

2008 Annual Report Nonpoint Source



Cover Page Photo: Wildflowers growing in Smithport Lake during low water.

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Acronyms and Abbreviations

BMP	Best Management Practice
BTNEP	Barataria Terrebonne National Estuary Program
CNPCP	.....	Coastal Nonpoint Pollution Control Program
CREP	.....	Conservation Reserve Enhancement Program
CRP	.....	Conservation Reserve Program
CSP	.....	Conservation Security Program
DO	.....	Dissolved Oxygen
EPA	.....	Environmental Protection Agency
EQIP	.....	Environmental Quality Incentive Program
ERC	.....	Environmental Regulatory Code
FBMP	.....	Forestry Best Management Practice
FY	.....	Fiscal Year
GIS	.....	Geographic Information System
GOMA	.....	Gulf of Mexico Alliance
GOMP	.....	Gulf of Mexico Program
GRP	.....	Grasslands Reserve Program
IR	.....	Integrated Report
LDAF	.....	Louisiana Department of Agriculture and Forestry
LDEQ	.....	Louisiana Department of Environmental Quality
LDHH	.....	Louisiana Department of Health and Hospitals
LDNR	.....	Louisiana Department of Natural Resources
LMRCC	.....	Lower Mississippi River Conservation Committee
MOU	.....	Memorandum of Understanding
MUS	.....	Marsh Upwelling System
NPS	.....	Nonpoint Source
SWCD	.....	Soil and Water Conservation District
TMDL	.....	Total Maximum Daily Load
USDA	.....	U.S. Department of Agriculture
WHIP	.....	Wildlife Habitat Incentive Program
WRP	.....	Wetlands Reserve Program

Executive Summary

The Louisiana Department of Environmental Quality (LDEQ) is the state's lead agency for the Nonpoint Source Management Program. They are responsible for planning, managing and coordinating nonpoint source related activities. The State of Louisiana has identified agriculture, forestry, urban runoff, home sewage systems, sand and gravel mining operations, construction activities and hydromodification as the types of nonpoint sources of water pollution that need to be managed, if the goals of the Clean Water Act are to be met. Whereas, some of these activities now have permits associated with them, LDEQ's NPS Program remains involved in some aspects of working on these types of pollution problems.

During 2008, the State of Louisiana continued to make progress in implementing the Nonpoint Source (NPS) Management Plan. This progress is made through the collaborative efforts of many partners that work on solving water quality problems within Louisiana. A major revision of the NPS Management Plan was finalized and provided to the NPS Interagency Committee for their review and comment. The Memorandum of Understanding (MOU) was signed by the agencies and nonprofit organizations that work together to implement the state's plan. Early in 2009, the revised NPS Management Plan will be provided to the public for review and comment and will then be officially submitted to the U.S. Environmental Protection Agency (USEPA) Region 6 for final approval.

In addition to revising the NPS Management Plan, LDEQ was able to publish a success story for the Tangipahoa River on USEPA national website (http://www.epa.gov/owow/nps/Success319/state/la_tang.htm). After almost 20 years of working to improve water quality in the Tangipahoa River, the 2008 Integrated Report indicated that the river was fully meeting the primary and secondary contact recreational uses. This success resulted from many partners working together to reduce pollution from dairies, pastures, individual home sewage systems and small package plants and wastewater treatment systems.

Since agriculture and forestry activities occupy such a large percentage of Louisiana's land, strong partnerships with the U.S. Department of Agriculture and the Louisiana Department of Agriculture and Forestry (LDAF) are essential components in the state's NPS Management Plan. The Office of Soil and Water Conservation within the LDAF applies for half of the Section 319 funds each year in order to implement best management practices within watersheds where total maximum daily loads (TMDLs) have been completed and Watershed Implementation Plans written. USDA has federal funds through the 2008 Farm Bill to implement best management practices so LDEQ continues to work with them on how those funds can be directed toward the state's water quality problems.



Executive Summary

In addition to the work done with the agricultural partners, LDEQ focused its attention on urban, construction and home sewage problems that exist within the state. The Source Water Protection Program and the NPS Program both worked on cost-share programs to replace failing sewage systems and to educate the public on the importance of maintaining their existing systems. Highlights of these programs are included within this 2008 NPS Annual Report. Parts of Louisiana have experienced rapid growth and development, so emphasis has been placed on working with parishes on new ordinances that require the use of BMPs for all new developments and re-developments. LDEQ also distributed the sand and gravel mining BMP manual to the Concrete and Aggregate Industry and hosted a workshop to familiarize the industry with those practices and how TMDLs may affect their permits in the future.

The NPS program has already resulted in reduction of nonpoint source pollution and water quality improvement in some parts of the state. These improvements are expected to continue as more water bodies are targeted for watershed implementation. The success of this program is largely attributed to the effective collaboration of federal, state, and local governments, as well as universities and non-profit organizations. It is essential to the continued progress of the program, that this effective collaboration be maintained and expanded in 2009.

Highlights of the State's NPS Management Program for 2008 include:

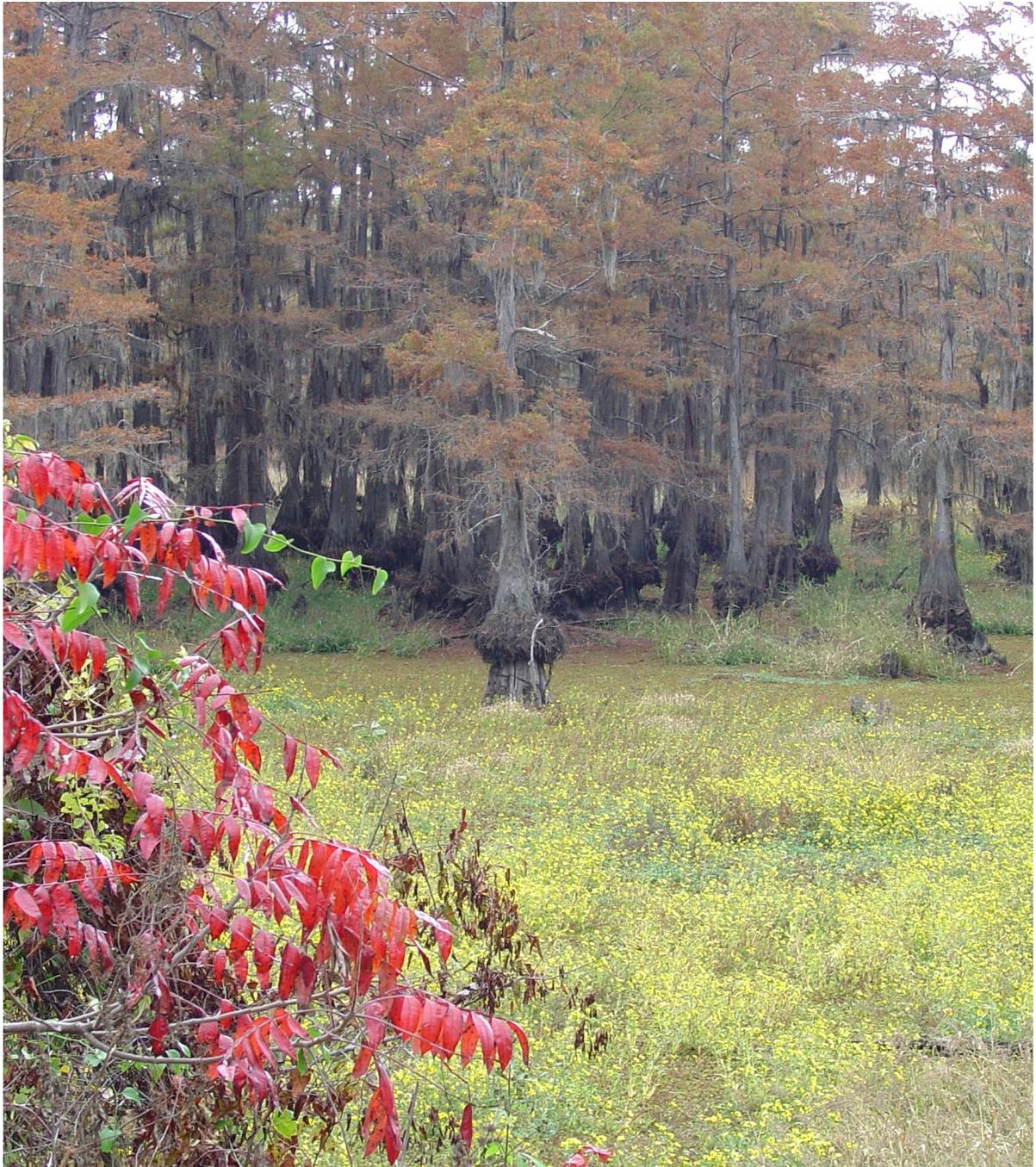
- LDEQ distributed the Sand and Gravel BMP Manual, and a workshop on this manual was held with the Concrete and Aggregate Industry;
- LDEQ continued implementing 45 projects within the state to reduce the amount of nonpoint source pollution entering the state's water bodies;
- LDEQ continued to work through their GIS Center on detailed satellite imagery classification of land-uses for the Red River Basin and the Lake Pontchartrain Basin. These data will be utilized for Watershed Implementation Plans for impaired water bodies;
- LDAF continued to implement targeted BMP agricultural programs in priority watersheds where TMDLs and Watershed Implementation Plans have been completed;
- LDEQ received comments back from EPA on the revised NPS Management Plan and will officially submit it to EPA in 2009;
- Drafted four Watershed Implementation Plans for impaired water bodies which have had total maximum daily loads (TMDLs) completed for them within the Red River and Vermilion-Teche Basins;
- Wrote eight Watershed Implementation Plans for impaired water bodies within the Terrebonne Basin;
- Completed all of the work and closed the 2001 Section 319 Grant;
- Tracked and managed the spending of over \$3 million of Section 319 grant funds.

In the upcoming year, LDEQ looks forward to continuing NPS program efforts in accordance with established long-term program goals through identifying and initiating projects aimed at producing measurable water quality improvement. LDEQ will be working to further engage our NPS program partners in Watershed Implementation Planning and implementation as an



Executive Summary

integral element for the overall efforts to achieve the state's water quality improvement goals. NPS projects may be woven into other LDEQ program efforts such as water quality permits, surveillance, enforcement, planning, and public outreach in order to systematically implement a watershed approach to improve water quality in Louisiana. During 2009, LDEQ will be working with watershed coordinators and groups to focus the efforts of the NPS Management Plan more directly to the local level where BMPs need to be implemented. LDEQ is planning a public outreach program that will involve radio, television and billboards all focused on raising the awareness about water quality and watershed issues.



NPS Program Funds

Section 319(h) of the Clean Water Act established an annual grant that Congress allocates to the states through EPA to be used for nonpoint source-related activities that support the goals of the Act. Louisiana's allocated funds are split between LDEQ and the Louisiana Department of Agriculture and Forestry (LDAF). The incremental funds which are received by LDAF are strictly used for the implementation of agriculture and forestry BMPs in watersheds for which Watershed Implementation Plans and TMDLs have been completed.

The base funds which are awarded to LDEQ are available for a wider range of activities, including Watershed Implementation Planning and working with cities, parishes and local organizations on watershed implementation. LDEQ's portion of the grant is used to fund specific nonpoint source projects that are designed for reduction of NPS pollution, evaluation of the effectiveness of projects to improve water quality and educational projects designed to increase public awareness about nonpoint source pollution and the actions that can be taken to reduce and control it. In addition to the specific projects, Section 319 funds are also utilized to pay salaries of the staff that work on nonpoint source related activities.

The Louisiana Department of Environmental Quality expended over \$3 million of Section 319 funds during Fiscal Year 2008 (Table 1) to implement 45 projects directed at reducing nonpoint source pollution and improving water quality. The Section 319 federal funds amounted to \$3,023,977 while \$1,354,472 were provided as matching funds. For grant years 2000 and 2001, LDEQ was responsible for both the base and incremental funds. Beginning with the 2002 grant, incremental funds were awarded directly to the Louisiana Department of Agriculture and Forestry while LDEQ continues to manage the base funds.

Grant Year	Federal	Match	Total
2000	138,792	92,529	231,321
2001	1,471,915	303,674	1,775,589
2002	621,458	428,303	1,049,761
2003	392,116	263,502	655,618
2004	193,119	128,746	321,865
2005	345,369	230,247	575,616
Total	3,023,977	1,354,472	4,378,449

NPS Program Funds

A total of 45 projects were implemented by the LDEQ NPS Program during FY2008 (Figure 1). The largest percentage of projects was implemented statewide. The Mermentau and Vermilion Basins, Barataria and Terrebonne Basins, and Red and Sabine Basins were combined because some of the projects covered both of these basins.

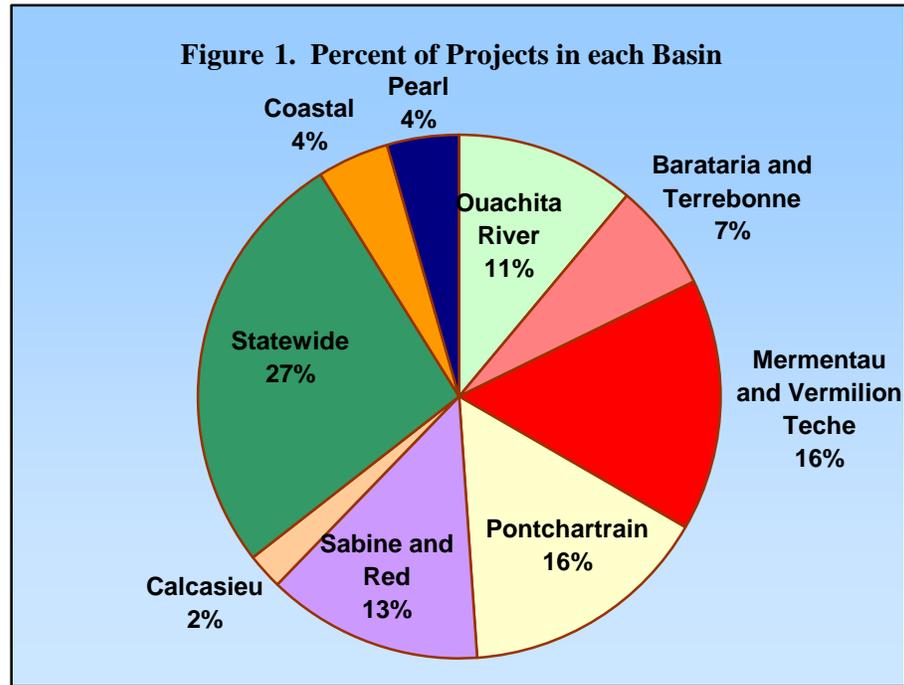
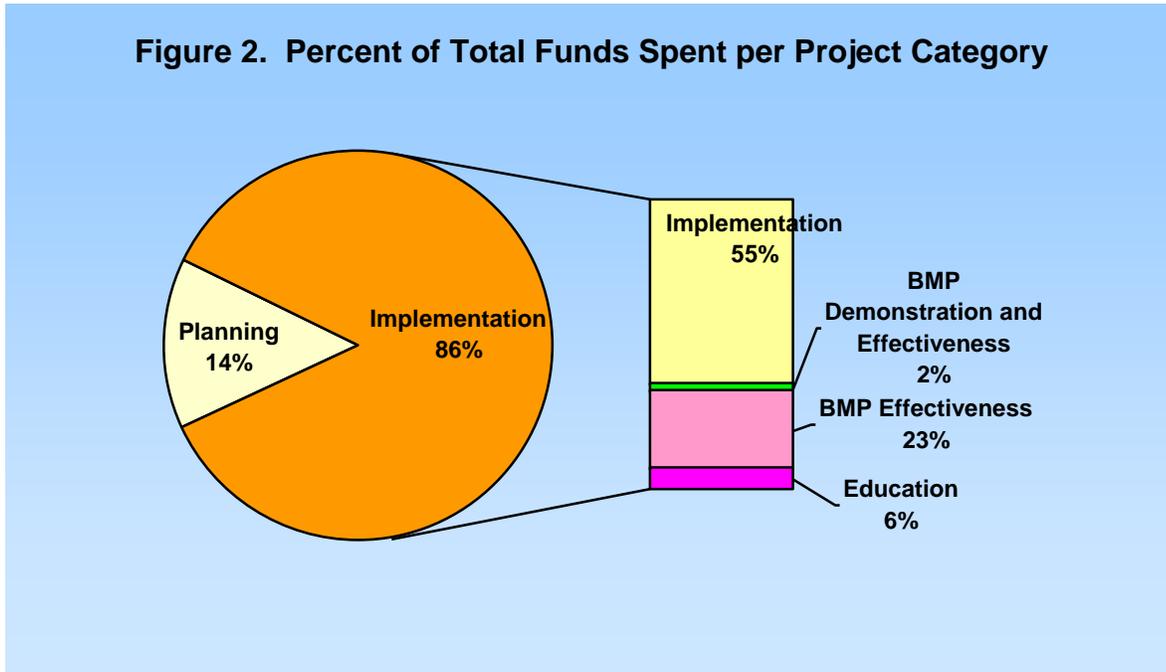


Table 2 shows how the federal and match funds were distributed among the basins. Since there were more statewide projects than projects in any one basin, there was also the largest percentage of funds spent on statewide projects.

