ongoing	Follow the schedule for funding and implementing the above actions, and update the schedule as needed.

Fish and Wildlife Population Management (Goals 11-13). The protection and restoration of the habitats that are essential to sustain fish and wildlife are thoroughly addressed in the priority goals for Adaptive Management (Goals 1 through 8), fish population surveys are included within these as Goal 6. The following goals cover additional management needs for specific fish and wildlife populations in and around the lake. Public comments indicated that many citizens were not as supportive of Goals 12 and 13 compared to the other goals proposed in the draft plan. Thus, until there is more understanding of the issues, these might be considered the lowest priority goals in the plan.



Fish Management Actions

Set priorities and implement fish management actions to benefit the sport fishery.

Timeline	Action:
Every year	Continue to stock walleye and northern pike fry at historic levels. Consider stocking other species if monitoring results demonstrate that natural reproduction is low.
Every year	Implement goals and actions for carp control (Goal 4)
Year 3 and ongoing	Implement modified size and bag limits in response to changes in fish populations.
Years 3-5	Construct a fishway at Princeton Dam to promote upstream movement and improve recruitment of walleye, northern pike, sturgeon, catfish and white bass into Lake Puckaway and the river above (Goal 5)



Wildlife Population Surveys

Monitor selected wildlife species to help measure the success of habitat protection and restoration and to establish additional management recommendations.

Timeline	Action:
Year 2 and ongoing	Support the DNR in implementing the annual frog and toad surveys by county (State of the Upper Fox River Basin, page 31, www.dnr.state.wi.us/org/gmu/upfox) to follow population trends from year to year in and around Lake Puckaway.
Year 2 and ongoing	Explore the feasibility of partnerships with ornithological, herpetological, or other societies to establish survey schedules for: <ul style="list-style-type: none"> ▪ Frogs, Turtles ▪ Birds - songbirds, shorebirds, eagles, etc.
Year 2 and ongoing	Integrate the results of wildlife surveys into the improvement of the Habitat and Recreation Zones map (Goal 9).

GOAL
13

Common Terns

Manage the common tern habitat area on a portion of the dredge bank island.

Timeline	Action:
Year 1	Write a letter of support for the common tern project to the WDNR Bureau of Endangered Resources.
Year 1	Design and seek funding for a simple structure to be erected above the high water mark on the island, filled with rock, and top-dressed with sand and gravel.
Year 2 and ongoing	Build the structure and note its success in fledging young.

Information, Education, and Public Involvement (Goals 14-18). The public review process for this Comprehensive Plan identified a very strong desire for improvements in communication between the LPPRD Board and its members, and the general public. Goals 14-18 presented here are an essential aspect of plan implementation and success. **The development of specific actions, assignments, and timelines to accomplish these goals is of extremely high priority.**

GOAL
14

Outreach Messages

Develop and routinely update “key messages” to implement LPPRD outreach goals and help:

- foster understanding and pride in the shallow lake system
- communicate current management policies and practices
- invite public participation in Lake District issues and activities
- address public expectations for recreation and navigation

GOAL
15

Outreach Schedule

Establish and implement a routine schedule to inform the public and increase the visibility of LPPRD and promote the Puckaway area as a tourism destination and a rural residential area.

Actions:

- Web site
- Kiosks
- Newsletters
- Brochures
- Curriculum materials for schools
- News releases
- Public library

GOAL
16

Volunteer Activities

Establish and implement a range of activities to engage the public in hands-on projects, increase visibility of LPPRD, and recruit new volunteers and leaders.

Actions:

- Events
- Workshops
- Work days
- Informal coffees or “get to know us” activities
- Volunteer tasks (one-time, committee, program work, and organizational work)
- Lake Puckaway/Fox River clean up project

GOAL
17

Shoreline Demonstration

Develop shoreline demonstration projects and provide incentives for private property owners to protect shorelines. (See Goal 7)

GOAL
18

Public Review

Provide opportunities for the public to learn about the Adaptive Management Committee’s recommendations (Goal 1), provide feedback on the overall implementation of this Comprehensive Management Plan, and for Lake District members to vote at Annual Meetings.

