

**Ponchartrain Basin
Comprehensive Management Plan
Phase II**

"ACTION AGENDA ITEMS"

May 1993

Prepared for:
The Lake Ponchartrain Basin Foundation
And
The Interagency and Advisory Working Groups

as part of:

The Ponchartrain Basin Comprehensive Management Project

Prepared by:

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In Association with
The Lake Ponchartrain Basin Foundation



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Any opinions, findings, and conclusions in this publication do not necessarily reflect the views and policies of the EPA, the Lake Pontchartrain Basin Foundation, the University of New Orleans or the participants in the planning process.

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The Lake Pontchartrain Basin Foundation

The Lake Pontchartrain Basin Foundation is a non-profit organization dedicated to the restoration and preservation of the Lake Pontchartrain Basin. The Foundation was created by Act 716 of the Louisiana Legislature in 1989 to lead the clean-up and restoration of the Lake and the rivers and bayous flowing into it. Today, the Foundation is made up of a 13-member board, staff, volunteers and members who diligently work to SAVE OUR LAKE and its rivers, bayous and wetlands.

The Foundation's board provides a voice for the citizens of the Basin. Nine of the organization's thirteen board members are elected from the Foundation's broad-based membership. The remaining four positions are filled by representatives of the Louisiana Departments of Environmental Quality, Health and Hospitals, Natural Resources, and Wildlife and Fisheries.

Examples of Foundation Projects include:

- The Pontchartrain Basin Comprehensive Management Plan;
- Educational programs to alert citizens about problems facing the Basin and letting them know what they can do to help;
- A Stormwater Treatment Project to test the effectiveness of aquatic vegetation in the cleansing of urban stormwater runoff;
- Monitoring pollution threats throughout the Basin;
- Litter abatement projects such as Beach Sweep;
- Wetlands restoration and preservation projects such as the proposed National Wildlife Refuge near Cane Bayou;
- Fundraising events like Back to the Beach; and
- A River Watcher program where citizens learn how to test the water quality of their rivers.

The Foundation is currently planning other programs, such as assisting in the construction and maintenance of dairy waste lagoons on the North Shore and finding solutions to poorly sewered and non-sewered communities. Through efforts like these, the Foundation is making great strides toward the restoration of the Lake Pontchartrain Basin.

Acronyms

| | |
|--------|---|
| AG | Advisory Group |
| BMP | Best Management Practice |
| CAC | Citizens Advisory Committee |
| CES | La. Cooperative Extension Service |
| CFACT | Citizens for a Clean Tangipahoa |
| CMP | Comprehensive Management Plan |
| COE | U.S. Army Corps of Engineers |
| CBCC | Comprehensive Basin Coordinating Council |
| CWPPRA | Coastal Wetlands Planning, Protection, and Restoration Act |
| DAF | La. Dept. of Agriculture and Forestry |
| DCRT | La. Dept. of Culture, Recreation, and Tourism |
| DEQ | La. Dept. of Environmental Quality |
| DHH | La. Dept. of Health and Hospitals |
| DNR | La. Dept. of Natural Resources |
| DOTD | La. Dept. of Transportation and Development |
| DWF | La. Dept. of Wildlife and Fisheries |
| EPA | U.S. Environmental Protection Agency |
| GIS | Geographic Information System |
| IAWG | Interagency Working Group |
| IHNC | Inner Harbor Navigation Canal |
| LEERIC | La. Environmental Education Resource and Information Center |
| LGS | La. Geological Survey |
| LNCS | La. Nature and Science Center |
| LPBF | Lake Pontchartrain Basin Foundation |
| LSU | La. State University |
| MRGO | Mississippi River Gulf Outlet |
| NMFS | National Marine Fisheries Service |
| NORM | Naturally Occurring Radioactive Material |
| NPDES | National Pollution Discharge Elimination System |
| SAV | Submerged Aquatic Vegetation |
| SCS | U.S. Soil Conservation Service |
| SLU | Southeastern Louisiana University |
| S&WB | Sewerage and Water Board |
| UNO | University of New Orleans |
| USCG | U.S. Coast Guard |
| USDA | U.S. Dept. of Agriculture |
| USFS | U.S. Forest Service |
| USFWS | U.S. Fish and Wildlife Service |
| USGS | U.S. Geological Survey |
| UWMRC | Urban Waste Management and Research Center at UNO |

**A Statement of Agreement in Principle
by the
Interagency and Advisory Working Groups**

PROLOGUE

The Pontchartrain Basin, a 4,700 square mile watershed in southeastern Louisiana, stretches from the State of Mississippi on the north and east, to the Mississippi River on the west and south, and the Breton Sound at the Gulf of Mexico. From upland pine forests to coastal wetlands, diverse plant and animal species share the Basin with almost two million people, or 45 percent of Louisiana's population. Residents of this region enjoy a way of life centered around ground and surface waters that provide employment, recreational and educational opportunities, a harvest of fish and shellfish, river- and lake-oriented lifestyles, and irreplaceable aesthetics.

AGREEMENT IN PRINCIPLE

WHEREAS, there are at least 98 separate agencies and governing bodies in the Pontchartrain Basin with diverse interests and limited jurisdictions that have the responsibility for regulating activities affecting environmental issues that concern the public; and

WHEREAS, the primary goal of the Pontchartrain Basin Comprehensive Management Plan is to provide a plan and strategy that encourages these many regulating agencies and governing bodies to deal with the Basin as an interconnected ecosystem; and

WHEREAS, cooperative efforts can provide mutual benefits of sustainable economic growth and development and improved quality of life, public health, and public safety for those that live, work, and play in the Basin;

LET IT BE KNOWN THAT, we, the delegates of the Interagency and Advisory Working Groups, agree in principle, but not necessarily in all specifics, with the intent of the Pontchartrain Basin Comprehensive Management Plan.

Signed: _____

Organization: _____

Date: _____

(For Review Only)



Study Area

The Pontchartrain Basin is a 4,700 square mile watershed in southeast Louisiana. Elevations range from over 300 feet mean sea level in the hills along the Mississippi state line to sea level throughout the coastal lowlands and occasionally below sea level in some urban areas. Pleistocene terraces and uplands, the older geologic features, form the northern half of the Basin, an area commonly referred to as the Florida Parishes. Many small rivers drain the Florida Parishes and introduce freshwater into Lakes Maurepas and Pontchartrain, the great mixing zone of fresh and saline water. The largest of these rivers is the Amite which has its headwaters in the counties of southwest Mississippi. Watercourses crossing the northern parishes have eroded into the uplands, creating distinct river valleys. Bayous and tidal channels, those sinuous bodies of slow-moving water commonly associated with south Louisiana, characterize the coastal lowlands. Located in the center of this vibrant and dynamic Basin is the state's largest waterbody, Lake Pontchartrain.

Lake Pontchartrain, formed 5,000 years ago, covers almost 630 square miles. The shallow Lake (average depth 12 feet) is brackish, receiving freshwater from Lake Maurepas, the Tangipahoa and Tchefuncte Rivers, Bayous Lacombe and Bonfouca, as well as drainage canals, and saltwater from the Gulf of Mexico. The combination of lakes and wetlands forms a complex estuarine ecosystem.

Pine trees dominate the higher uplands, while in the river valleys and sloughs, hardwoods are prevalent. Coastal lowland vegetation includes natural levee and bottomland hardwoods, cypress-tupelo swamp, and fresh to brackish marshes. The natural vegetation patterns are undergoing rapid changes, mostly man-related.

Urbanization and shifts in demographics are evident throughout the Basin and have led to drastic changes in land use patterns. In the western region of the Basin, east Baton Rouge Parish has grown rapidly during the past 30 years. Moving eastward, along I-12, from Hammond to Slidell, small farms and woods have been converted into a suburban setting of houses, shopping centers, and small businesses. In contrast are the petrochemical plants, grain elevators, and refineries, many of which were established in the early 1900's, that have turned the Mississippi River into an industrial corridor from Baton Rouge to New Orleans. Flanking the plants are subdivisions and commercial developments covering areas that were once sugar cane fields. Finally, Orleans, Jefferson, and St. Bernard Parishes have defined their expansion boundaries with the construction of a hurricane levee protection system. Much of this area is at or below sea level, therefore flood control is necessary; however, some of these flood control projects have caused environmental damage.

These changes, while in many cases unavoidable, contribute a variety of environmental stressors. Nonpoint source pollutants, sewage from humans and farm animals and industrial and agricultural discharges, comprise the majority of runoff problems. Shell dredging, oil and gas exploration and development, the Mississippi River Gulf Outlet (MRGO), and industrial activities along the Inner Harbor Navigation Canal (IHNC) also impact the environmental quality of the Basin. There are at least 98 separate agencies and governing bodies in the Basin with diverse interests and limited jurisdictions that have responsibility for regulating environmental resources.