Table 2. Total Funds Spent per Basin	
Basin	Total Funds Spent
Barataria	\$44,285
Barataria and Terrebonne	\$33,786
Calcasieu	\$3,555
Pontchartrain	\$777,693
Mermentau	\$356,300
Mermentau and Vermilion-Teche	\$108,282
Pearl River	\$121,155
Ouachita River	\$398,269
Red River	\$446,603
Sabine and Red	\$20,000
Vermilion-Teche	\$447,925
Coastal	\$93,865
Statewide*	\$1,526,731
*includes salaries, travel, supplies, operating costs, etc.	

NPS Program Funds

Figure 2 shows how the Federal and Match funds were distributed among the five categories of projects. There are two main categories: Planning and Implementation. The categories of Education, Implementation, BMP Effectiveness, and BMP Demonstration and Effectiveness all fall under the main category of Implementation.



Meeting the NPS Milestones

The Louisiana Department of Environmental Quality (LDEQ) outlined a 15-year timeline within the 2000 NPS Management Plan to implement a watershed strategy for the state. This timeline was expanded to meet the court ordered schedule to develop TMDLs for all impaired water bodies by 2011. Within that timeline, LDEQ anticipated that it would take three cycles of water quality data collection over 15 years to see major water quality improvements as a result of watershed implementation. The NPS Management Plan has two main goals to accomplish by the year 2012: to restore the designated uses in 25% of the impaired water bodies and to remove water bodies from the 303(d) list of impaired waters.

Data was collected in the Mermentau and the Vermilion-Teche River Basins during 1998, the Calcasieu and Ouachita River Basins in 1999, the Barataria and Terrebonne Basins in 2000, Pontchartrain and Pearl Basins in 2001, and the Red and Sabine Basins in 2002. The cycle began again in 2003 for many of the water bodies in the Mermentau and Vermilion Basins and continued into 2004 for the Mermentau, Vermilion, Ouachita and the Barataria Basins. Therefore, much of the data presented represents the first 5-year cycle of that 15-year timeline.

During 2008, the state has adhered to this timeline. LDEQ has implemented projects and programs to reduce nonpoint source pollutants in the Calcasieu, Ouachita and Barataria Basins as the timeline indicates, as well as in every other basin in the state. Specific details of these projects are provided within their respective sections of this report, and a complete list of projects is in Appendix A. Eight Watershed Implementation Plans were written for the Terrebonne Basin. Two Watershed Implementation Plans were drafted for the Red River Basin, and two plans were drafted for the Vermilion-Teche Basin. TMDLs were developed for impaired watersheds in the Terrebonne, Red, Sabine, and Vermilion-Teche Basins. In FY2008, water quality surveys were conducted on nine water bodies in the Pontchartrain Basin. The water bodies were Bayou Manchac (040201), Amite River (040303), Grays Creek (040304), Colyell Creek System (040305) Blind River - Amite River Diversion Canal (040401), Blind River (040403), New River (040404), Selsers Creek (040603) and Cane Bayou (040903 and 040904).



Meeting the NPS Milestones

Table 3. Schedule of Milestones for Louisiana's NPS Management Program

	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	
Mermentau	Black Stripes	Light Grey	Green	Green	Green	Black Stripes	Yellow	Yellow	Yellow	Yellow	Black Stripes	Blue	Blue	Blue	Blue	Blue	Black Stripes	Blue	Blue	Blue
Vermilion	Black Stripes	Light Grey	Green	Green	Green	Black Stripes	Yellow	Yellow	Yellow	Yellow	Black Stripes	Blue	Blue	Blue	Blue	Blue	Black Stripes	Blue	Blue	Blue
Calcasieu		Black Stripes	Light Grey	Light Grey	Light Grey	Green	Black Stripes	Yellow	Yellow	Yellow	Yellow	Black Stripes	Blue	Blue	Blue	Blue	Black Stripes	Blue	Blue	Blue
Ouachita		Black Stripes	Light Grey	Light Grey	Light Grey	Green	Black Stripes	Yellow	Yellow	Yellow	Yellow	Black Stripes	Blue	Blue	Blue	Blue	Black Stripes	Blue	Blue	Blue
Barataria			Black Stripes	Light Grey	Light Grey	Light Grey	Light Grey	Black Stripes	Green	Green	Yellow	Yellow	Black Stripes	Yellow	Blue	Blue	Blue	Black Stripes	Blue	Blue
Terrebonne			Black Stripes	Light Grey	Light Grey	Light Grey	Light Grey	Black Stripes	Light Grey	Light Grey	Green	Green	Black Stripes	Yellow	Yellow	Yellow	Yellow	Black Stripes	Blue	Blue
Pontchartrain				Black Stripes	Light Grey	Light Grey	Light Grey	Light Grey	Black Stripes	Light Grey	Light Grey	Light Grey	Light Grey	Black Stripes	Green	Green	Green	Yellow	Yellow	Black Stripes
Pearl				Black Stripes	Light Grey	Light Grey	Light Grey	Light Grey	Black Stripes	Light Grey	Light Grey	Green	Green	Black Stripes	Yellow	Yellow	Yellow	Yellow	Yellow	Black Stripes
Red					Black Stripes	Light Grey	Light Grey	Light Grey	Light Grey	Black Stripes	Green	Green	Green	Yellow	Black Stripes	Yellow	Yellow	Blue	Blue	Blue
Sabine					Black Stripes	Light Grey	Light Grey	Light Grey	Light Grey	Black Stripes	Green	Green	Green	Yellow	Black Stripes	Yellow	Yellow	Blue	Blue	Blue
Mississippi				Black Stripes	Light Grey	Light Grey	Light Grey	Light Grey	Black Stripes	Light Grey	Light Grey	Light Grey	Light Grey	Black Stripes	Green	Green	Yellow	Yellow	Yellow	Black Stripes
Atchafalaya					Black Stripes	Light Grey	Light Grey	Light Grey	Light Grey	Black Stripes	Light Grey	Light Grey	Green	Green	Black Stripes	Yellow	Yellow	Yellow	Yellow	Yellow

- 1- Black Stripes = Collect Water Quality Data to Develop Total Maximum Daily Loads (TMDLs) and to Track Water Quality Improvement at the Watershed Level
- 2- Light Grey = Develop Total Maximum Daily Loads for the Watersheds on the 303(d) List
- 3- Green = Develop Watershed Management Plans to Implement the NPS Component of the TMDL
- 4- Yellow = Implement the Watershed Management Plans
- 5- Blue = Develop and Implement Additional Corrective Actions Necessary to Restore the Designated Uses to the Water Bodies

Ambient Monitoring Schedule

LDEQ revised its monitoring program in May 1998 to operate on a five-year cycle with monthly sample collections occurring in two or three basins each year and rotating from year to year (calendar year). In this manner, the entire state had been covered at the end of 2002. Although the five-year cycle completed the goal of collecting water quality data from every subsegment in the state, it did not correspond with the even year §305(b) reporting cycle and placed a disproportionate amount of responsibility on the regional field staff during the one-year surveys. Additionally, LDEQ prefers to use two cycles of monitoring data for a more accurate assessment. When two cycles of data are used, the five-year rotating cycle causes large time gaps in the datasets used for some water bodies in each assessment cycle. In an effort to equalize the number of basins assessed every two years, balance the field staff work load, and minimize data gaps, LDEQ implemented a four-year rotating sampling plan in January, 2004 (Table 7).

Within each basin, all monitored subsegments will be sampled over the year or years specified under each cycle period. Water quality assessments for the Integrated Report will be conducted for each basin following the last year of its monitoring period. Approximately 125 water body subsegments are typically monitored each month under this program.

Basin	First 4-Year Cycle	Second 4-Year Cycle	Third 4-Year Cycle
Mermentau	2004, 2005, 2006, 2007	2008, 2009, 2010, 2011	2012, 2013, 2014, 2015
Vermilion-Teche	2004, 2005, 2006, 2007	2008, 2009, 2010, 2011	2012, 2013, 2014, 2015
Calcasieu River	2004, 2005	2008, 2009	2012, 2013
Ouachita River	2004, 2005	2008, 2009	2012, 2013
Barataria	2004, 2005	2008, 2009	2012, 2013
Terrebonne	2004, 2005	2008, 2009	2012, 2013
Mississippi River	2004, 2005	2008, 2009	2012, 2013
Pontchartrain	2006, 2007	2010, 2011	2014, 2015
Pearl River	2006, 2007	2010, 2011	2014, 2015
Red River	2004, 2005, 2006, 2007	2008, 2009, 2010, 2011	2012, 2013, 2014, 2015
Sabine River	2006, 2007	2010, 2011	2014, 2015
Atchafalaya River	2004, 2005	2008, 2009	2012, 2013

Assessment procedures follow U.S. EPA guidance documents for §305(b) assessments, U.S. EPA's Consolidated Assessment and Listing Methodology (CALM) guidance (U.S. EPA, 2002), U.S. EPA's Integrated Report guidance (found within CALM guidance), as well as Louisiana's surface water quality standards, and ERC 33:IX.1101-1123.

Implementation and Improvement

Watershed Implementation Plans

One of the strengths of Louisiana's NPS Program is the Watershed Implementation Planning and implementation strategy. This strategy utilizes TMDLs combined with detailed land-use classification from satellite imagery and watershed characterization. All of the completed TMDLs can be viewed on LDEQ's website at:

<http://www.deq.louisiana.gov/portal/default.aspx?tabid=1563>.

During 2008, the NPS staff wrote eight Watershed Implementation Plans for the Terrebonne Basin, drafted two Watershed Implementation Plans for the Red River Basin, and drafted two Watershed Implementation Plans for the Vermilion-Teche Basin. LDEQ staff completed the land use classification for the Red River Basin, and completed the field work for the land use classification for the Lake Pontchartrain Basin.

Watershed Implementation Plans can be viewed on the Nonpoint Source Pollution Unit website at: <http://nonpoint.deq.louisiana.gov/wqa/WaterShedPlanning.htm>.

Implementation Plans Focused on in 2008	
River Basin	Subsegment
Terrebonne	Bayou Petit Caillou (120503)
Terrebonne	Bayou Grand Caillou (120501)
Terrebonne	Bayou Maringouin (120111)
Terrebonne	Bayou Grosse Tete (120104)
Terrebonne	Lower Grand River and Belle River (120201)
Terrebonne	Bayou Pointe au Chien (120605)
Terrebonne	Bayou Du Large (120505)
Terrebonne	Bayou Chauvin (120507)
Vermilion-Teche	Bayou Boeuf (060208)
Vermilion-Teche	Bayou Courtableau (060204)
Red River	Lake Edwards / Smithport Lake (100605)
Red River	Bayou Pierre (100606)

Implementation and Improvement

Watershed Implementation Plans follow Nine Key Elements in order to provide assessment and management information for a selected watershed. The Nine Key Elements are:

1. Identify the causes and sources of nonpoint pollution
2. Estimate the load reductions needed
3. Describe the management measures needed
4. Describe the technical and financial assistance needed
5. Develop a strategy to provide information and education
6. Develop an implementation schedule
7. Identify interim milestones
8. Develop criteria to determine load reductions
9. Develop a plan to monitor effectiveness

The incremental component of the Section 319 grant is utilized for implementing BMPs in watersheds where TMDLs and Watershed Implementation Plans have been completed. These Watershed Implementation Plans are the basis for implementing nonpoint source projects by both LDEQ and the Louisiana Department of Agriculture and Forestry's (LDAF) Office of Soil and Water Conservation.

Education and Outreach Activities

The LDEQ NPS Staff has participated in educational and outreach activities in 2008 which has raised public awareness of nonpoint source pollution. The staff also attends conferences and classes to educate themselves, as well as giving presentations at conferences to educate others. The NPS staff has participated in activities such as:

- Earth Day
- Envirothon
- Wildwoods Wanderings
- Ocean Commotion
- Hunting and Fishing Day
- World Water Monitoring Day
- Science, Technology, Engineering, and Math Camp for girls
- Organizing Volunteer Storm Drain Marking Events
- Hosting LDEQ's Biannual NPS Interagency Meeting
- Presenting BMP information to the Forestry Industry throughout the state
- Attending Stakeholder and Committee Meetings
- Attending Annual Nonpoint Source Conference
- Attending numerous other NPS related workshops, seminars, and conferences

Because storm drains flow directly to our lakes, rivers and bayous, not to wastewater treatment plants, storm drain marking is an essential element of the state's stormwater pollution prevention program. Rainwater picks up street litter, yard waste, lawn fertilizers, pesticides, pet waste, and oils and fluids from driveways and streets. The first inch of runoff from a storm generally carries ninety percent of the pollution and causes at least half of water quality

Implementation and Improvement

problems. The storm drain marking program is a hands-on project for volunteers who are interested in educating the public about nonpoint source pollution prevention. The markers are placed on storm drain inlets and intend to remind citizens to help protect our waters from pollution that can be harmful to fish and wildlife and increase weed and algae growth. Even the best plan for managing watersheds and controlling nonpoint source pollution cannot succeed without community participation and cooperation. An aggressive public outreach and education program, therefore, is essential for local communities to develop and maintain. Education and outreach strategies and ideas would, raise the community's consciousness about the importance of water quality and the watersheds draining to our ponds, lakes, rivers, bayous, and eventually the Gulf of Mexico.