Economic Inventory (Goal 19). In addition to the ecological inventory that is at the core of this Comprehensive Plan to protect the health of Lake Puckaway (see Goal 1), LPPRD Commissioners and members are interested in maintaining an inventory of the economic indicators as measures of community health. This would include, but not be limited to, information on demographics, employment, property values, taxes, public works, and tourism. This information will help guide the ongoing implementation of this plan.

GOAL
19

Economic Inventory

Collect and summarize information on local and regional economic health and make recommendations that help support the Mission and Vision of this Comprehensive Plan.

Actions:

- Study the past, present, and future influences of Lake Puckaway on the economy of the Lake District and communities of Montello, Princeton, Markesan, Kingston, Dalton, and Marquette.

- Summarize economic inventory information for posting on the kiosks, fact sheets, etc.
- Identify and evaluate the economic benefits to businesses, communities and residents of a healthy lake ecosystem as defined by the Vision.
- Provide relevant information to support the work of the Adaptive Management Committee (Goal 1).
- Provide information to support lake district boundary and membership expansions (Goal 22).

LPPRD Organizational Development (Goals 20-22). In order to implement this ambitious Comprehensive Management Plan for Lake Puckaway, the structure and function of the Board of Commissioners must be supported. A Board assessment (Goal 20) will help gain perspective on LPPRD developmental needs and challenges, prioritize them, develop a plan of action, and measure their progress. Although more specific goals will grow out of this assessment, Goals 21 and 22 immediately address the funding issues presented by the implementation of this plan.



Board Development

Prepare the LPPRD Board to fully implement the Comprehensive Plan for Lake Puckaway.

Timeline	Action:
Year 1	Conduct an assessment of Board structure and function to establish and implement priority goals and actions for the following areas. <ul style="list-style-type: none"> - Vision and Planning - Campaigns and Projects - Fund-raising and Resources - Budgeting and Accounting - Governing Board - Members and Volunteers - Membership and Leader Development - Public Communications and Partnerships - Staffing
Year 2 and every year thereafter	Review the previous assessment and set new goals and actions for continuous improvement



Fund Development

Secure short- and long-term funds to implement this Comprehensive Plan.

Timeline	Action:
Year 1	Identify funds and resources needed to initiate implementation of this Comprehensive Plan.
Year 1	<ul style="list-style-type: none"> ▪ Submit Lake Planning Grant applications by August 1, 2004 to start the highest priority activities in Years 1 and 2. ▪ Submit a Lake Protection Grant proposal by May 1, 2005 to fully support the development of the Adaptive Management approach.
Year 1	Create and begin to implement a Fund Development Plan to cover activities not eligible for Lake Protection Grant funding and/or to eventually replace Lake Protection Grant Funding.
Years 2 and ongoing	Continue to improve and implement the Fund Development Plan.



Lake District Boundaries

Increase the lake district boundaries and voluntary attachments so that the District represents and is funded by a greater proportion of those who benefit from its services.

Actions:

- Expand the lake district from its present boundaries to include the Fox River frontage property owners to the Princeton Dam and west to the town of Montello.
- Mail voluntary attachment petitions to encourage the village of Marquette non-member property owners to voluntarily attach to the District.

Appendices

I. Lake Planning Grant Tasks and Timeline

Lake Planning Grants were awarded to the LPPRD by the Wisconsin Department of Natural Resources for two grant periods, 2002-2003 and 2003-2004.

Tasks and timeline for first grant period

- **USER SURVEY BY VIERBICHER & ASSOC.** Findings presented at the 2001 annual membership meeting. Informed of process and need for citizens to sign-up for Issue Teams.
- **LAKE PUCKAWAY BROCHURE (2001)** For education/information about the lake and its recreational values.
- **FOUR KIOSKS INSTALLED (May & July 2002)** Inform public of lake planning/management projects, meeting notices, and other matters of interest to lake users.
- **LAKE FORUM/SEMINAR (April 16, 2002)**
 - Presentations on the Princeton Dam: Linda Hyatt
 - Shallow Lake Ecology: Mark Sasing
 - Puckaway: Past, Present & Future; Rick Stel
 - What is a Lake District?: Atty Tamara Dudiak.
- **LAKE TOUR (June 2002)** View areas of the lake and discuss management needs. Mark Sasing spoke to a group after the tour.
- **LAKE LEVEL MONITORING (2001- 02 data)** at Princeton Dam, Sportsman's Resort (gauge vandalized July 2002), Lake Arrowhead Campground Marina. Flow rate monitored at USGS gauge at Berlin and Princeton; 2001 flow data graphed by Vierbicher & Assoc. (incomplete for 2002).
- **LAKE DISTRICT NEWSLETTERS (2001 & 2002)** Layout and printing by Vierbicher & Associates and LPPRD.
- **FACT SHEETS** on Lake Puckaway Past, Present, Future; Fish; What is a Lake District; Princeton Dam; and Battle of the Plants.
- **FORMATION OF ISSUE TEAMS** Kick-off Meeting November 16, 2003 (facilitated by Vierbicher & Associates). Issue Teams were formed for the Dam, Water Quality, Recreation, Wildlife/Fisheries, and Property & Financial. Attendees provided input into draft of Vision Statement for Puckaway. ***Teams were informed that their recommendations would be advisory to the board.*** All Issue Team reports were submitted to LPPRD mid-March 2003.