In addition to man-induced changes to the Basin, there are natural forces, such as hurricanes, that affect change. Land subsidence is one of the most powerful natural forces that has led to significant changes throughout the Basin. Subsidence and accompanying shoreline erosion has had significant consequences in St. Bernard Parish.

For many years, the Basin's wetlands have been channelized, drained, and filled, resulting in Lake Pontchartrain receiving a variety of contaminants. The cumulative effects of wetland degradation, shoreline erosion, saltwater intrusion, and discharge of contaminants have decreased grassbeds, diminished shellfish and fish harvests, closed beaches, and resulted in occasional occurrences of oxygen-deficient areas ("dead zones") in the Lake. As an example, the Gulf of Mexico sturgeon was once commonly found in Lake Pontchartrain and probably spawned in most of the rivers flowing into the Lake. It has dramatically declined in abundance to the point that it has been listed as "threatened" under the Endangered Species Act. Many other animals and plants are also at risk due to habitat destruction and pollution.

The Pontchartrain Basin is a complex system of physical elements where biological diversity is the rule. The picture of the Basin is further complicated by the rapid growth around Metropolitan New Orleans and Baton Rouge. Economic activities range from heavy industry along the Mississippi River, to forestry and agriculture in the upper reaches of the watershed, to fishing and trapping in the coastal wetlands. Comprehensive management planning must take into consideration the diversity of the Basin.

Methodology

As the first step in the development of the Comprehensive Management Plan (CMP), four public meetings were held in October 1991 to solicit public opinions on the conditions and needs of the Pontchartrain Basin. The public expressed a combination of goals, concerns, issues, and desires that for the sake of expediency are referred to as "concerns." These concerns were grouped into five categories: Education/Outreach, Renewable Resources, Uses, Pollution, and Institutional. From March through July 1992, monthly workshops made up of an Interagency Working Group (IAWG) of delegates from agencies with significant regulatory authority and an Advisory Group (AG) of delegates from civic, business, farming, fishing, environmental, industry, and other interested groups were convened to develop a comprehensive management plan for addressing the concerns expressed during the October meetings. At the March organizational meeting, five subcommittees corresponding to the five categories of citizen concerns were created. Delegates and alternates to the workshop volunteered to serve on these subcommittees. Some agencies assigned members of their staff not present at the organizational meeting to serve on the subcommittees.

Subcommittees developed specific responses to citizen concerns. These subcommittee recommendations are the integral elements -- the basic building blocks -- of the CMP. The subcommittees met regularly (at least once a month and sometimes more frequently) to discuss their approach to citizen concerns, share information, and assign tasks that would lead to the completion of their respective reports.

Each subcommittee elected a chair or co-chairs. A coordinator was provided to each subcommittee. Coordinators were individuals with experience and expertise in their respective categories. They participated and assisted their subcommittee by providing summaries of meetings, researching information, and serving as the contact person among subcommittees. The chairs and co-chairs generally led the subcommittee discussions and gave progress reports at the regularly scheduled workshops. Subcommittee meetings were held throughout the Basin in locations secured by members of the respective committees.

At the first workshop, a detailed outline was supplied to help subcommittees develop a uniform format for the content of their reports. A uniform format would be readily comparable and easier to blend into the final plan. However, by the third month, the chairpersons and coordinators indicated that the participants would not be able to complete the detailed outline as originally envisioned. Participants were volunteers on loan from their regular employers and could not provide the concentrated level of effort required by the process in the five-month schedule. After a meeting of chairpersons, coordinators, and grant administrators, it was concluded that a revision in report requirements was in order and that, at a minimum, the reports would consist of a matrix-style listing. Cost estimates associated with recommendations were provided by the subcommittees in cases where sufficient information was available. Each subcommittee had the option of preparing its report in a format it felt most comfortable, as long as it addressed the citizen concerns.

Final subcommittee reports were presented to the IAWG in July. The reports were compiled into a separate volume and provided to workshop participants for review in September. The subcommittee reports are the source documents for the CMP Phase II draft and will be utilized

throughout the planning process.

In order to develop the CMP, a decision was made to use the organizational framework of goals, objectives and action plans. Goals are usually long-term and broad in scope and reflect the will of the people. The goals are related to the desired condition for the Basin and its various segments. Objectives are more specific, short-term targets for attaining the goals. Objectives are obtainable through the implementation of specific action plans. Typically, they are established on the basis of preferred uses, standards, and permit activities to improve water quality. Finally, action plans are developed to address specific priority problems.

The CMP Phase II draft was developed during October and November of 1992. For consistency in format, coherency, elimination of repetition, and ease in reading, the five categories of public concerns addressed in the subcommittee reports were consolidated and reorganized into a set of goals, objectives, and actions under each of the following headings: Plan Implementation, Water Quality, Critical Habitat, and Education/Public Participation. If a subcommittee named a particular agency or organization in conjunction with a specific action, the agency is listed in brackets [] after the action statement.

The CMP Phase II draft document was sent to participants in mid November for review and comment. Participants had until mid December to submit their comments. Out of the 142 participants in the planning process, 12 comment letters were received by the deadline. Responses to comments and proposed revisions based on comments received were prepared and sent out to all participants prior to the CMP Workshop #6 which was held late January 1993. At this workshop participants were given the opportunity to comment on the responses and proposed revisions. Revisions based on all written comments and comments from the workshop were incorporated into the document. Participants reviewed the document a second time before it was disseminated to the public.

The final steps in Phase II of the CMP planning process include the thirty-day public review period and public meetings. The public will have a chance to review the draft document, which will be made available at convenient locations in the Basin, and present their comments at six public meetings to be held around the Basin. Locations for the public meetings include the four cities where the initial meetings were held, Metairie, Destrahan, Hammond, Mandeville, and two additional meetings in St. Bernard Parish and the City of Amite. The Lake Pontchartrain Basin Foundation will supplement the public review and comment period with presentations to targeted audiences and upon request to specific groups. A CMP Workshop #7 will convene after the public meetings to review public comments and proposed revisions for the final Phase II CMP draft.

The next step (Phase III) of the planning process will be to develop strategies for implementing parts of the plan. It will be necessary to prioritize these strategies, to determine relative costs and schedules of implementation, and to identify lead agencies/groups and sources of funding and utilization of existing information/programs.

Plan Implementation

Introduction

Implementation of the Lake Pontchartrain Basin Comprehensive Management Plan will be a challenging and complex task. The CMP was developed to consider a range of environmental concerns and considerations. It has many goals and objectives and affects many parties and interests.

Implementation will inevitably involve a combination of emotional, scientific, technological, political, and financial issues. Bringing these diverse topics into a harmonious and effective balance will be a difficult challenge. Implementation will also involve a combination of voluntary and regulatory actions and a combination of existing and new resource management initiatives. Voluntary action can begin independently of, or with the endorsement of regulatory agencies. Regulatory actions must, by mandate, be overseen by governmental agencies.

Currently, there are a large number of state, federal, and local environmental regulations which address and have initiated implementation of many of the recommendations. For some of the action items, additional resources will be necessary to increase enforcement activities. For some of the other proposed programs, additional resources will be needed to increase technical support. As one studies the plan it is clear that new initiatives in monitoring, modelling, data exchange, regulation, and management are needed to achieve the remainder of the CMP's goals.

Regulatory agencies, those ultimately responsible for implementing the resource management recommendations in the CMP, must take a central role in plan implementation. However, this is not to say that the plan can or will be implemented with only agency support. Several circumstances confuse the issue. The problem of agency independence and, in some cases, agency overlap can complicate implementation. Political realities will also determine, to some degree, how well the implementation efforts proceed. Ultimately, the success of the management plan will rest with the public since much of the work will involve financial and personal commitment to the restoration of the Basin.

The organizational structure through which the action plans will be accomplished is the existing Interagency Working Group (IAWG) and Advisory Group (AG). These two groups have been involved in the planning process from the beginning. Members of the IAWG represent public agencies with regulatory authority and management responsibilities in the Basin. Members of the AG are delegates from civic, business, farming, fishing, environmental, industry, and other interest groups representing the public. Responsibilities of the IAWG and AG relative to the implementation of the CMP and lists of their members follow.

The partnership of the IAWG, AG and, most importantly, the public, will ensure the successful implementation of the CMP and the long-term success of the restoration efforts.

GOAL: Develop an organizational structure for the Basin wide cleanup effort which will promote coordination among public and private entities whose actions affect the use, restoration, and/or preservation of the Lake Pontchartrain Basin.

Objective I: Promote coordination among public and private entities whose actions affect or could affect the use, restoration, and/or preservation of the Pontchartrain Basin.