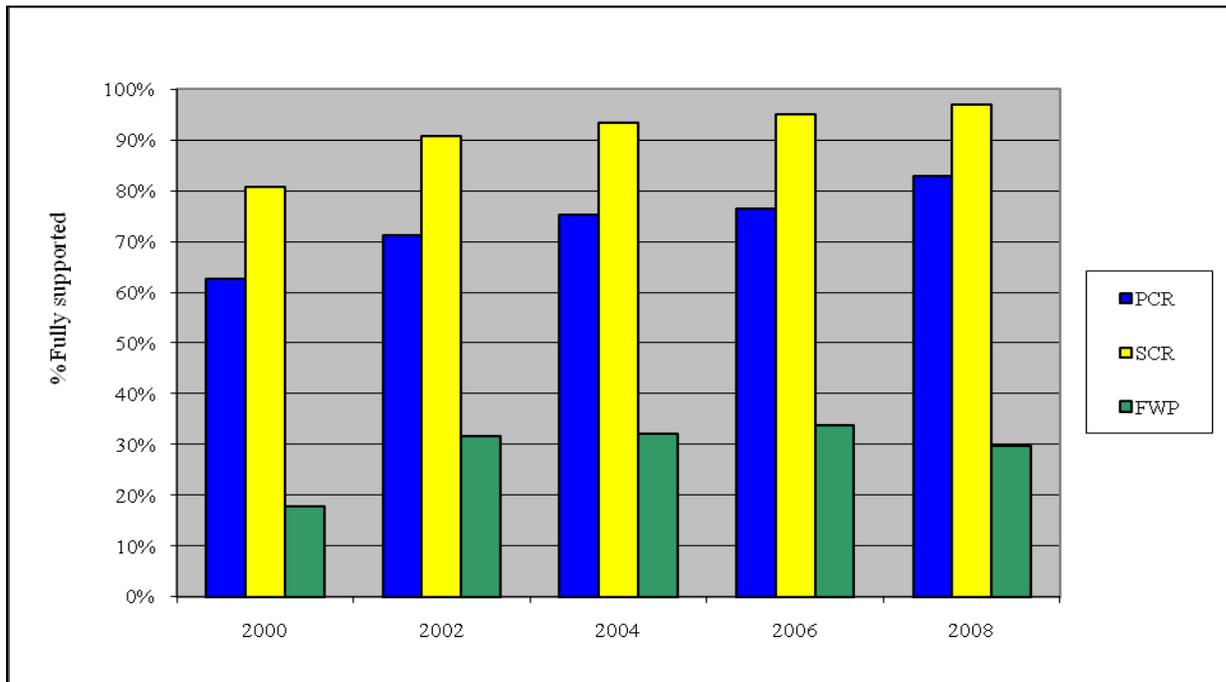
Improvements shown in draft 2008 Integrated Report

During 2008, LDEQ compiled the 2008 Integrated Report (IR), which provides information on the level of attainment of all of the water bodies within the state, based on water quality data from 2000 to 2007. The Integrated Report is written once every two years. The 2008 Integrated Report was not finalized as of the end of 2008. The data in the 2006 Integrated Report indicated that water quality had improved (i.e., one or more causes of impairment had been removed) in 80 water bodies across the state between the 2004 and 2006 listing cycle (Table 8). The draft 2008 IR indicated that 129 water bodies had improved since 2006 with one or more causes of impairment removed.

River Basin	Number of Water Bodies Improved in 2006 IR	Number of Water Bodies Improved in 2008 IR	Reason for Improvement
Atchafalaya (01)	3	2	New data shows attainment
Barataria (02)	10	9	New data shows attainment
Calcasieu (03)	8	6	New data shows attainment
Pontchartrain (04)	2	29	Data shows attainment
Mermentau (05)		8	
Vermilion-Teche (06)	2	24	New data shows attainment
Mississippi River (07)	0	1	New data shows attainment
Ouachita River (08)	36	8	New data shows attainment
Pearl River (09)	0	7	New data shows attainment
Red River (10)	6	16	New data shows attainment
Sabine River (11)		7	
Terrebonne (12)	13	12	New data shows attainment
Total	80	129	

Implementation and Improvement

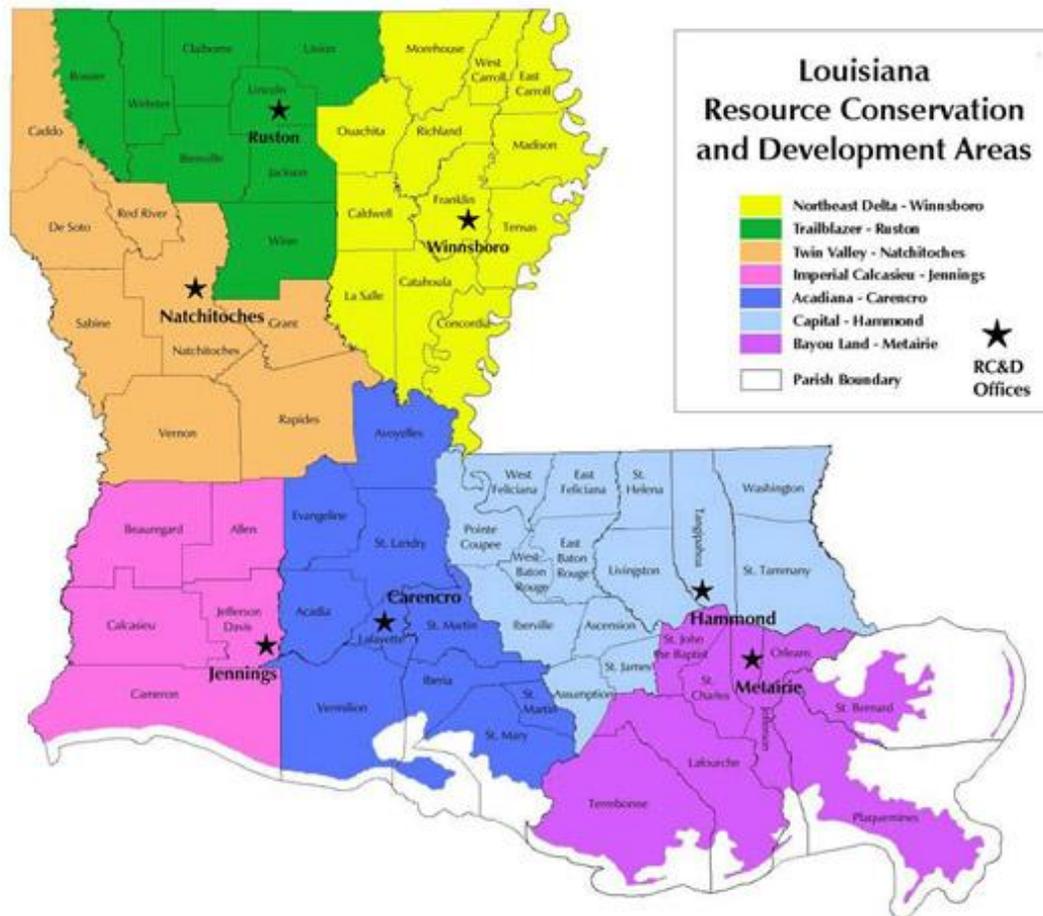
The draft 2008 IR indicated that there had been water quality improvements made in the number of water bodies that met their primary contact and secondary contact recreation uses. The graph below illustrates that as the blue and yellow bars continue to climb toward full attainment. More details on this use are included in the NPS Annual Report. The green bars illustrate the percentage of water bodies in full compliance with the fish and wildlife propagation use. LDEQ anticipates more success stories in 2009, based on the water quality data that has been collected for the 2008 IR.



Implementation and Improvement

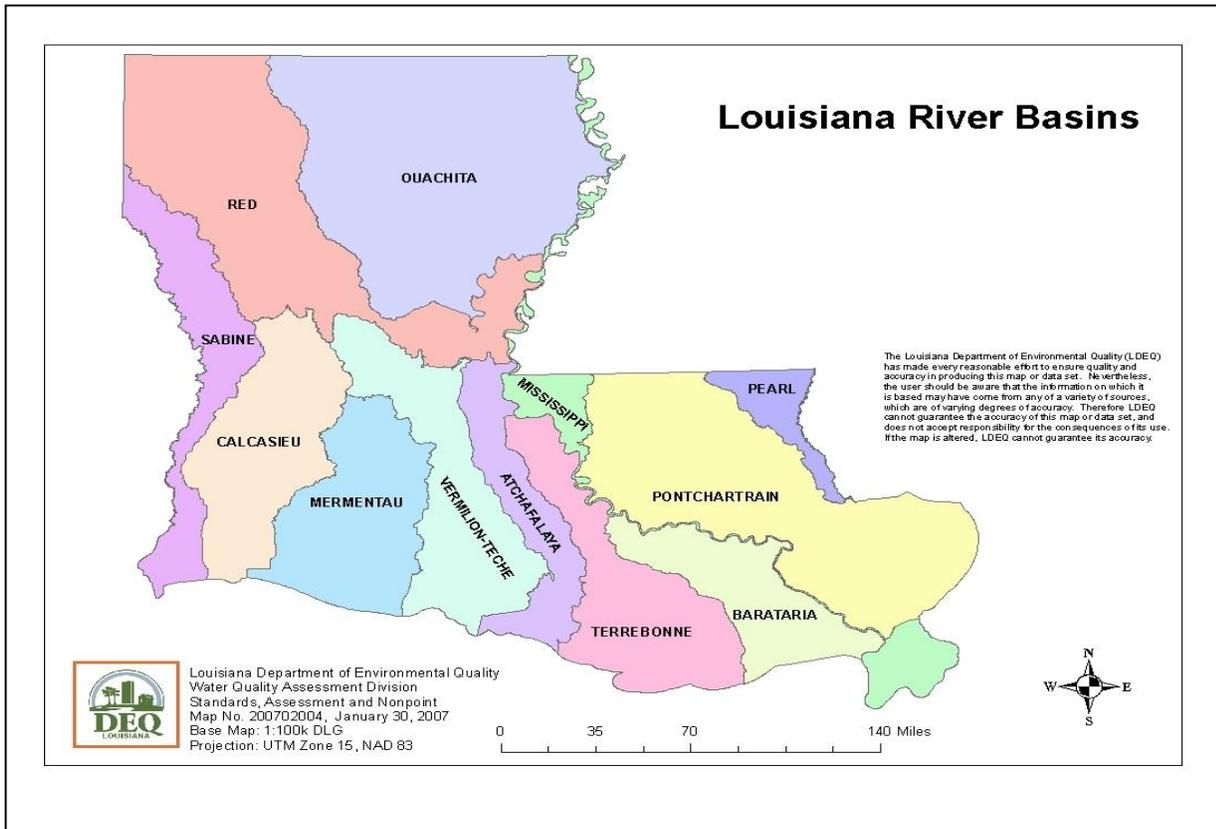
Organizing Watershed Coordinators

During 2008, LDEQ's NPS Unit worked with all seven Resource Conservation & Development Councils in Louisiana, as well as the Lake Pontchartrain Basin Foundation, to establish cooperative agreements for local Watershed Coordinators. These Watershed Coordinators will organize local stakeholder groups which will work on nonpoint source water quality problems in each of their respective areas. Local watershed groups will be the focus for much of the on-going work related to controlling nonpoint source pollution within Louisiana.



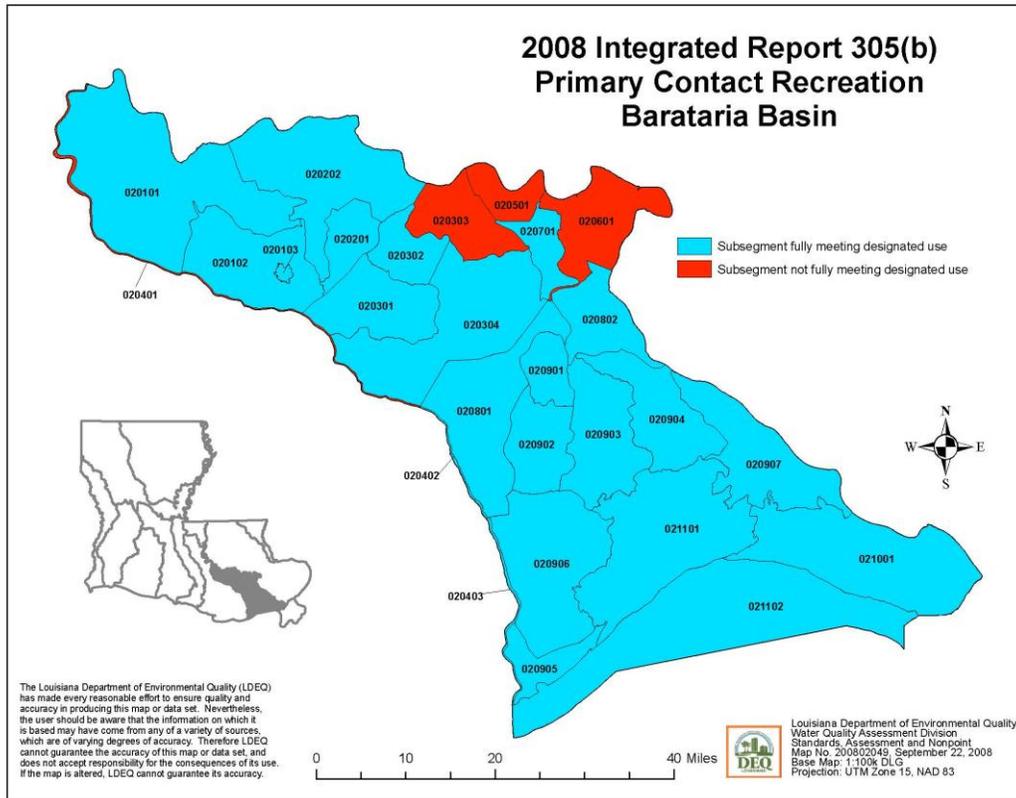
Implementation and Improvement

Louisiana has 12 river basins that it manages through water quality data collection, stream surveys, TMDL development and Watershed Implementation Planning and implementation. The following sections highlight the projects that have been implemented in Louisiana's River Basins during 2008.



Implementation and Improvement

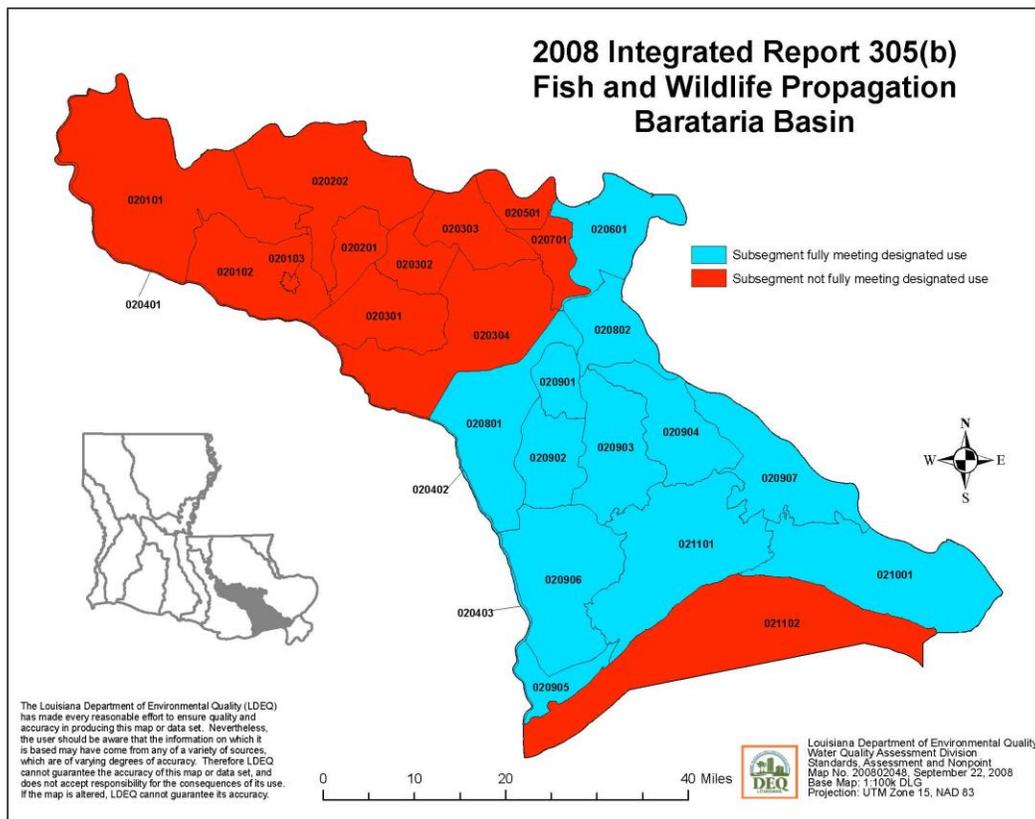
Barataria Basin



The draft 2008 IR indicated that there were three subsegments that were not fully meeting the Primary Contact Recreation use within the Barataria Basin, compared to two in 2006. The additional subsegment was in the upper part of the basin. Lake Cataouatche was added as an impaired waterbody for Primary Contact Recreation because it was not meeting the criteria for fecal coliform. The impaired subsegments for Fish and Wildlife Propagation remained the same from 2006 to 2008 in the Barataria Basin.