Tasks and timeline for the second grant period

- Partners in Place, LLC contracted to help complete the planning process in August 2003.
- Status Report completed by the consultant on September 23, 2003.
- Meeting in Green Lake to review the Status Report on October 19, 2003.
- First draft of the Comprehensive Plan completed for initial Board review in January 2004. Reviews by the Commissioners, DNR staff, and citizens compiled to inform the next draft.
- Draft Management Plan posted on the web March 13, 2004.
- Open House for interactive learning about and providing feedback on the Draft Plan on April 3, 2004.
- Comment period for those who did not attend the open house open through April 10, 2004.
- Draft Plan revised, April-May 2004.
- Revised Plan accepted by the Commissioners on May 17, 2004 and approved by the LPPRD membership at the Annual Meeting on June 5, 2004.

II. Criteria for Writing and Evaluating Draft Goals and Actions

At the beginning of the second Lake Management Planning Grant period, criteria were developed to help evaluate the recommendations of the Issue Team reports and to write and evaluate goals and actions for the Comprehensive Management Plan.

Goals are broad statements that provide a 3-5 year direction for how you will achieve your mission and approach your vision. As you write draft goals, be sure to

✓ **Check** – are they:

- Broad statements, providing 3-5 year direction, rather than specific actions?
- High priority?
- Feasible?
- Consistent with the approved Vision?
- Consistent with other Goals and Actions?
- Represented in your plans for evaluation and continuous improvement?

Actions are specific, measurable results designed to meet one of the organization's goals. Although some actions are likely to be repeated every year, many will be sequenced to reach a goal in do-able steps over time. As you write draft goals, be sure to

✓ **Check** – are they:

- Designed to help meet one of your goals?
- Specific and measurable?
- Feasible?
- Sequenced to reach the goal over time (see example below)?
- Consistent with the approved Vision?
- Consistent with other Goals and Actions?
- Represented in your plans for evaluation and continuous improvement?

III. Explanation of the Alternatives Considered

A. Arriving at the Vision Statement

The following range of possible futures for Lake Puckaway was outlined to focus participants' attention to and agreement on a desired future. All possible futures were assumed to include good access to the lake for recreational boating.

A desired future for Lake Puckaway and its human uses				
Not Considered	Desired Future	Current Condition	Undesired Future	Not possible
Remove the dam and restore a free-flowing river-marsh system	<p>A healthy clear lake</p> <ul style="list-style-type: none"> - infrequent algal blooms - excellent habitat for plants and animals - fishery dominated by walleye, northern pike, bass, and panfish 	<p>The lake is currently in a precarious state between the Desired Future and Undesired Future</p>	<p>An unhealthy turbid lake</p> <ul style="list-style-type: none"> - frequent algal blooms - degraded habitat for many plants and animals - fishery dominated by carp and bullheads 	Construct a deep, clear-water lake



Vision Statement – Our Desired Future

Lake Puckaway is a healthy shallow-water riverine lake with clear water; infrequent algal blooms; excellent habitat for plants and animals; great nature watching, fishing, and hunting; and boating access well suited to the lake's characteristics. Community pride in the lake supports a healthy local economy and culture and a commitment to long term resource stewardship.