Actions:

- A. Continue the existing Interagency Working Group (IAWG) to respond to citizens concerns regarding governmental agency coordination.
1. Promote communication and collaboration for Basin restoration among local, state, and federal governments through the IAWG.
 2. Designate the LPBF as the lead organization with "convener authority," defined as that power to call meetings, set agendas, and address administrative matters on behalf of the IAWG.
 3. Recommend new regulations or suggest areas that need increased enforcement of existing regulations.
 4. Mediate any appropriate environmental dispute referred to it.
 5. Strengthen interagency coordination to reduce duplication of efforts.
 6. Refer problems identified by citizen groups and the AG to an appropriate action agency.
 7. Coordinate with existing water management programs.
 8. Encourage the establishment of a one-stop information clearinghouse on matters affecting the use, restoration, and/or preservation of the Pontchartrain Basin.
 9. Develop a way to include the State of Mississippi in the implementation of Basin cleanup actions.
 10. Develop incentive programs to encourage actions that favorably impact the Pontchartrain Basin.

The following is a list of present members on the IAWG:

Ascension Parish
Dept. of Economic Development

Dept. of Agriculture & Forestry
Dept. of Environmental Quality

Dept. of Health & Hospitals
Dept. of Transportation & Development
East Baton Rouge Parish
Iberville Parish
Livingston Parish
La. Municipal Association
Plaquemines Parish
St. Charles Parish
St. James Parish
St. Tammany Parish
U.S. Army Corps of Engineers
Washington Parish

Dept. of Natural Resources
Dept. of Wildlife & Fisheries
East Feliciana Parish
Jefferson Parish
Lake Pontchartrain Basin Fnd.
Orleans Parish
St. Bernard Parish
St. Helena Parish
St. John the Baptist Parish
Tangipahoa Parish
U.S. Environ. Protection Agency

Objective II: Establish a mechanism to ensure public empowerment and participation in the education and planning process.

Actions:

- A. Continue the existing Advisory Group (AG) to ensure public empowerment and participation in the education and planning processes.
1. Coordinate with existing local environmental organizations.
 2. Assist in the development and nurturing of new groups.
 3. Encourage proactive approaches to environmental management of the Basin.
 4. Encourage the participation of interested user groups on the AG.
 5. Hire a LPBF-based, full-time Education/Public Participation Coordinator who will be responsible for executing the Education/Public Participation section of the CMP.

The following is a list of present members of the Advisory Group:

Amite River Basin Commission
Chamber of Commerce - Baton Rouge
Chamber of Commerce - St. Tammany W.
Coalition to Restore Coastal La.
Dept. of Education
Dillard University
La. State Univ.
La. Audubon Council
La. Environmental Educators Assoc.
La. Landowners Association
La. Forestry Association
La. Governor's Office
Lake Pontchartrain Fishermen's Assoc.
La. Mid-Continent Oil and Gas Assoc.
National Marine Fisheries Service
National Oceanic and Atmospheric Adm.

Barataria/Terrebonne National Estuary Prg.
Chamber of Commerce - New Orleans
Citizens for a Clean Tangipahoa
Dept. of Culture, Recreation & Tourism
Dept. of Justice
Gulf of Mexico Program
La. Assoc. of Conservation Districts
La. Cooperative Extension Service
La. Farm Bureau
La. Wildlife Federation
La. Geological Survey
La. Nature Conservancy
La. Univ. Marine Consortium
N.O. Sewerage & Water Board
Nation Park Service
Sea Grant Legal Program

Sierra Club
Sparkling River Committee
St. Tammany League of Women Voters
U.S. Fish & Wildlife Service
U.S. Soil Conservation Service
Women for a Better Louisiana

Southeastern La. University
Three Rivers Basin Foundation
U.S. Coast Guard
U.S. Geological Survey
University of New Orleans
Xavier University

Water Quality

Introduction

The process of preserving and restoring water quality is complex. Although there have been numerous studies and reports that address water quality in the Basin, not every scientist, regulatory agency, or concerned citizen will agree on the true nature of the problem. It is at times difficult to establish clear-cut "cause and effect" relationships between human activities and deterioration of water quality. There are, however, known sources of water pollution, both point (from a single source) and nonpoint (from diffuse sources) that need to be considered.

Bacteria and viruses (pathogens) from warm-blooded animals and human wastes present a major source of pollution that limits primary and secondary recreation in the Basin's waterbodies. Because of the pathogen contamination, the La. Dept. of Health and Hospitals (DHH) has determined that swimming within approximately one-quarter mile from the South Shore of Jefferson and Orleans Parishes, and within a 200-yard radius of the mouths of streams which flow into the Lake along the North Shore is not advisable. Several rivers in the parishes which border the Lake have also been posted against swimming in recent years.

Some of the most severe water quality problems are found along the shorelines directly adjacent to Lake Pontchartrain in Jefferson, Orleans, and St. Tammany Parishes. Much of this pollution originates from urban stormwater runoff, the largest single cause of water pollution in the Basin. In addition to pathogens, stormwater may contain high levels of heavy metals, chlorinated hydrocarbons, pesticides, and other man-made chemicals; high nutrient concentrations; and large amounts of soil-derived suspended sediments.

Urban runoff is not the only source of municipal water pollution. In 1989, more than 500 communities were discharging treated and untreated wastewater into the Pontchartrain Basin. These facilities ranged from individual package treatment systems for schools or subdivisions, to large municipal systems discharging over one million gallons of treated sewage per day. Wastewater from these facilities contains varying amounts of suspended solids, biochemical oxygen-demanding materials, nutrients (phosphorus and nitrogen), and pathogens.

In addition to larger treatment systems, tens of thousands of individual septic systems contribute to water quality problems. In some poorly sewered and non-sewered communities, untreated sewage is being directly discharged into the Lake and its rivers and bayous. Although water quality impacts from sewage have been lessened by plant upgrades, improved septic tank regulations, and the diversion of wastewater to the Mississippi River, significant problems still remain.

Agricultural discharges also contribute significant pollution loadings to the Pontchartrain Basin. Agricultural runoff, originating from farming practices such as animal operations, agri-chemical applications, and land-clearing activities, contains pathogens, nutrients, toxic chemicals, and sediments. Although pathogen contamination from large animal operations has led to the closing of some rivers to recreation, new cost-sharing programs have begun to address these problems. In addition to agriculture practices, tree farming operations have impacted water quality in specific areas. In order to address the impacts of forestry operations, voluntary best management practices (BMPs) have been in effect since 1990.

"Produced waters" or formation brine is a by-product of oil and gas well operations. Produced water contains varying levels of saltwater, organic, naturally occurring radioactive and heavy metal contaminants that could adversely affect receiving waters. The impact on water quality in a shallow confined lake, Lake Pontchartrain, would be far greater than on deep flowing seawater such as the Gulf of Mexico. Currently there is a moratorium on new drilling operations in the Lake itself, and state and federal regulations will phase out most discharges in the Basin. Some operations in high flushing areas in the Basin, e.g. Breton Sound, will be allowed to continue discharging "produced waters" into the Basin if permitted by the DEQ.

The salinity in the Lake is also affected by the impact of saltwater intrusion from the Mississippi River Gulf Outlet (MRGO) via the Inner Harbor Navigation Canal (IHNC) and the Intercoastal Waterway.

In the lower end of the Basin, freshwater from the Pearl River can dilute some of the elevated salinity levels. Manmade freshwater diversion projects can also offset the effects of saltwater intrusion. Diversions from the Mississippi can provide much needed sediments to wetland areas. While diversions can be beneficial, they also have the potential to cause environmental harm. The Mississippi River contains toxic chemicals, pesticides and herbicides, nutrients, and sediments. Any diversion project must be judged on both its merits and its potential damage.

Upland and wetland construction and development, both commercial and residential, have also had water quality impacts throughout the Basin. Dredging and filling of wetlands is often associated with the most detrimental of these practices. Wetlands serve as natural filters for stormwater runoff, and when the natural vegetation is destroyed, sediments, heavy metals, and other contaminants are transferred to the Basin's surface waters. In addition, the impervious surfaces, resulting from the steadily increasing number of roofs, roads, parking lots, and driveways, decrease the surface area available for filtering runoff through the soil. As development around the lake shore increases, water quality problems can be expected to escalate.

GOAL: To improve Basin water quality through a comprehensive program of point and nonpoint pollutant source reduction that targets urban runoff, sewage, industrial pollution, agricultural runoff and saltwater intrusion.

Objective I: Provide a technical basis for the formulation of water quality improvement actions through water quality monitoring, needs assessment, and research.

Actions:

A. Monitor all pollution sources in the Basin, with citizen involvement when possible. Specifically, monitoring should include point sources and nonpoint sources of pollution from urban and rural areas, and agricultural regions.