Implementation and Improvement



Average Fecal Coliform Concentrations Measured in Cells per 100 mL Sample for Selected Water Bodies in the Barataria Basin						
Water Body (subsegment)	2000	2004	2005	2006	2007	2008
Bayou Lafourche (020401)	127	357	323	265	796	463*
*partial year data						

The water quality data for Bayou Lafourche indicated a slight increase in the dissolved oxygen concentration from 2007 and measurable decline in fecal coliform bacteria between 2007 and 2008.

Average Dissolved Oxygen Concentrations Measured in mg/L for Selected Water Bodies in the Barataria Basin						
Water Body (subsegment)	2000	2004	2005	2006	2007	2008
Bayou Lafourche (020401)	5.70	6.94	6.66	6.71	6.38	6.68*
*partial year data						

Implementation and Improvement

Source Water Protection Program- Bayou Lafourche Sewage Project

LDEQ is trying to address the fecal coliform issue in Bayou Lafourche by locating malfunctioning on-site home sewage systems. A contract with Nicholls State University to perform sampling of ditches that are receiving effluent from home sewage units has been developed. Ditches that ultimately drain to the bayou will be sampled. The data will be reported to LDEQ once it is compiled. If there is a demonstration that on site decentralized sewage systems are a major contributor to the Bayou Lafourche problem, the data will be used to convince people of the need of a source of funding to resolve the problem and to convince the local government to take a leadership role in protecting the welfare of its constituents. This includes, but is not limited to, the adoption of a local ordinance to give the local government the authority to inspect sewage systems and order the repair/replacement of malfunctioning/inoperable systems. Consideration will also be given to an attempt to have individual onsite sewage systems combined into a community type system to better control polluted discharges into the environment.

This contract went through the review/execution process during the second quarter of FY 2008. Louisiana's Office of Contractual Review finalized the contract. Nicholls University wrote the Quality Assurance Project Plan and Standard Operating Procedures. The QAPP and SOPs were approved by LDEQ and EPA on May 23, 2008.

The draft quarterly report for this project covering the months of April, May, and June 2008 was received on July 10, 2008. This report stated that the contractor has begun purchasing equipment required for the contract completion and that approximately 80% of the site selection was complete. It also stated that initial sampling of the sites that were selected had begun.



Source Water Protection Program- Bayou Lafourche Inspection Project

Additional support was provided by other LDEQ Divisions for the Bayou Lafourche area at the Source Water Protection staff's request. This support was in the form of the Bayou Lafourche Watershed Inspection Project. LDEQ's regional offices sampled for fecal coliform at bridges down the length of the bayou and inspected 769 facilities from Donaldsonville to Leesville for all-media compliance. This resulted in staff writing 285 notices of deficiencies to facilities not having a permit to discharge. Also, 30 referrals were made to enforcement and another 30 warning letters were sent out. This collaborative, targeted watershed approach served as a pilot for the newly developed Clean Waters Program.

Implementation and Improvement

Source Water Protection Program- Assumption, Lafourche and Terrebonne Parishes Source Water Protection Committee

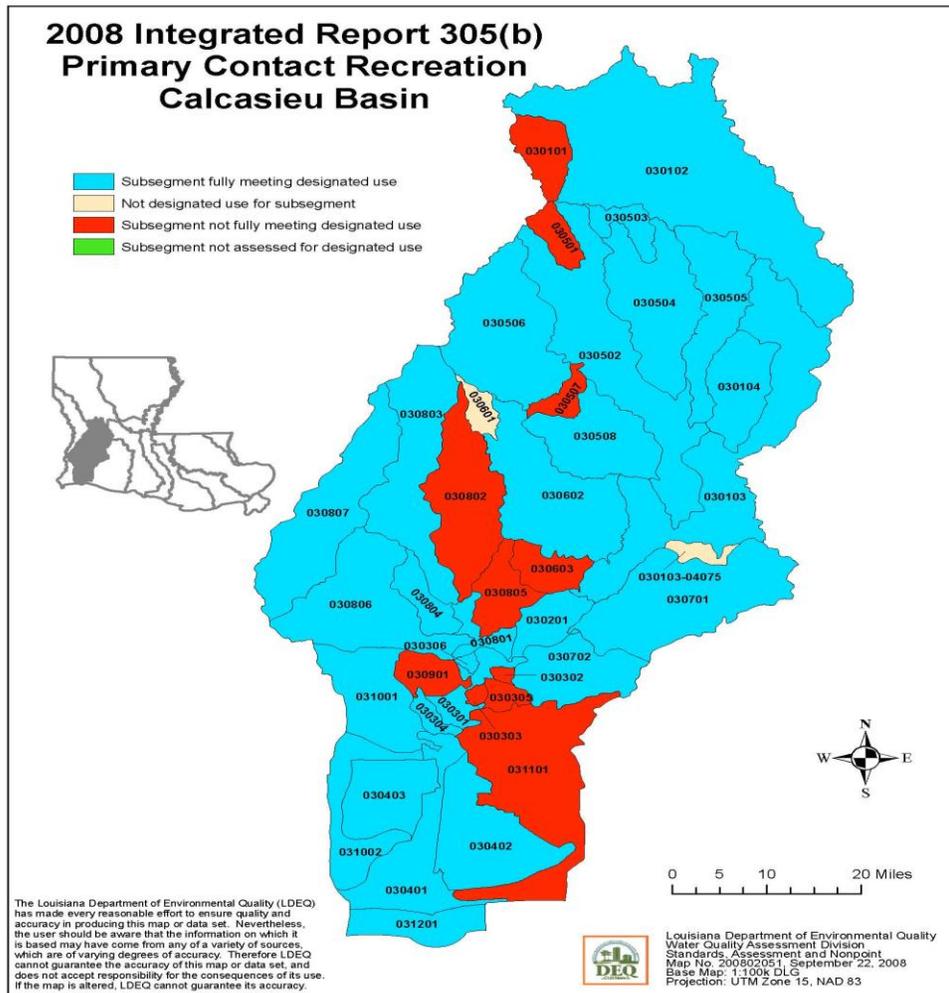
The source water protection committee held two committee meetings in FY 2008. The first meeting of FY 2008 was held on February 28, 2008 and the second meeting was held May 29, 2008. Presentations included the Louisiana Department of Environmental Quality on the Bayou Lafourche Inspection Project, the Louisiana Department of Environmental Quality on Louisiana's Nonpoint Source Pollution Program, and Nicholls State University on the Bayou Lafourche Sewage Sampling Project (funded by a 319 grant).

Committee members and LDEQ have visited facilities that are potential sources of contamination to educate them on best management practices to prevent pollution from getting into the waterways. Of the facilities visited, 219 are located within the drainage area for Bayou Lafourche. Since urban runoff has also been identified as a significant contributor of nonpoint source pollution into Bayou Lafourche, it is important that these facilities know that prudent operation on site is important so that contaminants do not end up beyond their premises and in the bayou. Visits to potential sources of contamination have been completed.



Implementation and Improvement

Calcasieu Basin



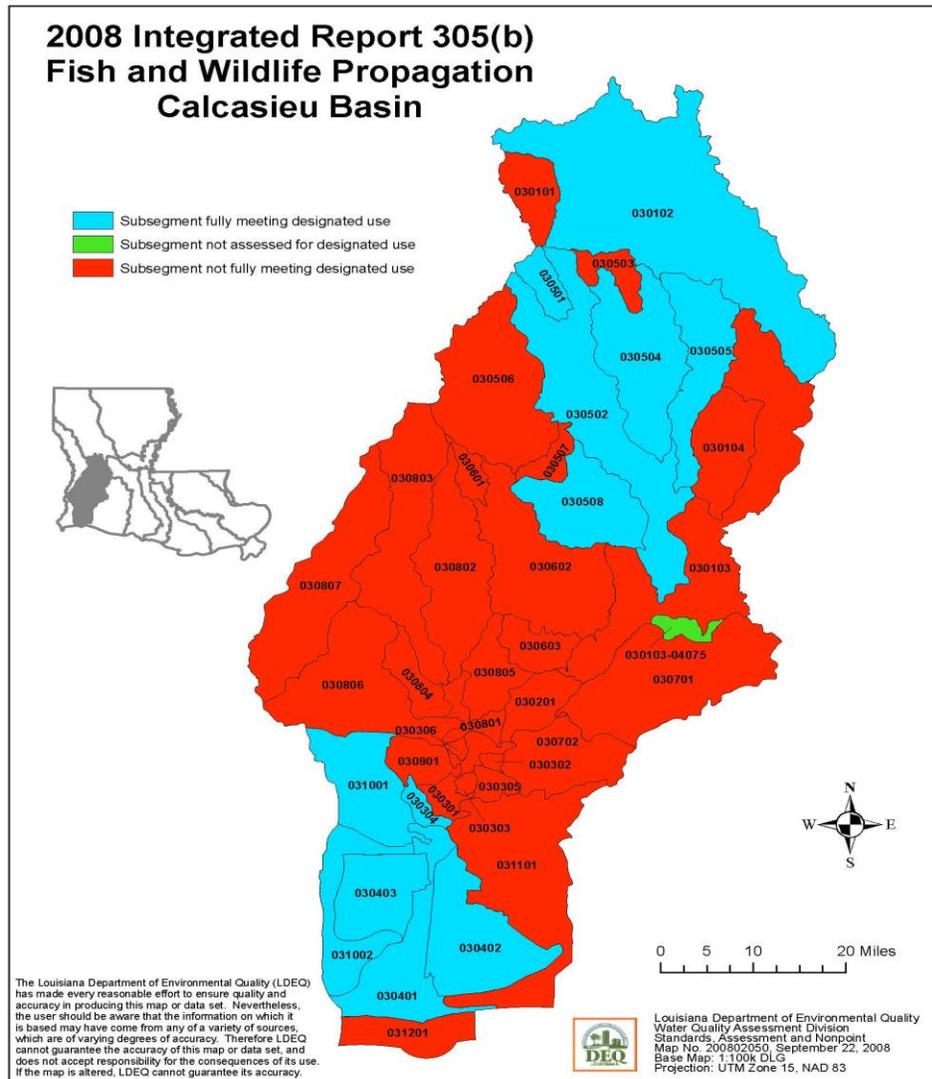
The draft 2008 IR indicated that there were eleven subsegments that were not fully meeting the primary contact recreational use within the Calcasieu River Basin, compared to eight in 2006. Several subsegments were added and removed throughout the basin with an overall gain of three impaired subsegments.

For Fish and Wildlife Propagation, twelve subsegments were meeting the criteria in the draft 2008 IR, compared to eleven in the 2006 IR. Bundicks Creek and Bayou Choupique were removed from the draft 2008 IR. However, Prien Lake was added to the list of impaired waterbodies for low dissolved oxygen.

USDA and SWCD Programs

During FY 2008, the USDA implemented approximately 5,571 acres of BMPs within the Calcasieu River Basin through the EQIP. An additional 66 acres of practices were implemented through the Conservation Reserve Program (CRP), 152 acres of practices were implemented through the Wetlands Reserve Program (WRP), and 727 acres of practices were implemented through the WHIP.

Implementation and Improvement



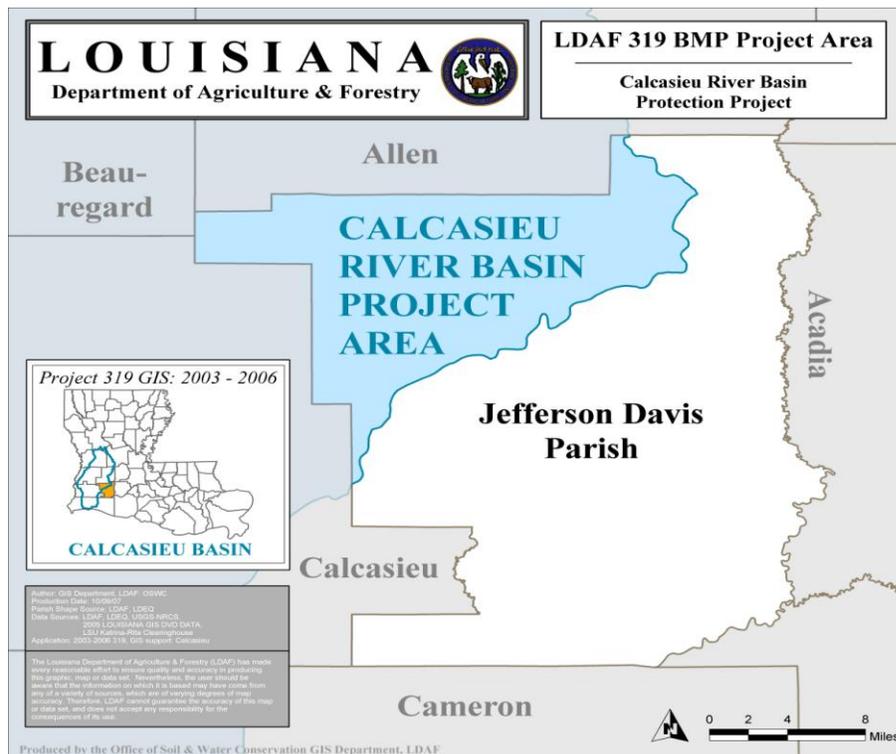
Source Water Protection Program Work in Calcasieu Parish

The Louisiana Department of Environmental Quality's Drinking Water Protection Team began work in Calcasieu Parish in June 2008. Staff members visited with representatives of the local water systems and other government officials to introduce the Drinking Water Protection Program. Calcasieu Parish has fifteen active public community water systems, including the City of Lake Charles which serves a population of 80,000. All of the systems are ground water systems. A community meeting to introduce the program to the public and solicit volunteers to form a committee is scheduled for FY 2009. Work in Calcasieu Parish will continue into FY 2009.

Implementation and Improvement

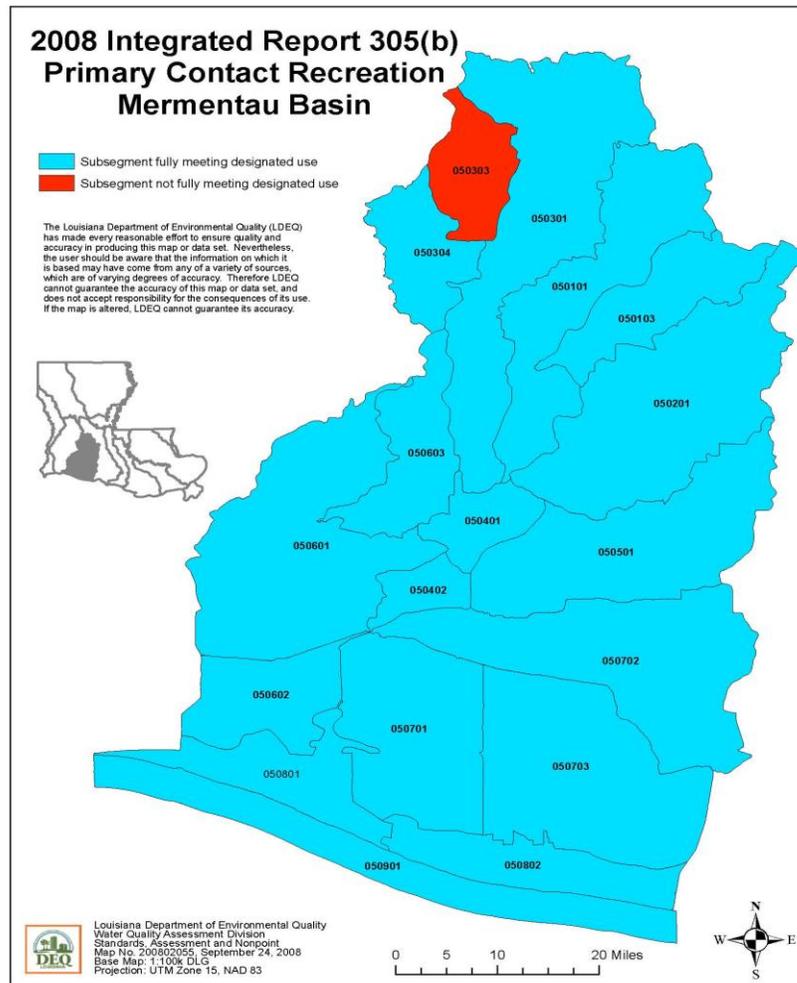
In addition to the work that USDA did on watershed implementation, the Office of Soil and Water Conservation implemented a project where agricultural BMPs were implemented. The following table summarizes the types and acres of BMPs that were implemented through this project during 2008. The map illustrates that the project was in Jefferson Davis Parish which falls on the border of the Calcasieu and Mermentau River Basins.