B. Indicators of Lake Health and Implications for Water Level Management

Indicators of the Health of Lake Puckaway

What are the indicators of the health of a nutrient-rich, shallow riverine lake system like Puckaway? Some of the most important ones are:

- Large beds of two general types of rooted aquatic plants that provide habitat for fish and wildlife habitat:
 - plants that grow underneath the lake's surface (known as *submergent aquatic plants*), and
 - plants that grow above the water's surface in shallow areas of the lake and along shorelines (known as *emergent aquatic and wetland plants*).
- Clear water with infrequent *algal blooms* – times of unacceptable murkiness caused by excessive algae.
- Shorelines protected from erosion due to wind and waves and from stormwater runoff.
- A vigorous sport fishery based primarily on natural reproduction and with carp held in check.

The Timing of Important Seasonal Events

At the same time that we understand the prescription for a healthy lake ecosystem, we also recognize the high value placed on the lake for recreational use. Good access to the lake by year-round and seasonal residents and occasional visitors is vital to local community culture and the local economy. One of the most direct ways to protect the health of the lake is to protect and improve its aquatic plant habitats. The most direct way to influence aquatic plant habitat is through water level management. When we observe the schedule for important seasonal events on the lake, an overlap in time of use between the open water boating season and the growth and development of aquatic plant habitats is apparent. (Figure a).

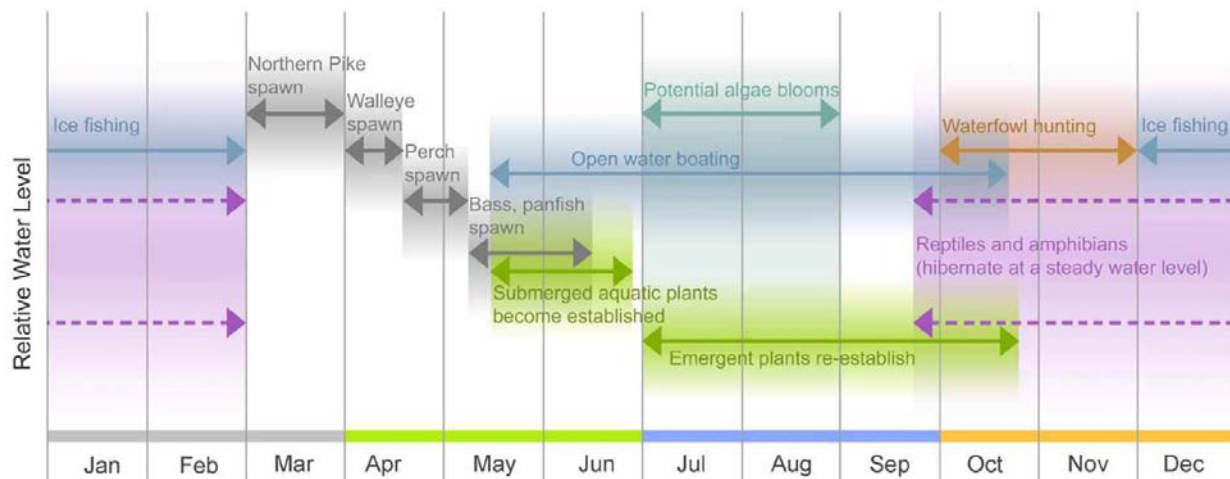


Figure a. Seasonal Ecology and Seasonal Recreation. The timing of important seasonal events on Lake Puckaway, illustrating the overlap in time between prime open water boating season and the growth and development of aquatic plant habitats.

Adaptive Management and Water Levels. The Comprehensive Management Plan for Lake Puckaway has been a long time in coming, in large part due to the different needs described above for the protection and restoration of the lake’s health and the desired water levels for lake use. This plan represents a carefully crafted compromise among the range of options identified by Commissioners, lake district members and users, agency staff, and others. The plan implements an *adaptive management approach that incorporates the results of monitoring into management action in order to adapt and learn over time* (Option B, below, and Goal 1, p. 5).