1. Compile and publish "emission data" from industrial, commercial and public-operated treatment works.

[Louisiana Department of Environmental Quality (DEQ)]

2. Identify existing monitoring activities.

[Lake Pontchartrain Basin Foundation (LPBF)]

3. Encourage ongoing agency and organization monitoring programs.
4. Develop monitoring systems/programs that can be utilized and understood by the public.
5. Involve citizens in monitoring activities.

[LPBF]

6. Encourage local organizations to detect and report violations, such as illegal dumping in waterways.

[DEQ, LPBF]

7. Involve primary and secondary schools in citizens' monitoring programs (with education as chief aim).

[LPBF, La. Nature and Science Center (LNSC), universities, DEQ, La. Department of Health and Hospitals (DHH), U.S. Environmental Protection Agency (EPA), local governments, state and federal agencies, citizen groups, drainage and water conservation districts.]

8. Establish a database link with the EPA's Gulf of Mexico Program for monitoring pollutants on a long-term basis.

[EPA]

9. Conduct an evaluation and sampling program of pumped stormwater to identify mixing and contaminated zones. These data along with meteorological data should be used to identify safe swimming areas.

10. Monitor drinking water at water treatment plants and wells under the Federal Safe Drinking Water Act. (Drinking water standards do not apply to surface waters.)

[DHH, DEQ's Ground Water Program]

11. Explore a Lakekeeper or Basinkeeper Program, modeled after the Hudson Riverkeeper and San Francisco Baykeeper programs, wherein boaters patrol waterways to discover and report sources of pollution not being detected by regulatory agencies.

[LPBF]

- B. Assess current condition of the Basin and determine desired level of quality, what is feasible using the best available technology, and how existing pollution

laws can best be implemented.

1. Produce a series of publications in layman's language describing the environmental condition and needs of the Basin. (Publications should provide a historical perspective.)

[LPBF]

2. Update the bibliography that was developed during the Basics of the Basin Symposium and enter these data into a micro-computer based retrieval system. Sources of raw data from agencies and universities should be added to the proceedings.

[LPBF]

3. Schedule the Basin Symposium as an annual event.

[LPBF]

4. Examine the need for a comprehensive and independent pollution study that identifies, prioritizes, monitors, and quantifies all pollution sources, e.g., domestic and industrial sources, animals, and soil erosion. Identify feasible goals for the Basin.

[LPBF]

5. Utilize the DEQ's air quality inventory to complete exposure health risk assessment studies for air pollution along the industrial corridor. Develop baseline data on air pollutants and sources.

[DHH, DEQ, EPA]

6. Identify sources of funding for agencies, universities, and organizations that can be used to analyze existing raw data.
7. Assess actual/potential impact of oilfield waste pits on water quality and wetlands in the Lake Pontchartrain Basin. Map location of sites for reference and distribution. Establish program to locate unidentified sites.

[DEQ, EPA, La. Dept. of Natural Resources (DNR) Office of Conservation, State Oil Spill Coordinator's Office]

8. Assess actual/potential impacts of naturally occurring radioactive material (NORM) sites in Basin.

[DEQ, DNR]

9. Assess nature and extent of contamination by Abandoned Hazardous Substance Sites, and the potential for impact on water quality. Map location of sites for reference and distribution.

[DEQ, EPA]

10. Develop and implement a methodology to identify locations where surface subsidence has been impacted by resource extraction.

[DNR, La. Geological Survey (LGS), U.S. Geological Survey (USGS)]

- C. Promote an ongoing, coordinated, interagency research program that addresses Basin water quality within its hydrologic boundaries.

1. Establish a mechanism for coordinating Basin-wide research projects.

[LPBF, universities]

2. Assemble an inventory of studies, including a series of publications in layman's language summarizing the results of past and current studies.

[LPBF]

3. Network and share data with all resource management agencies and groups.

[LPBF (or its contractors), university environmental education departments, resource agencies, La. Cooperative Extension Service (CES)]

4. Develop a geographic information system (GIS) for the Pontchartrain Basin, utilizing the expertise of the Louisiana Geological Survey (LGS), universities, private contractors, and the Basin parishes. House the project in Jefferson, Orleans, or St. Tammany Parishes.

[LPBF, EPA, LGS, USGS, DEQ, DHH, universities, local governments]

5. Coordinate research and workshops to develop appropriate technology for on-site source control, treatment of urban runoff (particularly in lowlands and coastal zones), and design of wastewater collection systems subjected to considerable subsidence.

[DHH, DEQ, EPA]

6. Formulate a water quality matrix identifying existing water quality problems, programs, and gaps. Start with the DEQ's 305(B) report and update bi-annually.

[LPBF]

7. Define hydrologic runoff parameters, e.g., "first flush."

[LPBF, U. S. Army Corps of Engineers (COE)]

8. Perform a risk assessment for the consumption of seafood from contaminated zones of the Lake. Make available to the public periodically.

[DEQ, DHH, EPA]

9. Develop a schedule for meeting EPA standards for drinking water.

[DHH]

10. Identify and evaluate implementation of regulations governing sewage and bilgewater disposal from commercial and recreational fishing vessels.

[U.S. Coast Guard (USCG), EPA, DEQ]

11. Establish an assessment program to locate unidentified NORM sites in the Basin. Put exact location on map for reference and distribution.

[DEQ, DNR]

12. Establish an assessment program to locate unidentified Abandoned Hazardous Substance Sites in the Basin.

[DEQ, EPA]

13. Study and implement the most prudent alternative method for treatment of contaminated sediments in produced water discharges.

14. Evaluate which organisms can be utilized for pollutant source identification.

[DHH, EPA]

Objective II: Reduce adverse impacts of urban runoff upon Basin water quality.

Actions

- A. Increase funding to continue and maintain the development of surface water quality standards and to monitor the waters of the Basin regularly for compliance under the Clean Water Act.

[DEQ, EPA, parishes]

B. Develop and implement a Basinwide stormwater management program.

1. Develop a basinwide stormwater management program (point source) according to EPA guidelines (40 CFR 122) requiring that urban areas:
 - a. Eliminate illegal or illicit connections to storm drain system.
 - b. Improve litter and garbage control in streets and canals.
 - c. Monitor proper fertilizer, insecticide and herbicide use.
 - d. Repair sewer collection systems.
 - e. Increase enforcement of existing and future regulations.
 - f. Properly dispose of household hazardous waste.

[DEQ]

2. Increase DEQ staffing so that NPDES permitting can be expedited and more on-site inspections for compliance can be carried out.

[La. Legislature, DEQ]

3. Tighten controls on the discharge of contaminated runoff through more stringent limits and/or pretreatment.

[EPA, DEQ]

4. Evaluate the feasibility of pretreating stormwater runoff and drainage into water bodies by routing stormwater through wetlands.

[LPBF, COE, Jefferson and Orleans Parishes, DEQ, DNR]

5. Develop a timetable for eliminating nonpoint pollution sources (5 years urban; 10 years industrial).

[EPA, DEQ]

6. Enforce existing ordinances which prohibit certain commercial facilities such as gas stations, auto repair shops, paint stores, dry cleaners, film developers, etc. from disposing of used oil, anti-freeze, paints, solvents, and any other potentially toxic substance on the ground or in storm drains.

[DEQ, EPA, local governments]

7. Develop emergency plans in coordination with local government agencies to identify potential problem sites related to accidental discharge from sewage lines and diversion of sewage to drainage canals.

[DEQ]

8. Develop and enforce a program to regulate the water quality of discharges from new developments.

[Parish and city zoning boards, DHH]

9. Assess health and assimilative capacity of wetlands prior to relocating outfall pipes for treatment of urban runoff.

[EPA, COE, DEQ]

10. Develop and implement a program for "proper" disposal of paint, solvents, motor oil, and other household hazardous waste prior to educating the public not to dump these in storm drains.

[LPBF, DEQ, EPA, DHH, municipalities, parishes]

- C. Continue to sponsor and obtain state, federal, and private funding for current and future water quality enhancement programs.

[LPBF, EPA, DEQ and any others appropriate]

- D. Discharge stormwater runoff from Orleans and Jefferson Parishes into Mississippi River instead of the Lake.

[COE, local governments]

Objective III: Eliminate sewage-related pollution impacts on water quality.

Actions:

- A. Raise sewage treatment standards and compliance levels.
 1. Enforce current regulation of sewage runoff and increase maintenance of sewerage lines and treatment facilities.

[EPA, DEQ, DHH, local governments]
 2. Enforce compliance schedules for sewage treatment plants.

[EPA, DEQ, DHH, local governments]
 3. Determine waste load allocations for each water quality limited stream segment in the planning area and require tertiary treatment where necessary.

[EPA, DEQ, DHH, local governments]
 4. Require best available technology for rural, residential, and commercial sewage treatment.