Best Management Practice	Amount
Conservation Crop Rotation	11117.4 acres
Residue Management Seasonal	6183.9 acres
Grade Stabilization Structures	3
Irrigation Water Management	1618.1 acres
Dry Seeding	111.5 acres
Irrigation Land Leveling	1264.9 acres
Nutrient Management	7104.1 acres
Pest Management	7104.1 acres
Shallow Water Management for Wildlife	3438.5 acres



Implementation and Improvement

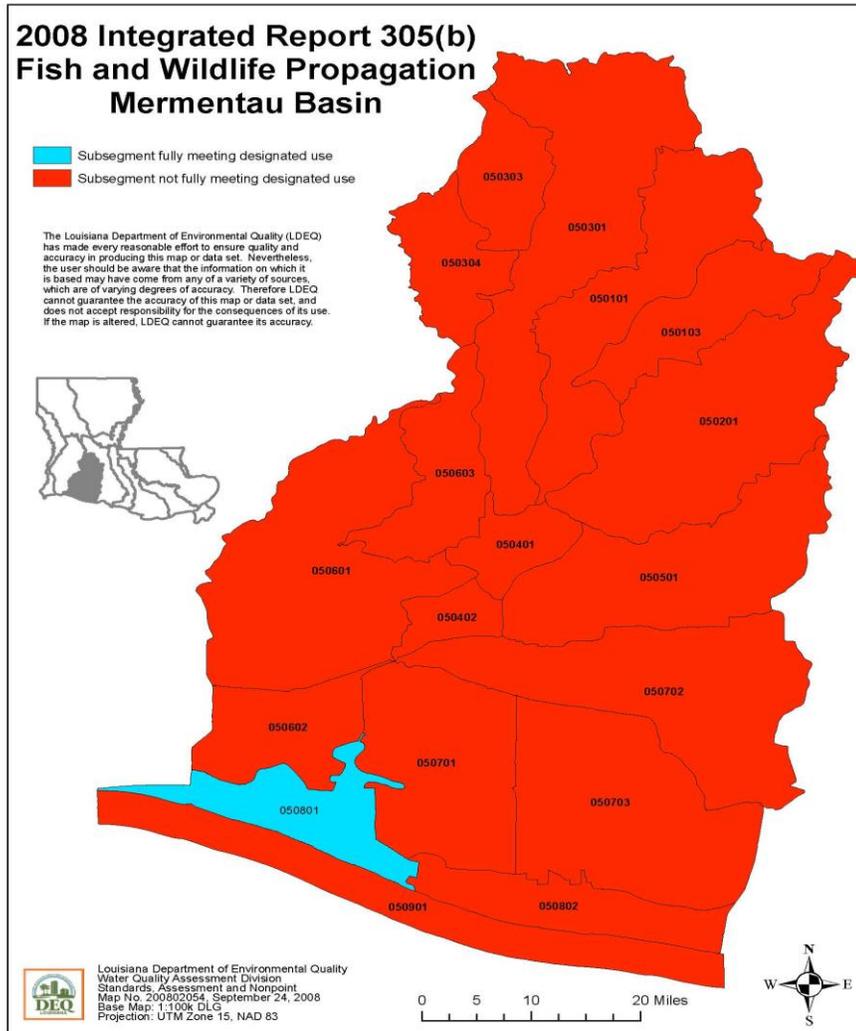
Mermentau River Basin



The draft 2008 IR indicated that four of the watersheds that were listed as impaired in the 2006 IR are now fully meeting their primary and secondary contact recreation uses, which leaves only one watershed listed as impaired for this use within the Mermentau River Basin. The water quality improvements were made in Bayou Nezpique, Bayou des Cannes, Bayou Mallet and Bayou Plaquemine Brule. Castor Creek is still not meeting the primary contact recreation use due to high levels of fecal coliform.

The draft 2008 IR indicates that the water bodies in the Mermentau River Basin have remained consistent since 2006, with only one water body fully meeting the fish and wildlife propagation use. The Mermentau River from Catfish Point Control Structure to the Gulf of Mexico is an estuarine water and fully supports its uses.

Implementation and Improvement



Average Dissolved Oxygen Concentrations Measured in mg/L for Selected Water Bodies in the Mermentau River Basin							
Water Body (subsegment)	1997	1998	2003	2004	2006	2007	2008
Mermentau River (050401)	3.24	3.63	3.43	4.1	3.65	2.62	3.91*
*partial year data							

LDEQ collects monthly water quality data each year for the Mermentau River, but samples the other water bodies on a 4-year cycle. The water quality data from 2008 for the Mermentau River indicated that it continued to improve, with the dissolved oxygen concentration averaging 3.91 mg/L and the fecal coliform concentration being 116 cells per 100 ml sample.

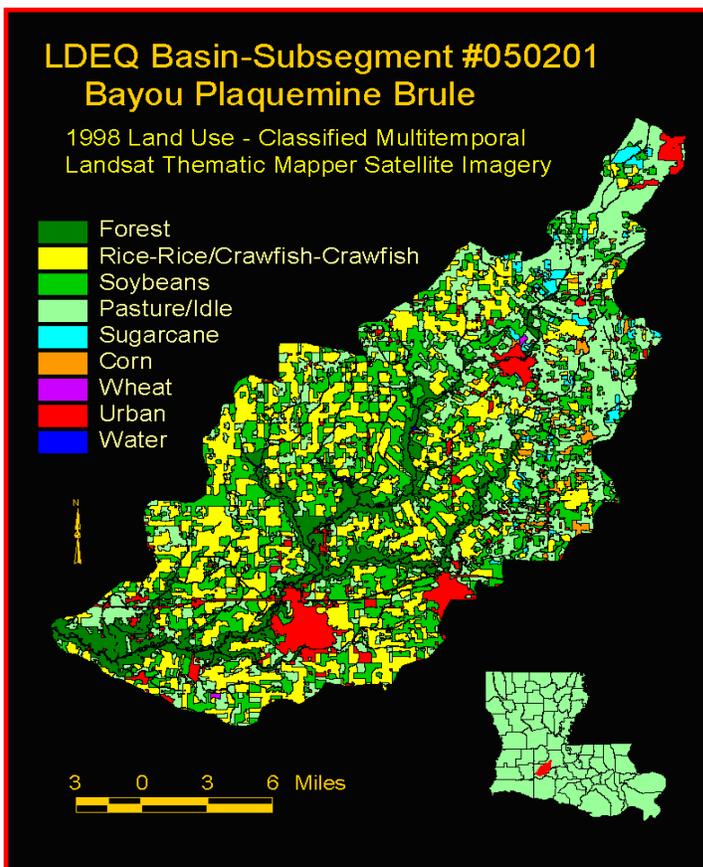
Average Fecal Coliform Concentrations Measured in Cells per 100 mL Sample for Selected Water Bodies in the Mermentau River Basin							
Water Body (subsegment)	1997	1998	2003	2004	2006	2007	2008
Mermentau River (050401)	368	467	4530	474	82	124	116*
*partial year data							

Implementation and Improvement

Modeling Nonpoint Source Pollution and Land Use Types in Bayou Plaquemine Brule Watershed

This project is scheduled to be completed in 2009. The Bayou Plaquemine Brule waterbody in the Mermentau River Basin in southwestern Louisiana is listed as impaired due to organic enrichment or low dissolved oxygen and is not meeting its designated use for fish and wildlife propagation. The specific goal of this project is to quantify the nonpoint source loads from land use types that exist in the Bayou Plaquemine Brule watershed. Spatial and temporal variation of nonpoint source pollutant sources and loading are being measured. The specific objectives are to quantify the daily loading of suspended solids and nutrients for Bayou Plaquemine Brule and its tributaries and to quantify the contribution of land use types such as soybeans, sugarcane, rice pastures on nonpoint source pollution in Bayou Plaquemine Brule. It will also evaluate the various BMPs implemented and their effects on nonpoint source pollution in the watershed. Finally, it will establish baseline information to quantify the effectiveness of best management practices in reducing pollution loads.

The 3-year surface water quality dataset that the University of Louisiana Lafayette will have at the end of the project will allow LDEQ to identify target areas in the watershed where BMPs need to be implemented to improve water quality and to also track whether the on-going BMP implementation has been effective in reducing NPS pollutant loads and improving water quality.



During 2008, SWAT (Soil Water Assessment Tool) model calibration and validation was completed using the available flow data within the watershed. A sensitivity analysis was conducted and identified eight sensitive parameters in SWAT modeling for the watershed. Annual loading rates are currently being computed for nutrients using SWAT model for one of the sub-watersheds. Further refinement on the loading rates is continuing.

Implementation and Improvement

Bayou Wikoff Sub-Watershed of Bayou Plaquemine Brule Watershed Project

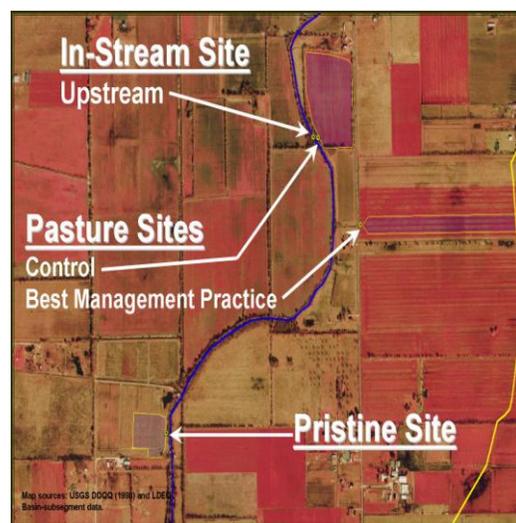
LDEQ and LSU Ag Center have been working on data collection for the Bayou Wikoff Sub-Watershed. The Bayou Wickoff Sub-Watershed is representative of the type of land-use that exists within the upper portion of the Bayou Plaquemine Brule watershed. The major land-use type is agricultural production, specifically sugarcane and pastures. Through the implementation of this project, LDEQ should be able to determine whether the BMPs implemented for these two types of agricultural production will achieve sufficient nonpoint source load reduction to achieve water quality standards. However, additional data is needed to make this determination.

The project area is the Cole Gully Sub-Watershed which lies within the upper portion of the Bayou Plaquemine Brule. The Louisiana Department of Environmental Quality (LDEQ) selected the Bayou Plaquemine Brule watershed in South Louisiana to implement a watershed implementation project. This watershed project has been a site of intensive watershed level monitoring and BMP implementation. This intensive implementation process allows LDEQ to determine whether the best management practices being recommended for nonpoint source pollution reduction do in fact reduce the pollutant load to the water body by 30-50%. Since this is the load reduction that was calculated through the TMDL process necessary to achieve water quality standards for dissolved oxygen, LDEQ needs to determine if that goal is feasible with the currently recommended practices.



A total of seven monitoring sites have been identified for the project. The sites selected include a “control” or pristine site, pasture sites, and sugarcane sites. In addition, two in-stream locations; one above-stream from the edge-of-field locations and another downstream were selected.

During 2008, the set-up and instrumentation of the seven monitoring sites was completed. Upon completion of the set-up, monitoring and sampling of these sites have taken place. These samples that were collected were sent to the Ag Chemistry Lab for analysis. The monitoring, sampling, and analysis continue into 2009.



Implementation and Improvement

Coulee Baton Micro Watershed Rural Sewer System Improvement Project

This project started in 2008 and is scheduled to end in July 2009. Louisiana passed a law in 2000 requiring all septic systems to have an approved Effluent Reduction System (ERS). The new law allows for six different ERS types but the most common is absorption field lines. A common misconception of the homeowner is that because they have never had a blockage or odor problem that their system is functioning properly. However, all of the soils in the micro watershed have severe limitations with wetness and slow percolation limiting the use of absorption field lines. In addition to poor soils, over 90% of the homes in the micro watershed are more than 20 years old with inadequate secondary treatment. A preliminary survey of the micro watershed found that 55 of the 110 homes discharge directly into a public ditch with no secondary treatment of sewage. Rural communities with aged septic systems have shown to be a significant contributor to nonpoint source pollution. A failing septic system can discharge more than 75,000 gallons of untreated wastewater into ground and surface waters a year.

A major limitation for the micro watershed is assistance for homeowners with potentially failing rural sewage systems. The Acadiana Resource Conservation and Development Council, along with other partnering agencies, developed a three phase project that : 1)demonstrates properly functioning effluent reduction systems 2)provides a cost share component for replacement and repair of aged systems for homeowners and 3)implements an educational and outreach program that highlights proper maintenance of systems, and an explanation of how the systems work, in hopes the homeowners will make better decisions about system maintenance and replacement.

The goal of this project is to address many of the issues and concerns addressed in the Louisiana's Nonpoint Source Management Plan for 2000 in the Statewide Educational Programs - Home Sewage Systems Section.

1. Homeowner education will be accomplished with field days, educational talks and town hall meetings.
2. Innovative Technologies will be accomplished with the effluent reduction system demonstration.
3. Improving water quality will be addressed through the cost share program to replace aged and failing septic systems.
4. Building partnerships with state and federal agencies and non profits will be promoted by the 12 cooperating state, federal and non profit organizations working with the Coulee Baton Micro Watershed.

The Acadiana Resource Conservation and Development Council has developed information packets announcing the Sewer System Improvement Project to potential participants. A town hall meeting was held within the micro watershed to discuss project parameters, demonstration goals and the cost share program procedures. A field day was then conducted to demonstrate properly installed and functioning systems, which was followed by a detailed survey to determine the type and condition of the homeowners current system. Presentations were also given on the proper maintenance of systems; an explanation of how systems work; and how homeowners can help them make better decisions about system maintenance and replacement. From the survey results and town hall meetings, participating homeowners were identified and a 3 representative home septic systems were selected for the effluent reduction demonstration program. After the new systems were demonstrated, the homeowner cost share program began. Partnering with local homeowners

Implementation and Improvement

and with the Vermilion Soil and Water Conservation District, a total match of \$38,532 is available to accomplish this project. A maximum cost share of 60% will be given for the replacement of up to 10 home sewage systems. The homeowner will provide 40% cash match for the installation of their new system.



This project has accomplished the following tasks in 2008:

- Acadiana RC&D mailed notices to 60+ licensed installers. VSWCD and Acadiana RC&D devised and coordinated power point presentation used at each of two town hall meetings at the parish library in Abbeville, LA. VSWCD coordinated the site selection for two town hall meetings, made necessary reservations, provided refreshment and meals, assisted in the development of the application packet distributed at the meetings, and assisted in the presentation process at the two meetings. Acadiana RC&D authored written articles to advertise the town hall meetings in area newspapers. Acadiana RC&D authored letters to homeowners and installers and mailed letters to licensed installers, the list of which was obtained from the DHH office in Abbeville. VSWCD mailed out notice of meetings to all landowners in the Coulee Baton Microwatershed. The town hall meetings occurred on June 23 and June 30, 2008.
- Acadiana RC&D and VSWCD developed the ranking criteria and application packets for the demonstration phase of this project. VSWCD has accepted a total of 16 homeowner applications, three of which will qualify for the demonstration systems.
- Three contractor bids were received and reviewed. Two were chosen; one installer placed a spray irrigation system and an ER field line, and the other placed the rock plant filter system. After it became apparent that the sewer system installers did not subcontract their own, Acadiana RC&D chose an independent electrical contractor based on references, homeowner request, and price estimates that fell within the budget parameters. The homeowner

Implementation and Improvement

permitting process was completed. The first installation of a demonstration system (rock plant filter) occurred September 26, 2008. The second demonstration system (ER Field Line) was installed October 2, 2008. The third demonstration system (Spray Irrigation) was installed October 3, 2008.