<p>No Dam Restore a river-marsh system.</p>	<p>Adaptive Management Water levels are managed to protect and restore lake and wetland habitat in carefully selected years using scientifically-determined criteria.</p>		<p>Status Quo Continue existing management, with “recreational” water levels throughout the open water boating season.</p>	
<p>Not an option Run-of-the-river or “background” flows for Options A - D</p>	<p>Option A Initiate water level management through an agreed-upon schedule for reductions or drawdowns. Establish a monitoring program to measure success and adapt as needed to achieve the desired results.</p>	<p>Option B (= Goal 1, p. 5) Establish a monitoring program to establish a baseline of lake health on which to base management actions.</p>	<p>Option C May consider a planned water level reduction or drawdown in the future.</p>	<p>Option D Never conduct a planned water level reduction or drawdown.</p>
<p>DNR management made a commitment to support the LPPRD Commissioners in keeping this alternative <i>off the table</i> for this Comprehensive Plan.</p>	<p>Some people cite the degraded condition of the lake and would <i>prefer</i> an immediate strategy for water level reductions in May-June for at least two consecutive years (2005 and 2006) and a full season drawdown in ~2008. Once the health of the lake has clearly rebounded, subsequent occasional reductions or drawdowns would be based on the results of monitoring and adaptive management.</p>	<p>Some people <i>prefer or can agree to</i> scheduled water level reductions as one tool in the Adaptive Management toolbox, to be applied as the need is demonstrated by the monitoring and decision-making program.</p>	<p>Some people do not believe that the lake is sufficiently degraded to justify change from the status-quo and <i>prefer</i> to monitor and observe the lake for a longer period of time. They might consider planned reductions or drawdowns sometime in the future.</p>	<p>Some people do not believe that the lake is sufficiently degraded to justify change from the status-quo and <i>prefer</i> to continue to keep water levels up to the extent possible for the entire open water season every year. Planned reductions or drawdowns would never occur.</p>
<p>Not considered, but effective for ecological protection and restoration.</p>	<p>Effective for lake protection and restoration. Consistent with the Mission and Vision.</p>	<p>Effective for lake protection and restoration. Consistent with the Mission and Vision.</p>	<p>Not effective for lake protection and restoration</p>	<p>Not effective for lake protection and restoration</p>

Issues to Consider If/When the Adaptive Management Approach Leads to a Recommended Water Level Reduction or Drawdown

It is important to remember that climate and the amount of precipitation have a greater influence on water level at any one point in time than do any management actions taken at the Princeton Dam; this is true under the dam's current configuration or with any future modifications to its structure. Water levels on Lake Puckaway are governed by the amount of water coming in via the Fox River and falling as rain or snow. At times of very low flow, the Princeton Dam, as it is now configured, may add up to 10 or 11 inches of depth above the run-of-the-river; if a drought is severe, this depth falls even lower. At times of moderate flow, the dam may add up to 24 inches of depth to the lake. When the water is very high during floods, the dam is submerged and it has no further ability to increase water levels on the lake. This description of Option B starts with the existing dam configuration. As adaptive management proceeds, the options for the dam's configuration will be reconsidered. However, even with dam modification, the following choices for 'regular' water level years, scheduled short-term reductions, or full season drawdowns will still be at the core of the Adaptive Management Committee's task to assess the health of the lake and make its recommendations.

“Regular” water level years are the same as the current “status quo” (Table 1, Options C and D). During the open water boating season, the lake is managed for “recreational” water levels starting in mid-May/early June. The dam's concrete sill may add up to ~12 inches above run-of-river; the 16.5” of boards placed on top of the sill may add up to another ~10 or 11 inches. Thus, the “recreational” lake level may provide up to ~24 inches above run-of-river in the open water season

These “recreational levels” are held until the boards are removed. There are three choices for the timing of the removal of the boards. They could be removed in:

- March. This would accommodate the needs of hibernating animals and maintain “recreational” water levels through the waterfowl hunting season. Although this might be the best choice to meet the needs of boaters and hibernating animals, it could not be implemented until the dam is modified to prevent ice from damaging the boards.
- October. This is the current situation or “status quo.” It maintains recreational water levels through the waterfowl hunting season, but does not accommodate the needs of hibernating animals.
- September. This would accommodate the needs of hibernating animals, but would not maintain “recreational” water levels through the waterfowl hunting season. It would not require dam modification.

One or both of the following two types of water level actions might be scheduled on a periodic basis to ensure the health of the lake. They both come with temporary inconveniences for boating access during carefully selected seasons or years.