[EPA, DEQ, DHH, local governments]
 5. Reduce fecal coliform pollution of shellfish beds by requiring camp owners to install treatment systems.

[DHH, local governments]

6. Establish more pretreatment programs and track contributing sources.

[DEQ, EPA]

7. Pursue parish and state requirements for provision of community type sewerage for all proposed new developments (e.g., subdivisions, etc.) thereby reducing the number of individual sewage disposal systems in the future.
8. Work with parishes to implement realistic, workable, comprehensive master plans for future development.

B. Ensure funding for adequate sewage treatment.

1. Obtain state and federal cost-sharing funds to assist local governments in rehabilitating wastewater collection and treatment systems to minimize bypasses and accidental sewage discharge.
2. Obtain an appropriate level of funding for monitoring programs targeting wastewater treatment facilities and sources.
3. Require a bond (fundable letter of credit) for rural development in order to ensure continuous compliance of wastewater treatment requirements.
4. Increase funding for current pretreatment programs.

Objective IV: Reduce impacts of industrial and commercially generated pollution on water quality.

Actions:

A. Develop a point source pollution management program that identifies and addresses sources of industrial and commercial pollution.

1. Determine best available technology for commercial sewage and industrial waste treatment.

[DEQ, EPA, DHH, local governments and industries]

2. Enforce compliance with State and Federal discharge permit limitations which are based on State water quality standards.

[EPA, DEQ, local governments]

3. Increase funding and manpower for DEQ, DHH, and local governments so that issuing industrial and commercial discharge permits can be expedited

to facilitate enforcement action where needed.

4. Enforce regulations governing sewage and waste residual disposal from commercial and recreational fishing vessels.

[U.S. Coast Guard (USCG), La. Dept. of Wildlife and Fisheries (DWF)
EPA, DHH]

5. Vigorously enforce litter laws and removal of unused commercial and recreational fishing equipment.

[USCG, DWF, La. Dept. of Culture, Recreation and Tourism (DCRT),
EPA Gulf of Mexico Program]

6. Encourage owners of boat launch facilities to comply with applicable standards for pump-out and other sanitary facilities. Agencies that fund boat launches should require that DHH review any permits and require adequate sanitary facilities.

[Local governments]

7. Implement permanent control measures for Abandoned Hazardous Substance Sites within the Basin.

[DEQ, EPA]

B. Clean up pollution in the Inner Harbor Navigation Canal.

1. Initiate a study to determine if the IHNC is a source of pollution in Lake Pontchartrain.

[DEQ, EPA, local governments and industries]

2. If the IHNC is determined to be a source of pollution, obtain funding for cleanup (e.g., through a user fee on industries through the Environmental Trust Fund).

[DEQ, EPA, local governments and industries]

C. Reduce oilfield discharge impacts in the Basin.

1. Phase out produced water discharges containing contaminated sediments.
2. Evaluate a sediment contamination program to determine the most prudent remediation alternatives.
3. Increase oil and gas inspection activities in the Basin.
 - a. Fund more inspectors at DNR and DEQ to encourage a regular circuit of inspection of oil and gas activities in the Lake.
 - b. Establish a special "lake ranger" position to provide routine surveillance

- of ongoing activities in Lakes Pontchartrain and Maurepas.
- c. Recommend that agencies obtain an adequate number of boats for use by any of the state and federal agencies that have inspection responsibilities in Lake Pontchartrain.

D. Mitigate adverse impacts of sand, gravel, and clay mining in the Basin.

1. Coordinate activities with DEQ's Nonpoint Source Program's Resource Extraction Section.

[DEQ]

2. Review recently passed legislation concerning reclamation of mining sites.

[LPBF]

3. Require reclamation of abandoned sand and gravel pits.

[DNR]

4. Reduce silting in the lower Amite River through implementation of the recommendations of the Sand and Gravel Task Force of the Governor's Interagency Task Force on Flood Prevention and Mitigation.

[COE, DNR, DEQ]

5. Ban clay mining in Lake Pontchartrain if adverse impacts cannot be eliminated.

[DNR, La. Legislature]

Objective V: Reduce environmental problems associated with agricultural practices.

Actions:

- A. Increase educational programs pertaining to BMPs for pesticides, soil erosion, and on-farm water management.
 1. Devise and implement BMPs for waterways. BMPs should provide for filter strips between forested and agricultural areas to ensure that sediments and chemicals used during these practices do not significantly impact the water quality in receiving waterways.

[DEQ, La. Dept. of Agriculture and Forestry (DAF), U.S. Soil Conservation Service (SCS), EPA, National Oceanic and Atmospheric Administration (NOAA)]

2. Encourage farmers and foresters to use BMPs to reduce erosion and minimize adverse impacts on water quality due to farming and silviculture activities.

[DEQ, SCS, EPA, NOAA, DAF, local governments]

- B. Develop an action plan for agricultural runoff which includes stricter control of agricultural runoff through existing laws and regulations.

1. Enforce existing agricultural runoff regulations.

[DEQ, EPA]

2. Provide cost-sharing incentives and technical assistance to farmers to install agricultural runoff treatment facilities.
3. Offer incentives to landowners and parishes to encourage the installation and maintenance of vegetated buffer strips along all stream banks.
4. Encourage installation of properly sited and lined lagoon systems at dairy farm sites.

[LPBF, DEQ, SCS, La. Farm Bureau, DAF]

- C. *Strictly control pesticide applications and employ non-chemical means to manage unwanted vegetation and pests whenever possible in both urban and rural areas.*

1. Improve enforcement of all regulations controlling the application of pesticides.

[DAF, EPA, local governments]

2. Obtain adequate funds to monitor compliance with existing regulations on pesticides.
3. Adopt local ordinances concerning use of pesticides.

[DHH, DEQ, DAF, CES, SCS, EPA, citizens, local governments]

Objective VI. Reduce impacts of saltwater intrusion on water quality.

Essential Habitat

Introduction

The term essential habitat encompasses the environmental parameters crucial to the survival of plants, animal species, wetlands, fish and shellfish, submerged aquatic vegetation, and primary nursery areas. The Pontchartrain Basin's diverse essential habitats are important ecological and economic areas that are home to a variety of fish, flora, and wildlife.

Human activities in the Basin have resulted in the loss or degradation of important essential habitats that support flora, fauna, and natural communities. Loss and/or degradation of these areas is the primary reason for reduction in the number, or loss of ecological function and health, of plant and animal species.

Wetland habitats have been substantially reduced within the past 25 years. Although natural processes, e.g., subsidence and plant eating animals (nutria "eat outs"), have contributed to some of this loss, much of it can be attributed to human activities. Some of the wetland losses can be directly traced to dredging or filling of these areas. With the increasing population on the North Shore, and other areas within the Basin, additional wetland acreage is continually being threatened.

Another cause of wetland degradation and/or loss is erosion. Shoreline erosion rates around the Lake vary considerably. Because of shoreline stabilization, there is little shoreline erosion in Jefferson and Orleans Parishes. However, parishes in the upper end of the Basin have experienced erosion rates varying from 8.2 feet per year in Tangipahoa Parish to 25.3 feet per year in St. John the Baptist Parish.

In addition to direct destruction of wetland areas, some loss of wetland habitat can be linked to sea level rise and/or subsidence. Although relative sea level rise is a basin-wide problem, there are some "hot spots" where soil subsidence, compaction, and sea level rise have contributed to concentrated wetland loss.

Saltwater intrusion causes wetland habitat loss. One of the major causes of change in salinity in the Basin is large navigation projects, such as the IHNC and the MRGO.

Saltwater intrusion increases the salinity in the Lake during periods of low stream flow and contributes to periods of stress in the marshes and swamps of the Basin. Studies have shown that fluctuating salinity levels also affect the yields of certain fish species. In general, the higher the salinity levels, the lower the population of these species.

Since 1954, the grassbeds along Lake Pontchartrain have been reduced by as much as 25%. Further studies conducted at the University of New Orleans revealed a 50% decrease between 1973 and 1985, a 17% decrease between 1985 and 1991, and a 75% reduction on the North Shore following Hurricane Andrew. The once-abundant beds along the South Shore have disappeared. The causes of this loss are thought to be shoreline development, adjacent land use patterns, water quality (pH, salinity, turbidity) and the quantity of photosynthetic active radiation available to submerged aquatic vegetation (SAV) within the estuaries.

In addition to the loss of SAV acreage, there has also been a shift in grass species composition from *Vallisneria* to *Myriophyllum* in Lake St. Catherine and protected waters

associated with Lake Pontchartrain. The primary causes of the reduction in size of the grassbeds and shift in species is thought to be, a change in substrate, pollution and saltwater intrusion.