- As a result of advertising and the public field day, VSWCD has accepted 7 applications for the cost-share phase. There has been three homeowners who have taken advantage of the 60/40 cost-share.

Source Water Protection Program Work in Jefferson Davis Parish

Committee work during FY 2008 was focused on the passage of ordinances. No committee meetings were held during the fiscal year. As of the end of FY 2008, the following ordinances were passed in Jefferson Davis Parish: the Jefferson Davis Parish Police Jury passed the source water protection ordinance on November 8, 2006; the Town of Welsh passed the ordinance on March 6, 2007; and the City of Jennings passed the ordinance on November 11, 2007. The Town of Lake Arthur has an existing source water protection ordinance in place from July 14, 1997.

There have been 117 visits to potential sources of contamination completed in Jefferson Davis Parish. The committee visits potential sources of contamination letting them know they are close to a drinking water source and hands out BMPs for the particular concern. In some cases the concern could be an abandoned gas station that needs closure; otherwise it could turn into nonpoint source contamination of an aquifer with the source unknown. Surface water runoff does result in water carrying pollutants through the ground into underground sources of drinking water. Then, like surface water, ground water moves and can carry contaminants beyond the originating source. The visits in Jefferson Davis Parish were completed as a collaborative effort by the Jefferson Davis Parish Drinking Water Protection committee members, 4-H club members, and the Louisiana Department of Environmental Quality Drinking Water Protection Team.

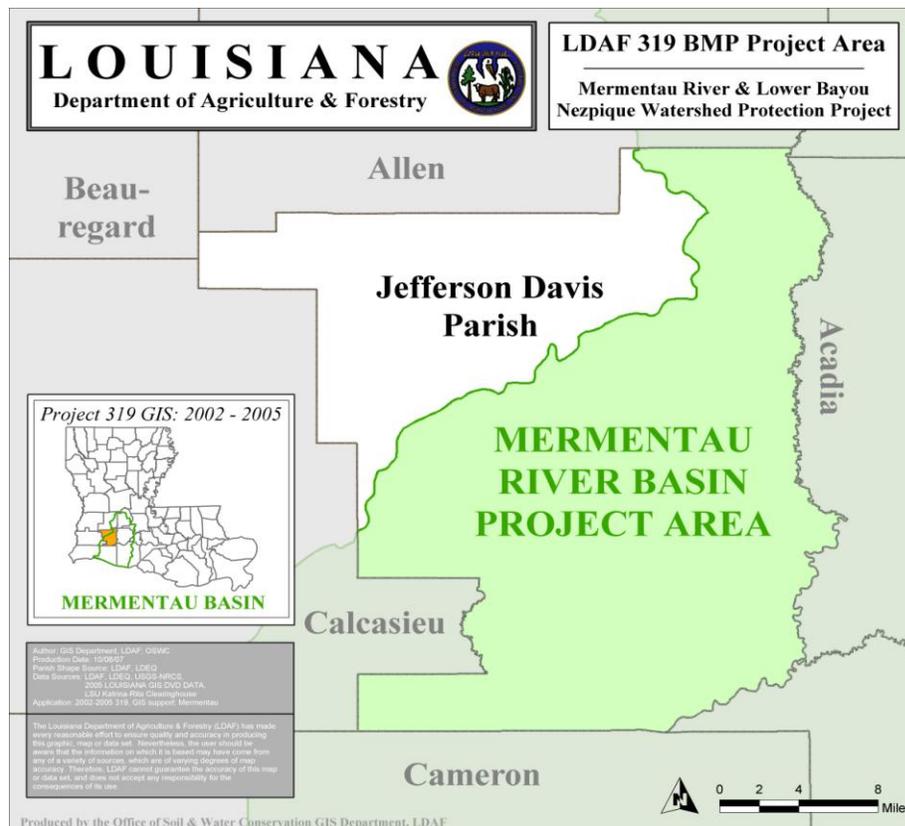
USDA and SWCD Programs

During FY 2008, the USDA implemented approximately 18,865 acres of BMPs within the Mermentau River Basin through the EQIP. An additional 284 acres of practices were implemented through the CRP, 11 acres of practices were implemented through the CSP, 128 acres of practices were implemented through the WRP, and 9 acres of practices were implemented through the WHIP.

Implementation and Improvement

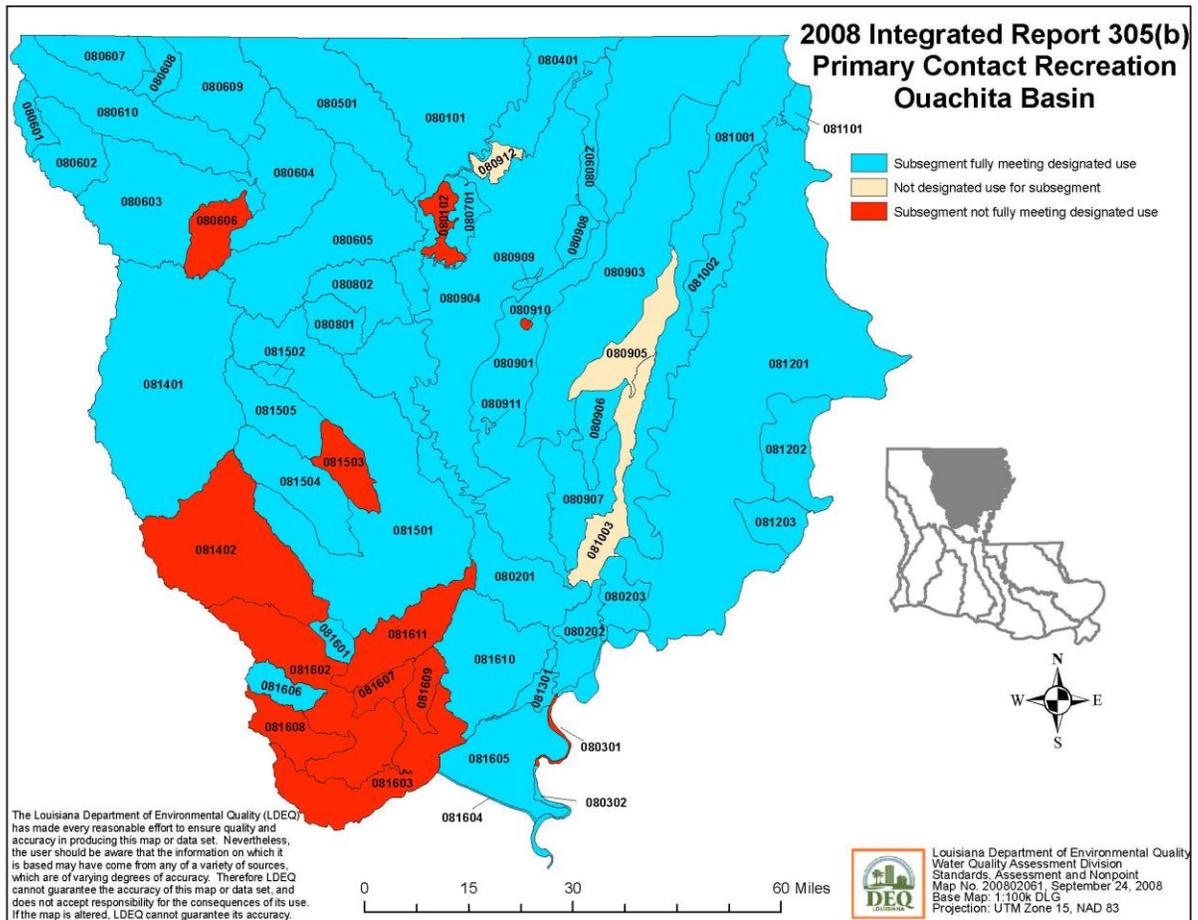
In addition to the work that LDEQ funded in the Mermentau River Basin, the Office of Soil and Water Conservation funded a watershed implementation project in 2008. The table and map that have been provided below indicate the type and acres of BMPs that were implemented through the incremental funds within the Mermentau River Basin.

Best Management Practice	Amount
Grade Stabilization Structure	3
Irrigation Land Leveling	1453.6 acres
Residue Management	1266 acres
Dry Seeding	128.8 acres
Irrigation Water Management	549.6 acres
Nutrient Management	1518.1 acres
Pest Management	1518.1 acres
Crop Rotation	2276.7 acres
Shallow Water Management For Wildlife	546.4 acres



Implementation and Improvement

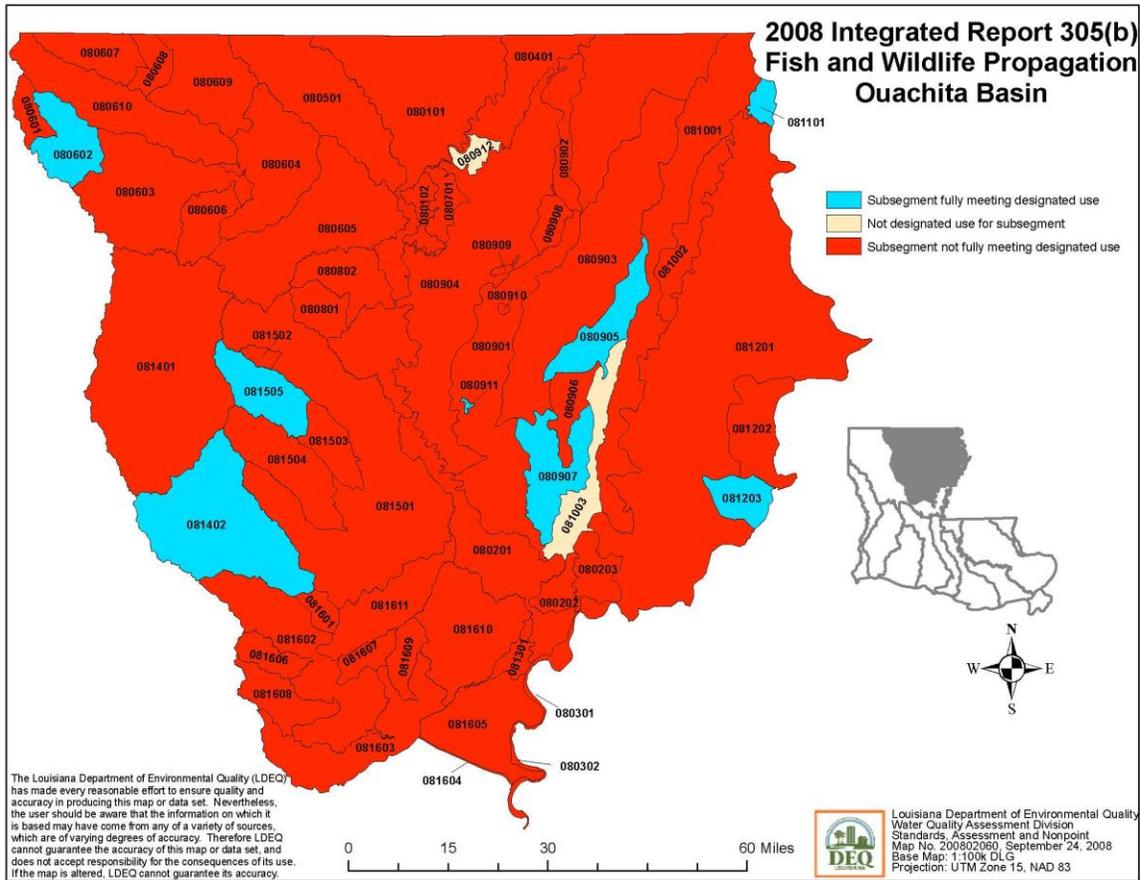
Ouachita River Basin



The draft 2008 IR indicated that there were 12 watersheds that were not meeting the primary contact recreation use, compared to 14 in the 2006 IR. There were improvements in Bayou D'Arbonne from its headwaters to Lake Claiborne and from Lake Claiborne to Bayou D'Arbonne Lake. There was also improvement in Little River from Archie Dam to the Ouachita River. Beaucoup Creek from its headwaters to Castor Creek was added to the watersheds impaired for contact recreation.

The draft 2008 IR indicated a decline in water quality within the western portion of the Ouachita River Basin for the fish and wildlife propagation use, compared to the 2006 IR. There were only eight of the watersheds fully meeting this use compared to 15 in 2006.

Implementation and Improvement



LDEQ collected water quality data for the Ouachita River and the Tensas River during 2008, with both water bodies indicating good water quality. The average concentration for dissolved oxygen was meeting or exceeding water quality standards and the concentration of fecal coliform bacteria was well below the criteria for primary contact recreation.

Average Dissolved Oxygen Concentrations Measured in mg/L for Selected Water Bodies in the Ouachita River Basin						
Water Body (subsegment)	1999	2004	2005	2006	2007	2008
Ouachita River (080101)	5.83	5.92	5.90	6.06	6.48	6.17*
Tensas River (081201)	5.89	5.36	6.85	6.70	5.54	5.76*

*partial year data

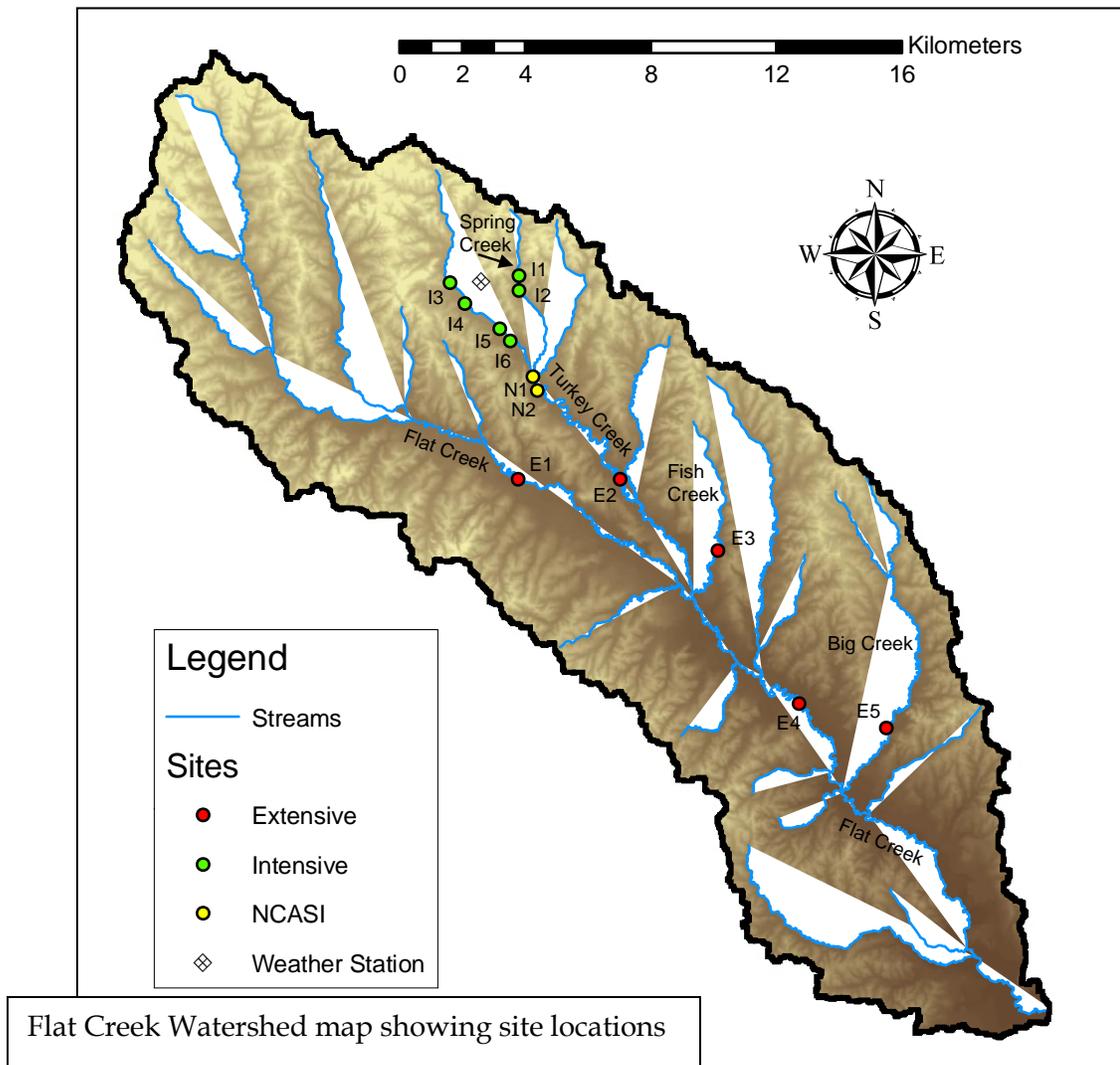
Average Fecal Coliform Concentrations Measured in Cells per 100 mL Sample for Selected Water Bodies in the Ouachita River Basin						
Water Body (subsegment)	1999	2004	2005	2006	2007	2008
Ouachita River (080101)	127	163	35	94	139	52*
Tensas River (081201)	141	265	226	83	47	84*

*partial year data

Implementation and Improvement

Monitoring the Effectiveness of Forestry BMP Implementation in the Flat Creek Watershed

This project is scheduled to be completed in 2009. This project was initiated in 2003 to address two critical questions: 1) Are Louisiana's current forestry BMPs effective in maintaining or improving the quality of low-gradient headwater streams often having low DO and high trophic levels? and 2) Will forestry BMP implementation bring any basin-wide benefits in water quality protection? To answer these questions the Flat Creek watershed was selected, which broadly represents the forested landscape in this region. The project employed a paired watershed design with intensive field monitoring of stream water quality for a pre-harvest period and a post-harvest period. Field instrumentation with automated ISCO samplers above and below 3 forest stands began in December 2005. In addition, we selected another 5 locations across Flat Creek to collect monthly stream water quality data. During the summer and early fall of 2007 two of the three forest stands were clearcut. Following the timber harvest the phase 2 period of this project began to determine whether significant changes in water quality parameters will occur.