Short term “water level reductions”

Occasional/scientifically determined late spring/early summer water level reduction” to benefit submergent aquatic plant habitats and increase water clarity. At this point, the dam operates with the concrete sill with no boards, and the lake averages up to ~12 inches above the run-of-the-river.

Full season “drawdown”

Occasional/scientifically determined full season drawdown to benefit emergent plant habitats. The dam would operate with the boards removed and the lock gates open. The lake would approach run-of-the-river or background water levels. Drawdown does not mean that the lake is drained to a river bed; this is not possible on Lake Puckaway. The month that a scheduled drawdown ends will depend on the findings of the Adaptive Management Committee.

IV. Team Charter for Adaptive Management: Some Guidelines

A. What is a Team Charter?

A charter is a “declaration or document setting forth the aims and principles of a group” (Webster's New World Dictionary).

In the case of the Lake Puckaway Protection and Rehabilitation District, the Board of Commissioners defines the mission or objectives of Adaptive Management Committee based the Mission, Vision, Goals, and Actions in this Comprehensive Management Plan for Lake Puckaway. This is documented in the form of a *team charter*.

A *team charter* is a clear description of the team's mission, as well as the authority and resources provided to accomplish that mission. The charter typically includes a statement of mission, objectives or statement of work; background; authority or boundary conditions (scope, constraints, resources, and schedule); membership; requirements or specifications, and communication responsibilities.

The charter should be specific enough to get the Adaptive Management Committee started in the right direction, but not so limiting as to dictate process or outcome at the outset. The Committee will establish more specific goals and plan once it comprehends the scope of the work, and the original charter may be re-negotiated with the Board.

At the outset:

Confusion, conflicts, or disagreements about the charter must be resolved to the mutual satisfaction of the Board and Committee members as soon as possible. Negotiate to change the initial mission, broaden or narrow its scope, or shift its focus. The *team charter* provides a common vision that keeps the Committee focused on its objective.

As the Adaptive Management Committee works, the charter will:

- Serve as a contract between the Board and the Committee.
- Define the objectives and purpose of the Committee, assuring a common understanding among Committee members.
- Define the objectives and their intended results to Lake District members and lake users.
- Keep the Committee focused.
- Allow the Board and Committee to evaluate the effectiveness of their working relationship.
- Define “boundary conditions” - roles and responsibilities, tasks and timelines, scope of authority, etc.

The above is adapted from Kenneth Crow, DRM Associates
www.npd-solutions.com/charter.html

B. Group Agreements

In addition to defining the relationship of the Adaptive Management Committee to the LPPRD, the Charter should also state the agreements that members make to work together.

Tips for Facilitators: Group Agreements

Purpose: Group Agreements make members' expectations of one another explicit. They put a group in a proactive position to be successful. Conflicts and frustrations are often a result of unstated assumptions and unfulfilled expectations. When members know what to expect of one another, their energy can be directed towards their work and trust is reinforced.

Preparation: Group Agreements are written to be specific to the needs of a group. If members come from a history of effective group work, the statements may be very succinct, and many expectations may exist as unwritten understandings. For new groups or groups that have been troubled by conflict, the agreements will be more comprehensive. See the checklist on the next page to work with your group to establish agreements that will help you build and sustain a healthy work group.

Sample Group Agreements

- start and end meetings on time
- help create space for all to participate
- one person talks at a time
- no side conversations
- help stay on task
- complete between meeting assignments
- state the clear purpose and expected outcome for each
make decisions by consensus



Group Agreements: A Checklist

Consider the following topic areas when developing your Group Agreements. Transfer your final guidelines onto a working list that is posted and/or available at meetings and conference calls. All members are responsible to help make sure the agreements are followed.

TOPIC AREA	SUGGESTED GUIDELINES	FINAL GUIDELINES
Attendance		
Participation		
Meeting agendas and records		
Rotation of routine chores		
Confidentiality		
Conversational courtesies		
Interruptions		
How decisions are made		



Appendices V. - X.

The following appendices are posted as separate files on www.lakepuckaway.com or available by request from the LPPRD Chair.

- V. Lake Puckaway: Past, Present, and Future Fact Sheet
- VI. Fish Fact Sheet
- VII. Lake District Fact Sheet
- VIII. The Princeton Dam Fact Sheet
- IX. Water Clarity: The Battle of the Plants
- X. Lake Puckaway User's Survey: 2001 Findings Report