There are many rare plant communities within the Basin that are being lost. One example is the longleaf pine savannas in Tangipahoa and St. Tammany Parishes. These areas are rapidly disappearing due to: 1) urban development; 2) suppression of the burning regime which controls the vegetative communities; and 3) changes in hydrology caused by draining or unnatural flooding. The quillwort, a plant found in the Basin, has recently been placed on the endangered species list.

In addition to rare plants, several endangered species of fauna are known to have been seen in the Basin. Examples include: gopher tortoise, brown pelican, peregrine falcon, southern bald eagle, and red-cockaded woodpecker. As essential habitat is lost, these animals will continue to decline in number.

There is evidence that overall fish production in the Lake has declined, although due to increased fishing pressure, the overall commercial catch increased in the period from 1976 to 1983. If primary nursery areas continue to disappear at the present rate, fish production could decrease significantly. Currently, all the shellfish beds in the Lake are closed to harvest because of pollution.

GOAL: Protect and restore land-based and aquatic critical habitat in the Pontchartrain Basin.

Objective 1: Reduce the environmental impacts of saltwater intrusion in the Pontchartrain Basin.

Actions:

- A. Initiate research projects to evaluate the impacts of saltwater intrusion caused by navigation, diversion, and structural projects.
1. Initiate an ongoing, coordinated, interagency research program that will develop a baseline study of salinity regimes in the Basin.

[LPBF, COE, EPA, DNR, DWF, DEQ, universities]

2. Create an interagency work group made up of the LPBF and local, state, and federal agencies to address diversion projects within the Basin.

[LPBF, DEQ, COE, EPA, DWF, DNR, local governments]

3. Conduct a study to determine the impacts of saltwater intrusion caused

by navigation projects such as the MRGO and the IHNC.

[LPBF, COE, EPA, DNR, DWF, DEQ, universities]

4. Determine existing ground elevations and the causes of wetland loss in the marshes on the MRGO disposal area.

B. Control saltwater intrusion by structural means.

1. Repair levees along the MRGO disposal area to prevent these fresh marshes from draining or becoming more saline.

[DNR, COE, EPA, Port of New Orleans]

2. Investigate the following for addressing saltwater intrusion and wetland destruction problems associated with the MRGO: close the MRGO (partial or full closure), construct a navigation gate and/or sill to control seawater passage, relocate the existing container facility to the Mississippi River, regulate the speed of vessels.

[COE, EPA, DNR, Coastal Wetlands Planning, Protection, and Restoration Act (CWPPRA), State Wetland Restoration Program]

3. Operate the gates at Bayous Bienvenue and Dupre to retard the saltwater wedge.

[DEQ, COE, DWF, DNR]

4. Evaluate all active diversion projects within the Basin as to their effectiveness for reducing saltwater intrusion. Suggested locations for evaluation include: Violet and Caenarvon.

[COE, DNR, CWPPRA, universities]

5. Review the IHNC expansion being evaluated by the COE.

[LPBF, DNR, universities]

6. Review the current design plans of the Bonnet Carre Freshwater Diversion and the Spillway to evaluate if closure procedures will prevent an environmentally dangerous spill in the Mississippi from reaching Lake Pontchartrain.

[LPBF, COE, DNR, DWF, universities]

7. Establish a demonstration project in the Pass Manchac area to determine if closing man-made channels is an effective way of controlling saltwater intrusion impacts.

[LPBF, COE, DNR, CWPPRA, universities]

8. Update the Bonnet Carre Environmental Impact Statement before beginning the project. The study should include analysis of the salinity stratification, economic impacts, water quality impacts on the South Shore of the Lake, and the causal relationships between the diversion and "dead zones".

[LPBF, DEQ, COE, EPA, DNR]

9. Develop a funding mechanism to mitigate the effects of navigation canals.

[COE, DNR, DWF, parish governments]

Objective II: Reduce and/or prevent loss of wetland areas within the Basin and restore degraded areas where possible.

Actions:

- A. Initiate research projects to evaluate wetland loss and degradation.
 1. Initiate an ongoing, coordinated, interagency research program that will develop a baseline study of the remaining wetlands in the Basin.

[LPBF, U.S. Fish and Wildlife Service (USFWS), DNR, COE]

2. Determine the effects of spoil banks, levees, and other constructed features on wetland sheet flows.

[Universities]

3. Develop and implement a methodology to identify locations where surface subsidence and/or marsh loss has been impacted by resource extraction.
4. Document the regional impact of levees to determine if there is a correlation between levee construction/use and wetland loss.
5. Survey the hydrologic impacts of logging canals on wetland areas and develop a model to determine if closing the current network of logging channels would improve the overall health of affected marshes.
6. Initiate a study to determine the feasibility of installing a series of weirs and flap-gates along highways in the Basin to increase flows, stabilize surface areas, and reduce ponding in wetland areas.

[LPBF, COE, CWPPRA, DNR, La. Dept. of Transportation and Development (DOTD), universities]

7. Utilize the U.S. Geological Survey's model of the Fritchie Marsh to aid in determining how to restore the area's hydrologic regime.

[State Wetland Restoration Program, USGS, universities]

- B. Enhance marsh vegetation growth and development by structural means, revegetation, diversion projects, and sediment retention devices.

1. Evaluate diversion projects in the Pearl River and the Bonnet Carre Spillway to determine if they will enhance surrounding marshes.

[DNR, COE, CWPPRA, local parishes]

2. Redesign or modify existing water control structures to improve drainage and promote the growth of new marsh vegetation.

[LPBF, COE, EPA, DNR, local parishes, landowners]

3. Create new sediment zones through the construction of levees and the utilization of pumps to rebuild the La Branche Wetlands as well as other sediment-starved sites on a case-by-case basis.

4. Rebuild marshes in the Big Mar area by utilizing sediment-trapping devices (silt screen, brush fences, etc.) to divert sediment from the Caenarvon freshwater diversion.

[DNR, COE, EPA, landowners, volunteer groups, local governments]

5. Perform a limited amount of dedicated dredging in Lake Pontchartrain to provide sediments to counteract subsidence.

6. Place sediment-trapping devices in open water areas to enhance sediment deposition projects.

7. Revegetate open water in the Goose Point area by planting appropriate flood-tolerant species and using predator guards.

[CWPPRA, COE, EPA, USFWS, landowners]

8. Determine where to install water control structures or pumps in perimeter levees to hydrologically connect the impoundment to exterior waterways to return the following wetlands to their natural vegetation:

- a. NE La Branche Wetlands
- b. Port St. Louis Marsh west of Madisonville
- c. Delacroix Marsh near Big Mar
- d. East Eden Isles
- e. Bayou Sauvage NWR
- f. New Orleans East

[DOTD, COE, EPA, DWF, DNR, USFWS, parish governments, landowners]

9. Redirect the Amite River down its original channel to improve water circulation and introduce sediment into the surrounding low swamps.
10. Map and locate all highway and railroad culverts within the Basin and repair culverts north of the Lake to restore the free movement of water.

[DOTD, CWPPRA, DNR, parish governments, landowners, municipal governments, railroads]

C. Determine the effects of nutria "eat outs" on wetland loss.

1. Develop an indirect, efficient, effective, and inexpensive technique for estimating nutria density.

[USFWS, universities]

2. Initiate control measures to decrease the number of animals eating cypress seedlings and marsh plants.

[USFWS, U.S. Dept. of Agriculture (USDA), DWF, DNR, CWPPRA, U.S. Forest Service (USFS), landowners, universities]

3. Develop alternative uses for nutria that would increase demand and harvest value. These could include:
 - a. Establishing a tannery in Louisiana to bypass the need to send skins overseas.
 - b. Increasing the bounty on nutria taken from "hot spot" areas.
 - c. Identifying the nutria as "varmint" which would allow people to harvest nutria throughout the year.

[DWF, USFWS, DNR, local governments]

4. Institute an educational program on the impacts and control of nutria that is primarily directed at landowners and environmental groups.

[LPBF, DNR, DWF, SCS, CES, local governments]

D. Implement a wetland protection program that will emphasize a "no net loss" policy and establish mitigation policies.

1. Develop a computerized wetland permit database within the Basin that addresses habitats and the acreage impacted. Periodically check to determine if permit special conditions were followed, if mitigation was

successful, and if there is a need for future changes in the permitting process.

2. Require that responsible agencies improve their monitoring and enforcement of the implementation of wetland permit special conditions.

[COE, EPA, DNR]

3. Develop mitigation banks containing each habitat type normally impacted by COE and DNR Coastal Management Division general permits, and identify which impacts cannot feasibly be avoided or minimized.
4. Develop mitigation bank guidelines that address purchasing and protection of habitat; habitat improvement; and the financial responsibilities of the mitigation bank and overseeing agencies.
5. Require as-built monitoring reports for all projects used as mitigation.
6. Require mitigation banks to produce annual monitoring reports. Require follow-up reports one and three years after the implementation of individual projects.
7. Encourage the rapid completion of the mitigation requirements for I-310 as they impact the structures in the La Branche Wetlands.