Implementation and Improvement

In 2008 we have successfully achieved all project objectives and tasks outlined for the reporting period. These include:

- A total of 14 storm-event sampling, whereby in-stream and flow measurements were conducted and water quality samples were collected from the 6 intensive monitoring sites.
- A total of 12 monthly sampling field trips, whereby in-stream and flow measurements were conducted and water quality samples were collected from both the 6 intensive and 5 extensive sites.
- Two 1-week benthic macroinvertebrate sampling each in the early May and mid August, whereby more than 160 benthic samples were collected and measurements on stream habitat were conducted.
- In addition to the above field trips, more than 10 additional trips to the project site were made to repair and maintain the field equipment.
- All water samples collected during 2008 were analyzed for nitrate, nitrite, total Kjeldahl nitrogen (TKN), ammonia, total and dissolved phosphorous, total suspended solids (TSS), fixed solids (FS), volatile solids (VS), and total solids (TS).
- Submission of 4 quarterly reports summarizing major project activities, milestones, problems encountered and Remedial actions taken.

In addition to the above achievements, we have undertaken a number of activities that can contribute to achieving the overall goal of this forestry BMP project. These include, among others:

- Quarterly field trips to Flat Creek with LDEQ project manager to better communicate and disseminate ongoing project activities.
- A project meeting in February with forestry industry personnel from Plum Creek Timber Inc. (PCT) and National Council for Air and Stream Improvement Inc. (NCASI) to review and discuss all project-related field activities and expected support.
- A project meeting in November with NCASI to discuss project-related activities and expected support for 2009.
- Three presentations were made in November at The 15th Biennial Southern Silvicultural Research Conference, which is the most relevant forestry conference in the South and Southeast United States. The conference was attended by several hundred forestry professionals from government agencies, forestry industries, research institutions, land owners and stakeholders.



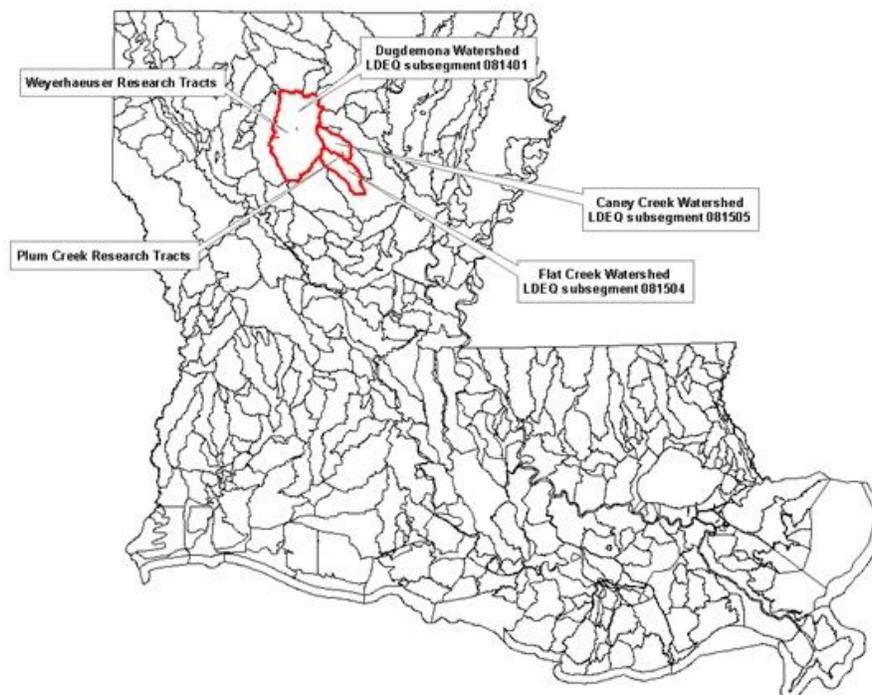
Implementation and Improvement

Evaluation of Effectiveness of Forestry Best Management Practices for Water Quality Improvement in the Ouachita Basin: Phase II

This project ended in 2008 and the Final Report has been approved by EPA. The most recent statewide survey conducted by the Louisiana Office of Forestry indicated approximately 93% of the forestry lands surveyed utilized BMPs. In order to determine whether BMP implementation results in reduced nonpoint source loading from forested lands, LDEQ worked with Louisiana Tech University and Willamette/Weyerhaeuser/Forestry Industry Partners (FIP). The two watersheds studies were the western part of the Dugdemona River watershed and the Castor Creek watershed. These areas are heavily forested, and the predominant land use in these watersheds is forestry. Water quality and quantity were compared before and after harvesting treatments, and compared upstream and downstream of the harvesting sites.

This project showed that timber harvesting without implementing BMPs increased storm levels of turbidity ($p=0.0572$), total suspended solids concentration ($p=0.1647$), nitrate-nitrite load ($p=0.1116$), total Kjeldahl nitrogen load ($p=0.2898$), and total nitrogen load ($p=0.1180$) post-harvest downstream relative to the control and harvest with BMP treatments, but not significantly ($\alpha=0.05$). Levels of all nitrogen forms were significantly higher in the post-harvest period than the pre-harvest period for all three treatments. Most of the increased levels of sediments and nutrients on the harvest without BMP treatment were short-lived. The shorter recovery time is contributed to rapid vegetative regrowth due to warm temperatures and evenly distributed rainfall in the southeastern United States.

Variation between tracts and within treatments was evident during both treatment periods. We recommend that future upstream-downstream studies incorporate more sites to reduce the variation, and increase the statistical power. In addition, base flow samples would allow a comparison of increases due to the storms. An increase in the number of storms sampled will help in reducing and accounting for variation. Every size and intensity of storm should be sampled, but we recognize this takes considerable resources.



Implementation and Improvement

Reduction in Nonpoint Source Contaminant Loads to Bayou Chauvin in the Ouachita River Basin

This project started in 2006 and is scheduled to be completed in 2009. The specific goal of this project is to identify specific sources of NPS loading to Bayou Chauvin watershed and implement BMPs that will improve water quality. This project will use existing water quality data, TMDLs, and inventory mapping and reconnaissance surveys to select and target locations along the watershed that are likely to contribute to NPS loading. Through targeted water quality monitoring, land use areas (agricultural/pasture, suburban, wetland) will be selected for implementation of BMPs and demonstration projects. Educational outreach programs will be developed to inform land owners of NPS issues through workshops, demonstration projects, and organization and training of action groups.

Existing water quality data for the Bayou Chauvin watershed during the last five to ten years has been obtained to determine seasonal trends for sediments, nutrients, and fecal coliform counts. Completed TMDLs were reviewed to establish in-stream water quality goals and implementation plans for reducing NPS loads to the Bayou Chauvin watershed. Visual observations were made of land use areas around the Bayou Chauvin watershed for selection of monitoring sites. Target water quality monitoring was conducted along Bayou Chauvin to identify potential areas contributing to NPS loading of contaminants. The project is in the process of identifying acceptable BMP sites and working with land owners to implement BMPs. Education and outreach is currently being conducted through the project. Brochures have been printed and disseminated to residents. Storm drain marking has been completed in several neighborhoods.



Implementation and Improvement

Reduction of Pesticides and Nutrients in Bennett's Bayou Following Implementation of BMPs

This project is scheduled to end in 2009. The Bayou is part of a watershed that includes Bayou Lafourche, Boeuf River, and portions of the Ouachita River. The Bennett's Bayou watershed contains both urban and agricultural land use areas. These waterways are impaired due to pesticides, nutrients, suspended solids, organic enrichment and fecal coliform bacteria. During 2002, USEPA Region 6 developed Total Maximum Daily Loads (TMDLs) for dissolved oxygen and nutrients for Bayou Lafourche.

Bennett's Bayou serves as the outlet for drainage of at least three NPS contaminant loads into Bayou Lafourche. These areas are the Chennault Park Golf Course, the ULM farm, and a residential subdivision. The Chennault Park Golf Course was shown to be a source of NPS pollutants in a previous 319 NPS project. A BMP was developed that included creating a wetland detention basin to capture and attenuate contaminant runoff from the golf course. This involved dredging the wetland to form sediment basins and reseeding with native plant material. This BMP was completed in the spring of 2006. This project will evaluate the success of the wetland area in reducing simazine and orthophosphate levels in golf course runoff and eventually Bennett's Bayou watershed.

This project has developed a water quality sampling, monitoring and testing schedule which will be used in the evaluation of the success of the constructed BMPs at Chennault Park Golf Course, the ULM farm and below a residential neighborhood storm drain discharge. Water quality samples have been collected. Aquatic bioassays have been performed on representative algae, invertebrate, and vertebrate species. Some toxicity problems have been noted.

This project will also evaluate the long-term success of another BMP implemented in the Bennett's Bayou watershed. In 1999, the ULM farm, located upstream from the golf course, developed a BMP that included conservation tillage systems with nutrient and pesticide management, and grassed waterways. Selected water quality parameters and pesticides (i.e., atrazine) will be monitored during rainfall events in Bennett's Bayou to evaluate the continued success of these agricultural BMPs.



Implementation and Improvement

Source Water Protection Program Work in Grant Parish

Grant Parish Source Water Protection Committee

The Louisiana Department of Environmental Quality's Drinking Water Protection Team began work in Grant Parish in December 2007. Staff members visited with representatives of the local water systems and other government officials to introduce the Drinking Water Protection Program. Grant Parish has fourteen active public community water systems. There is one surface water system and two water systems that purchase surface water. The surface water system is the Georgetown Water Supply and the source of drinking water is the Georgetown Reservoir. Control of road construction sediment and debris from getting into the reservoir is discussed later in this report. There are eleven ground water systems.

LDEQ Source Water Protection staff appeared on KALB Alexandria and KLAX Alexandria on February 19, 2008 to advertise for the upcoming Grant Parish Drinking Water Protection Community meetings. An Open House was held at the Grant Parish Library in Colfax, LA on February 21st, where residents could speak to DWPP staff one on one regarding drinking water protection, as well as obtain educational materials and sign up for the Grant Parish Drinking Water Protection Committee. A community meeting was held at the community center in Dry Prong, LA on February 21st. Nineteen volunteers signed up for the Grant Parish Drinking Water Protection Committee.



Jesse Means and Mary Gentry of LDEQ address the Grant Parish Drinking Water Protection Program Community Meeting audience at the community center in Dry Prong, LA on February 21st, 2008.

Implementation and Improvement

The first committee meeting, a training session, was held on March 27, 2008 in Dry Prong. Topics of interest to the committee include: used oil recycling, malfunctioning individual sewage systems, and Big Creek.

During the fourth quarter, the Louisiana Department of Environmental Quality's Drinking Water Protection Team continued to meet with the committee on the fourth Thursday of each month to work on protection activities. Eighty percent of the visits to potential sources of contamination have been completed by the committee, and the members have shown serious interest in setting up an oil recycling facility. Many parishes already have businesses that accept used oil for recycling, but Grant Parish does not have this type of facility. Mayor Pace from Dry Prong has been researching how to set up a facility and LDEQ contacted the City of Rayne for details on how they set up a used oil recycling station. DHH received two donated tanks for the project. Petron has donated a 350-gallon tank, and also a 1000-gallon tank. They were picked up by Georgetown city employees and are being stored in Georgetown. The committee is working with US Filter to arrange for oil pick-up.

The Town of Pollock passed the ground water protection ordinance on January 7, 2008.

The Dry Prong mayor and city council are reviewing the drinking water protection ordinance.

Big Creek Fecal Coliform Sources Project

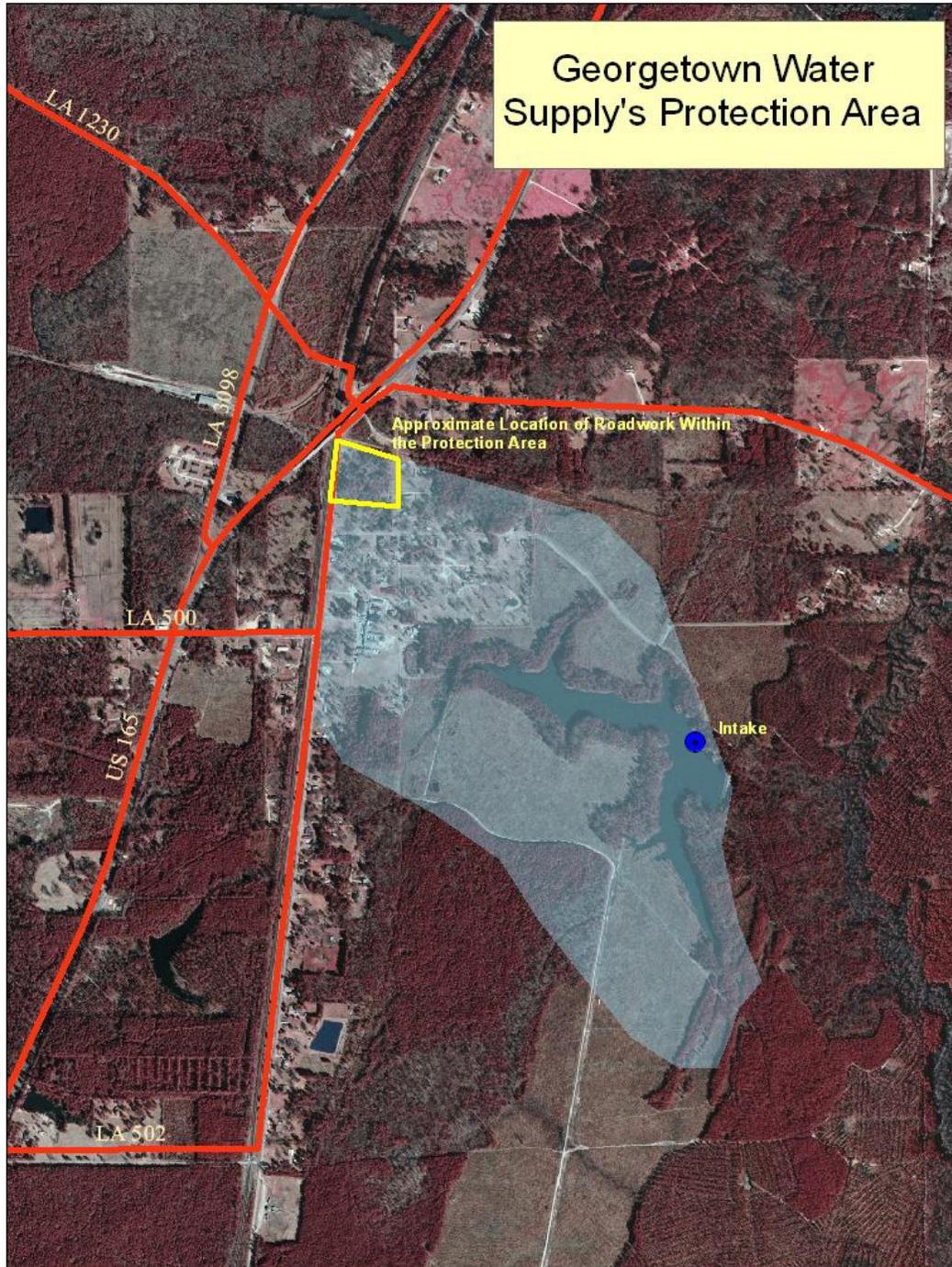
Big Creek, which is a source of drinking water for people in southern Grant Parish and northern Rapides Parish, is not meeting the fecal coliform standard necessary to support its designated use for primary contact recreation (swimming). Reasons cited for this in LDEQ's 2006 Integrated Report are livestock (grazing or feeding operations) and sewage discharges in unsewered areas. Because Big Creek is a drinking water source and an outstanding natural resource, it is in the public interest to determine what is contributing fecal coliform bacteria to the creek. Therefore, LDEQ contracted with the University of Louisiana Monroe to conduct a sampling program to study the sources of the fecal coliform. The contract was drafted and approved by EPA during the fourth quarter of FY 2008. The contract is currently in the review/finalization process.