[DOTD, COE, EPA]

8. Require mitigation to be located in the affected basin.

E. Develop educational and financial incentives to protect and conserve wetlands.

1. Modify the guidelines of the Wetlands Reserve Program to make converted marshlands eligible for funding under the program.
2. Develop financial incentives to discourage the conversion of wetlands to farmlands.
3. Develop educational programs to encourage the creation of wetlands from farmlands.

[LPBF, CES, USDA, SCS]

4. Encourage landowner participation in conservation programs such as the Wetlands Preserve Program and conservation easements.

[USDA, SCS, Louisiana Natural Heritage Program, Nature Conservancy]

Objective III: Prevent or reduce the impacts of shoreline erosion within the Basin.

Actions:

- A. Initiate a study to determine the most cost-effective and feasible shoreline-protection devices/methods.
 - 1. Initiate a demonstration project to determine cost-effectiveness of various wave-abatement devices.

- B. Construct the appropriate wave-abatement and sediment-trapping structures adjacent to the eroding shorelines to prevent further loss.
 - 1. Construct and maintain the appropriate shoreline protection devices in the MRGO adjacent to the shoreline.

[COE, EPA, DNR, Port of New Orleans, CWPPRA]
 - 2. Armor all cuts that are now part of the MRGO levee system.

[DNR, COE, EPA, CWPPRA, Port of New Orleans]
 - 3. Close the MRGO by placing a plug or floodgate at the la Loutre Ridge, move existing facilities and cease maintenance dredging of the waterway.

[COE, EPA]

- C. Regulate boat speeds in the MRGO so that they are required to maintain speeds below those that create large wakes.

[USCG, Port of New Orleans, local governments]

Objective IV: Reduce and/or prevent loss of SAV areas within the Basin and restore these areas where possible.

Actions:

- A. Initiate restoration projects to reconstruct SAV beds in Lake Pontchartrain.
 - 1. Map all remaining SAV areas to develop a baseline for future studies and restoration efforts.
 - 2. Improve substrates in areas currently containing SAVs to encourage additional growth in the Bayou St. John area.
 - 3. Initiate a demonstration project to determine if re-establishing *Vallisneria*

grasses in shallow water areas of Lake Pontchartrain is feasible.

4. Place sediment-trapping devices (Christmas tree fences, etc.) in open water areas to trap sediment to aid revegetation efforts.

[LPBF, DNR, COE, volunteer groups, local governments, landowners]

5. Evaluate the restoration of SAVs as ecological mitigation in areas where existing SAVs are destroyed due to development activities.

Objective V: Protect and restore essential habitat and rare natural communities.

Actions:

- A. Initiate an ongoing, coordinated, interagency research program that will develop a baseline study of natural vegetation and species/organisms in the Basin.
- B. Develop a Basin-wide restoration plan that ranks potential restoration areas from highest to lowest in priority. The highest priority restoration areas, or "key areas," are those that result in the maximum gain in ecosystem function at a minimum cost.

[LPBF, CWPPRA, COE, EPA, USFWS, DNR, universities]

- C. Encourage the enhancement of publicly and privately owned habitat for rare and endangered species (non-consumptive and consumptive) where those actions do not impact water quality.
 1. Support efforts by National Wildbird Refuge, Inc. to raise funding for "Project Swallow" in Jefferson Parish.
 2. Initiate a demonstration project at Bayou Sauvage National Wildlife Refuge (NWR) that could test the feasibility of constructing terraces in the organic soils of the deltaic region; if feasible, construct terraces similar to those built on the Sabine National Wildlife Refuge to restore intertidal soil elevations to the impounded areas. Coordinate with the USFWS' Southeast Louisiana Refuge Complex (SELA) and the Master Plan for Bayou Sauvage NWR.
- D. Develop and strictly enforce management plans for all scenic streams and rivers within the Basin.
 1. Protect all waterbottoms of, and habitats adjacent to, scenic streams and rivers.

[DWF, DNR, USFWS, EPA]

- E. Enforce all existing federal and state regulations regarding the protection of threatened and endangered species and marine mammals.

[USFWS, DWF]

- F. Develop resource management programs that will protect and restore longleaf pine savannas in the Basin.

1. Develop regulations that prevent the loss of longleaf pine savannas in Tangipahoa and St. Tammany Parishes.
2. Mandate the use of BMPs for the harvest of timber from longleaf pine savannas.

[USFS, USDA, DAF, DEQ]

3. Purchase the largest and most pristine remaining longleaf pine savanna areas, maintain fire burn zones around them, and manage these areas to maintain the habitat.

[USFS, USDA, DAF, DEQ]

4. Develop landowner incentive programs to encourage the planting and management of longleaf pine.
5. Develop a management program for prescribed burning.

- G. Develop and initiate a management program for cypress trees in the Basin.

- H. Initiate a study on cost-effective methods to eradicate or control fruit tree leafroller populations.

1. Develop a biological control for fruit tree leafrollers, a destructive pest to cypress swamps.
2. Evaluate the water quality impacts from aerial spraying for fruit tree leafrollers during spring feeding periods.

Objective VI: Design, develop, and oversee a system of parks and wildlife preserves that protects the Basin's essential habitat while allowing for recreational and educational activities.

Actions:

- A. Request that the Office of State Lands in the Division of Administration identify and map state-owned lands which could be used for recreational purposes or

which could provide access to water.

- B. Distribute Statewide Comprehensive Outdoor Recreation Plan inventories to IAWG delegates so they can be reviewed for accuracy.
- C. Work with the Louisiana Department of Culture, Recreation, and Tourism (DCRT) to incorporate the state-owned lands identified by the Office of State Lands into the Statewide Comprehensive Outdoor Recreation Plan.
- D. Redirect a portion of the DCRT advertising budget to market underutilized outdoor recreational facilities in the state.
- E. Work with the DCRT to ensure that there is sufficient public access to water-based recreational facilities.
- F. Coordinate with local levee districts to determine if adequate facilities are proposed and/or maintained to meet recreational demand along the levees.
- G. Involve regional and local sportsmen's associations as local sponsors of new recreational developments, e.g. bike routes, fishing sites, and hiking trails.
- H. Work with the USFWS to increase public access to the Bayou Sauvage National Wildlife Refuge.
- I. Encourage the use of excursion boats on Lake Pontchartrain.
- J. Promote recreational use of waterbodies (e.g., excursion boats, canoeing, and camping) and provide recreational facilities and open space in the Basin such as beaches, state parks, trails, and paths.
- K. Explore the use of easements and servitude for access to public lands.

Objective VII: Encourage the development of efficient transportation systems that minimize adverse environmental impacts to the Basin's critical areas.

Actions:

- A. Coordinate with the DOTD and metropolitan planning organizations in the development of the state's intermodal transportation plan so that transportation goals of the state are consistent with the Basin's management plan.
- B. Identify the key routes to be developed/upgraded and assure that the plans are consistent with the goals of the Basin's management plan.
- C. Encourage development of mass-transit systems in order to reduce traffic congestion, to reduce source and nonpoint source pollution associated with high traffic volumes, and to improve general quality of life.

- D. Encourage the development of bicycle routes and hiking paths in the Basin.
 - 1. Coordinate with the New Orleans Regional Planning Commission and other regional planning bodies to develop the "Ring Around the Lake" bicycle trail.
- E. *Coordinate with state and federal agencies to ensure that transportation projects are compatible with ongoing coastal conservation/restoration efforts.*
 - 1. Design transportation structures in conjunction with DNR wetland restoration staff so that hydrologic factors are taken into consideration.
 - 2. Consider wetland impacts before implementing transportation maintenance/rehabilitation projects, not just in the planning of new projects.

Objective VIII: Restore and protect the primary nursery areas in the Basin in order to maintain long-term, sustainable fisheries.

Actions:

- A. Initiate a fisheries analysis and monitoring program that can be utilized for the long-term management of fisheries resources.
- B. Maintain optimum yield for existing commercially and recreationally important basin species.

[National Marine Fisheries Service (NMFS), DWF, USFWS, Wildlife & Fisheries Commission]

- C. Encourage the development of value-added processing for all seafood resources harvested in the Basin.

[La. State University (LSU) Agricultural Center, DWF, La. Seafood Promotion & Marketing Board, USDA, DAF]

Education/Public Participation

Introduction

Public education and involvement is necessary to foster public recognition of the Pontchartrain Basin as a regional and national resource, and to stimulate public, governmental, and private sector support for the financial commitment necessary to restore and protect the Basin. In addition to financial resources, the restoration efforts will require changes in lifestyle, both individual and community-wide. If the public is made more aware of how the Pontchartrain Basin estuarine system functions and why it is such an important resource area, then the public is more likely to properly use the area and support its management.

Public education is necessary both as a supplement and an alternative to regulatory enforcement programs. In this era of staff shortages and fiscal shortfalls, resource management agencies will need the backing of a well-informed public to effectively address environmental problems. More and more, public education is recognized as the effective resource management tool to address those problems which result from individual actions such as improper disposal of waste from households, automobiles or boats.

Recognizing the potential for these efforts, the DEQ's Nonpoint Source Pollution Program has developed an effective program to deal with nonpoint source pollution (one of the major causes of water quality degradation) that stresses educational rather than regulatory mechanisms. This program can serve as a model for other educational programs.

Public involvement in actions to clean up and protect the Lake and Basin is important because the public can bring information, expertise, values, funding and priorities to the decision-making process. Resource management programs which have not adequately educated or involved the public are often met with resistance or animosity, and some ultimately fail as a result.

Currently there is no comprehensive, basin-wide education/public awareness program. The development of this document provided the first forum where these issues could be openly discussed by the public and private sectors. The results of these meetings indicate that education and public involvement is one of the most critical components of the management plan and must include both urban and rural elements. In addition, multicultural approaches and components must be encouraged.

GOAL: Educate the public on a broad array of issues involving pollution in the Basin in order to encourage active public/private participation in cleanup and to deter further environmental degradation.

Objective I: Develop and/or distribute a comprehensive array of educational materials for use in environmental education programs.

Actions:

- A. Develop and/or distribute materials to inform the general public about:

1. General and commercial pollution.

[DEQ, DNR, EPA, DWF, Louisiana Environmental Education Resource and Information Center (LEERIC), Urban Waste Management and Research Center at UNO (UWMRC) La. Land and Exploration, LSU Sea Grant, COE]
2. Methods for treating and monitoring rural and agricultural runoff.

[DEQ, CES]
3. Recycling and precycling (purchasing products with minimum, recyclable packaging).

[LPBF, LNSC Recycle New Orleans!, DEQ]
4. Marine litter.

[LPBF, EPA's Gulf of Mexico Program, DNR's Coastal Management Division, LGS, Center for Marine Conservation, DCRT, USCG]
5. Household trash and disposal.

[LPBF, DEQ, EPA, CES, local governments]
6. Urban runoff.

[LPBF, DEQ, COE, EPA, DHH, local governments; New Orleans Sewerage and Water Board (S&WB), Jefferson Parish, CES, DEQ]
7. Water quality standards.

[DEQ, EPA]
8. Affordable pollution control technologies and practices.

[LPBF, DEQ, CES, universities]
9. Environmentally safe household chemical use and disposal practices.

[LPBF, CES, DEQ]
10. Yard waste composting.

[LPBF, CES, DEQ, EPA, DHH, local governments, schools]
11. *Applicable civil and criminal penalties for environmental degradation.*

12. Water quality issues related to the IHNC.
[LPBF, universities, local governments]
13. Need for funding.
[LPBF, CES]
14. Proper use of pesticides, fertilizers, herbicides.
[LPBF, CES]
15. Recycling used motor oil.
[LPBF, DEQ]
16. Functions and need for healthy wetlands (uplands, swamps, and marshes).

B. Develop and/or distribute materials to inform the business community about:

1. Economic value of sound environmental practices.
[LPBF, DEQ, local governments, universities]
2. Consumer recycling incentive programs.
[DEQ]
3. Commercial/industrial waste recycling incentives.
[LPBF, EPA, DEQ, local governments]

C. Develop and/or distribute materials to inform landowners about:

1. Environmental protection rights and responsibilities.
[LPBF, local governments, local environmental groups]
2. Environmental aspects of public access laws.

Objective II: Increase availability of appropriate educational materials to all residents of the Basin.

Actions:

- A. Initiate an advertising campaign to focus attention on the Basin and Lake.
[LPBF, LSU Sea Grant, Southeastern La. University (SLU) Consortium, LEERIC,

UWMRC]

- B. Form and coordinate a speakers program; gather information on good speakers; publicize speakers program through media.

[LPBF, League of Women Voters, citizen groups, existing speakers bureaus]

- C. Involve governmental officials and agencies.

1. Develop information packets and conduct workshops.
2. Designate a Basin lobbyist.
3. Foster continued participation of state and local agencies on LPBF Board and IAWG.
4. Initiate "Lake Advocate of the Year" award.

[LPBF]

- D. Develop public service announcements, videos, and slide shows for public presentation.

[LPBF, New Orleans S&WB, Jefferson Parish, CES, DEQ]

- E. Develop a video on Lake Pontchartrain (problems and solutions); develop resource packet with video for school/civic groups.

[LPBF, teachers organizations, citizen groups, state agencies]

- F. Establish museums and interpretive centers on North and South Shores in cooperation with existing facilities.

[LPBF, Audubon Institute, La. Nature and Science Center (LNSC), UWMRC, Citizens for a Clean Tangipahoa (CFACT) Education Committee, SLU, Northlake Museum and Nature Center]

- G. Erect shelters with educational information and mini nature centers on public access trails, e.g., the Wildlife and Fisheries Museum in Kenner, Turtle Cove Environmental Research Station, and the Swamp Walk at Joyce Wildlife Management Area.

[LPBF, Audubon Institute, LNSC, UWMRC, CFACT Education Committee, SLU]

- H. Continue Turtle Cove Environmental Research Station teacher workshops.

[LPBF, SLU]

- I. Improve signage on Lake and tributaries regarding safety of swimming.
[LPBF, state agencies]
- J. Publicize the following existing programs: storm drain stencilling program, citizen monitoring, natural lawn care, and BMP education for local government officials.
[LPBF, DEQ's Nonpoint Source Pollution Program, local government officials]
- K. Disseminate litter control information.
[LPBF, DCRT, DEQ]
- L. Establish a hotline that provides information on maintenance of rural waste treatment systems.
[EPA, CES]
- M. Promote LNSC's Recycle New Orleans! educational program.
[LPBF, LNSC]
- N. Pursue initiation of a uniform, standardized notification process for swimming and other recreational advisories from the state agencies.
[DHH]

Objective III: Promote grassroots public participation in Basin cleanup.

Actions:

- A. Enlist volunteers, boats, and specific area coordinators for litter sweeps/garbage pickups.
[LPBF, DCRT, environmental groups]
- B. Develop a list of organizations/groups to participate in storm drain stencilling and litter cleanups.
[LPBF, DCRT, local governments, garden clubs, school groups, churches, business/civic organizations]
- C. Solicit local government assistance in organizing public participation.
[LPBF, local governments]

D. Promote public participation and cleanup programs including:

1. CFACT citizen monitoring and litter pickups
2. Storm Drain Stenciling
3. Adopt-A-Beach/Canal/etc.
4. Trash to Treasure
5. Boaters' Pledges
6. Christmas Tree Project
7. Beach Sweep.

[LPBF, DNR, CFACT, DCRT, local governments, environmental groups]

E. Reduce solid waste.

1. Involve fast-food businesses in source reduction by encouraging:
 - a. Litter pickup within one-block radius of business.
 - b. Reduction of the use of plastics.
 - c. Business involvement in identification of trash sources.

2. Establish research sites to monitor and catalog types of solid waste disposed of daily.

[LPBF, universities]

F. Coordinate cleanup efforts of agencies, schools, citizen groups and business.

[LPBF, DCRT, citizen and business groups]

G. Create and support citizen watchdog groups.

[LPBF]

Objective IV: Promote environmental education and grassroots involvement of children in Basin cleanup.

Actions:

- A. Involve younger children in environmental projects. Sponsor contests on Lake Pontchartrain (essay, art, music, etc.) and get PTAs, schools, and scout troops involved.

[LPBF, school systems, CFACT, businesses, DEQ, universities]

- B. Expand existing educational programs and hands-on projects throughout the Basin.

[LPBF, New Orleans S&WB, Jefferson Parish, CES, DEQ, Project Fight Urban Runoff]

- C. Form a committee of educators to review existing science and environmental curricula. Adapt curricula to the needs of educators and students in the Basin.

[LPBF, parish school boards]

- D. Encourage use of curriculum guides.

[LPBF, Science Supervisors, Master Teachers]

- E. Encourage development of educational materials that address environmental issues in the Basin for teachers.

[LPBF, LNSC, universities]

- F. Sponsor a Pontchartrain Basin oriented science fair.

[LPBF, Greater New Orleans Regional Science Fair]

- Objective V. Promote environmental education and grassroots involvement of multicultural groups in Basin cleanup.