Also, representatives of LDEQ's regional office in Pineville are currently working on a concentrated inspection process for the Big Creek watershed to be sure there is complete compliance with LDEQ's permitting system in the area. Work in Grant Parish will continue into FY 2009.

Implementation and Improvement

Protection for Georgetown's Drinking Water Reservoir From Road Construction Runoff

During 2007, LDEQ monitored construction activities on U.S. Highway 165 that occurred near the Village of Georgetown's (Grant Parish) public water supply source. Previously in the summer of 2006, LDEQ had become involved in negotiations to decide upon a protocol which would protect Georgetown's reservoir during the road construction on the portion of U.S. Highway 165 that crosses the northwest portion of the reservoir's protection area. See the map below.



Implementation and Improvement

An agreement was reached between Louisiana TIMED Managers (the contractor handling the construction of the highway) and the Village of Georgetown, the Louisiana Department of Health and Hospitals, the Louisiana Rural Water Association, and LDEQ. The special precautions included waiting to clear the area in question last, not staging or washing vehicles/equipment within the protection area, not storing any hazardous materials within the protection area, the construction of storm water runoff/cleanup control structures, and the staging of spill control equipment near the area in case of the release of any hazardous material.

On July 17, 2007 the Village of Georgetown's water operator informed LDEQ that the contractor performing the road construction was going to initiate construction within the Georgetown reservoir's protection area the following day. He further stated that the contractor had not yet put into place the previously agreed upon storm water and pollution control structures that were stipulated in the cooperative agreement. LDEQ in turn contacted the contractor, who then halted construction and put protection measures into place. LDEQ followed up with an inspection of the portion of the construction site within the reservoir's protection area. The inspection found that, apart from some minor issues that needed to be addressed, the overall performance of the storm water and pollution control structures the contractor had put into place were sufficient to protect the reservoir. The contractor was notified of the findings and stated that the follow-up work to address the minor issues would be conducted accordingly.

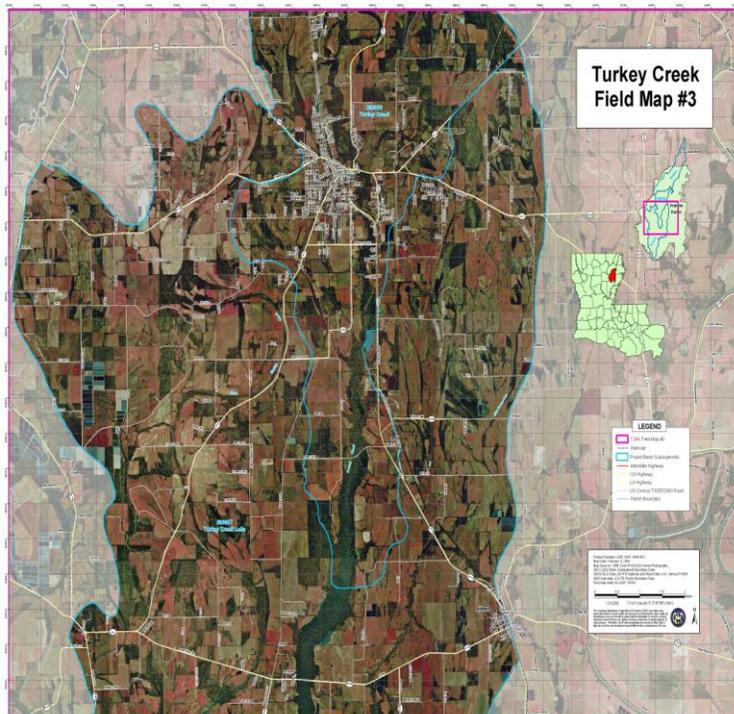
USDA and SWCD Programs

During FY 2008, the USDA implemented approximately 47,753 acres of BMPs within the Ouachita River Basin through the EQIP. An additional 28,537 acres of practices were implemented through the CRP, 3,846 acres of practices were implemented through the WRP, and 575 acres of practices were implemented through the WHIP.



Implementation and Improvement

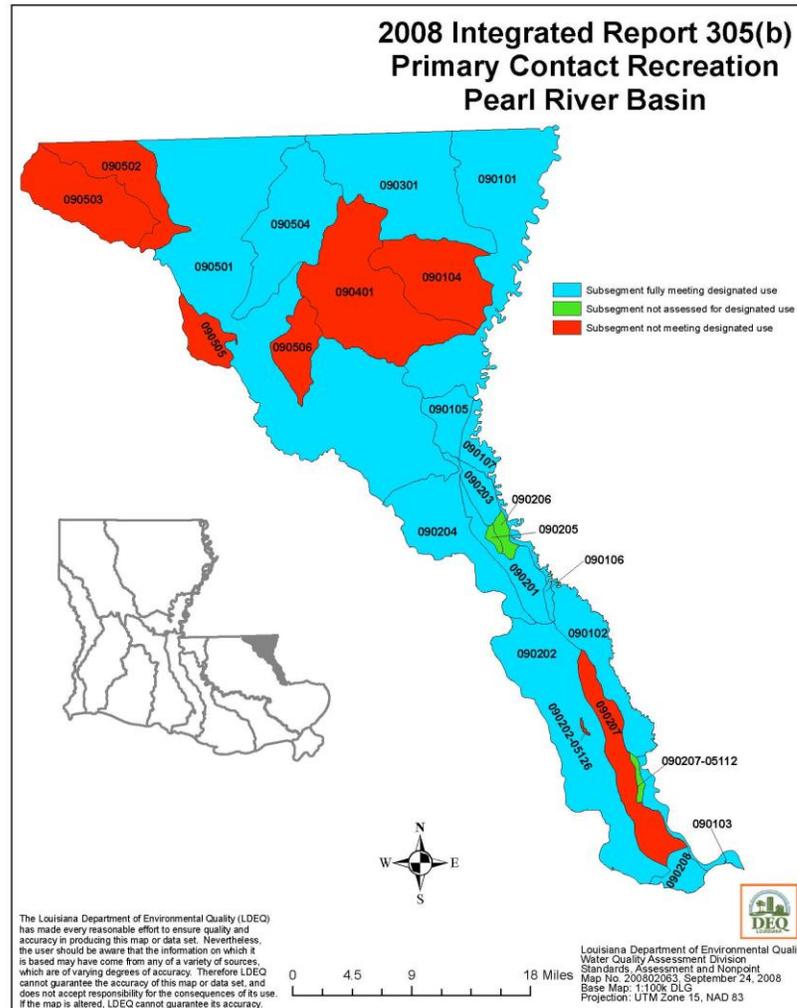
In addition to the work that LDEQ has funded through the NPS Program, the Office of Soil and Water Conservation has also implemented agricultural BMPs in the Ouachita River Basin within the Turkey Creek watershed area. The map and table provide information on the location of the project, the types and acres of BMPs that have been implemented.



Best Management Practice	Amount
Critical Area Planting	1.05 acres
Mulching	0.75 acres
Grade Stabilization Structure	4
Pipeline	1972.5 ft
Irrigation Water Conveyance	1320 ft
Grassed Waterway	1.05 acres
Critical Area Planting	1.05 acres
Precision Land Forming	12.45 acres
Pasture and Hayland Planting	61.9 acres
Pipeline	513 ft
Heavy Use Area Protection	2
Watering Facility	2
Mulching	1 acres
Critical Area Planting	2.6 acres
Grade Stabilization Structure	4
Grassed Waterway	1.6 acres

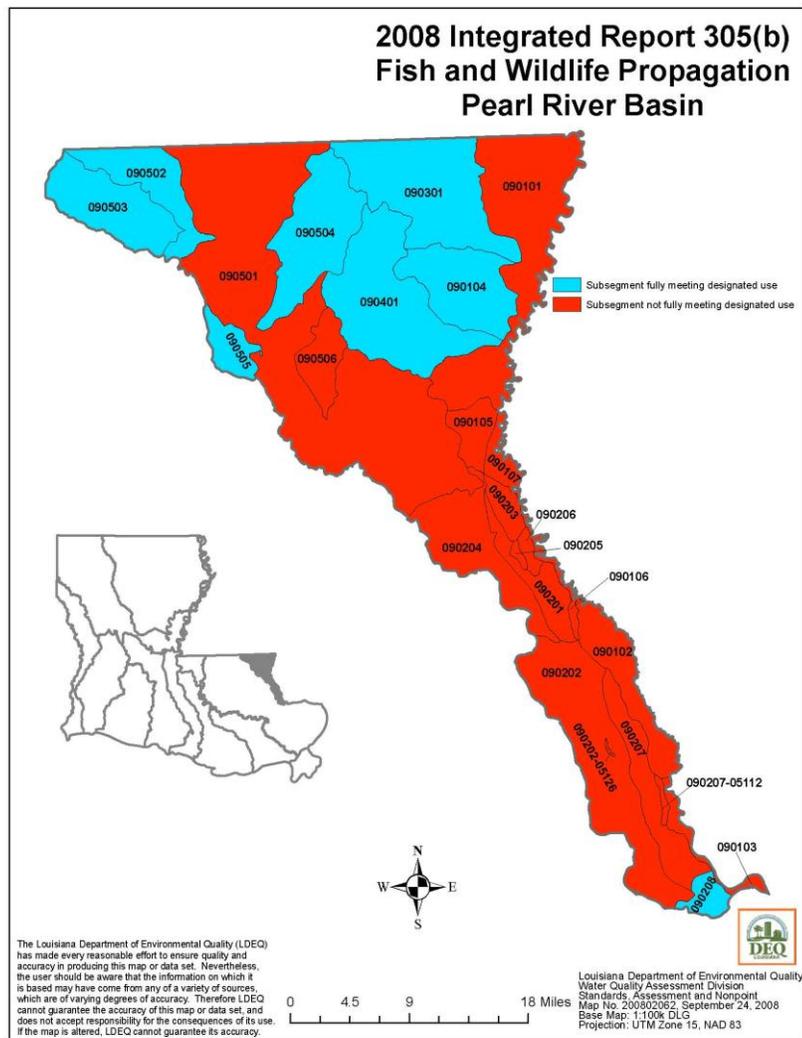
Implementation and Improvement

Pearl River Basin



The draft 2008 IR indicated that there were eight watersheds that were not meeting the primary contact recreation use compared to seven in 2006. There were improvements in some of the water bodies but others declined in water quality. The Pearl River from the Mississippi state line to the Pearl River Navigation Canal and Pushepatapa Creek from its headwaters and tributaries at the Mississippi state line to Pearl River floodplain improved. However, Little Silver Creek from headwaters to Bogue Chitto River and the Middle Pearl River and West Middle Pearl River from West Pearl River to Little Lake declined and were added to the water bodies that are impaired for contact recreation.

Implementation and Improvement



The draft 2008 IR indicated that there were eight water bodies that were fully meeting the fish and wildlife propagation use compared to only five in 2006. The three water bodies that improved included Peters Creek from its headwaters to the Pearl River, Lawrence Creek from its headwaters to the Bogue Chitto River and Bonner Creek from its headwaters to the Bogue Chitto River.

The water quality data from 2008 continued to indicate good water quality for the Pearl River, with the average annual concentration of dissolved oxygen exceeding the criteria necessary to protect the fish and wildlife propagation use. The data also continued to show improvements in the average annual concentration of fecal coliform bacteria with the values falling well within the criteria necessary to protect the contact recreation use.

Implementation and Improvement

Average Dissolved Oxygen Concentrations Measured in mg/L for Selected Water Bodies in the Pearl River Basin						
Water Body (subsegment)	1996	1997	1998	2001	2006	2008
Pearl River (090101)	8.84	9.73	7.95	7.56	6.75	8.34*
*partial year data in 2007						

Average Fecal Coliform Concentrations Measured in Cells per 100 mL Sample for Selected Water Bodies in the Pearl River Basin						
Water Body (subsegment)	1996	1997	1998	2001	2006	2008
Pearl River (090101)	144	483	3854	509	194	111*
*partial year data in 2007						

USDA Programs

In the Pearl River Basin, the USDA implemented approximately 659 acres of BMPs through the EQIP in FY 2008. An additional 442 acres of practices were implemented through the CRP, and 58 acres of practices were implemented through the WHIP.

Pearl River Watershed Monitoring and Source Identification

This project started in late 2007 and is currently in progress. The Louisiana and Mississippi Departments of Environmental Quality have identified the Pearl River and several of its tributaries as impaired and not fully meeting its use for fish and wildlife resources due in part to high turbidity and sedimentation levels.

The Pearl River was identified by The Nature Conservancy as a priority for conservation attention because of its high biodiversity significance. Continued excess sedimentation at high concentrations can make it difficult for a stream to recover. Nonpoint source pollution from sedimentation was cited as the possible reason the rare Pearl darter is extinct from the Pearl, and why several other riverine fauna such as the federally threatened Gulf sturgeon and inflated heel splitter may disappear within the next 10 years.

Tasks for the project include gathering and analyzing historic and current data on the geomorphology of the Pearl River and its major tributaries, as well as conducting a field-based assessment of channel stability and sediment flux of the lower Pearl River. The project will ultimately characterize whether changes in river channel morphology have occurred through time and will also highlight locations where bank instability and sediment input may be generating excessively high sedimentation levels at specific river reaches. The two primary sources of excess sedimentation in the Pearl River are thought to be incompatible land use practices, such as incompatible sand and gravel mining, and changes in geomorphology of the stream.

High-level analysis and assessment of current and historical channel conditions, stability and migration behavior was completed in 2007 using aerial photos, with the Pearl River divided into 39

Implementation and Improvement

geomorphic reaches, and the West Pearl divided into 11 reaches. Assessments of historic channel behavior and rates of change using these aerial photos are ongoing and in review by the Senior Biohydrologist.

All 49 geomorphic reaches have been evaluated, with 28 reaches completed in Louisiana. One reach could not be evaluated as there is no longer any flow connecting the “East” with the West Pearl in this reach. This site was visited twice in June 2008 and again in January 2009 to confirm that conditions were no different during high water level.

Locations of 10 reaches spanning high and low levels of potential sediment generation were selected in the Pearl River. Two of these reaches were located in the Lower Basin and at each two cross sections were selected and measured.

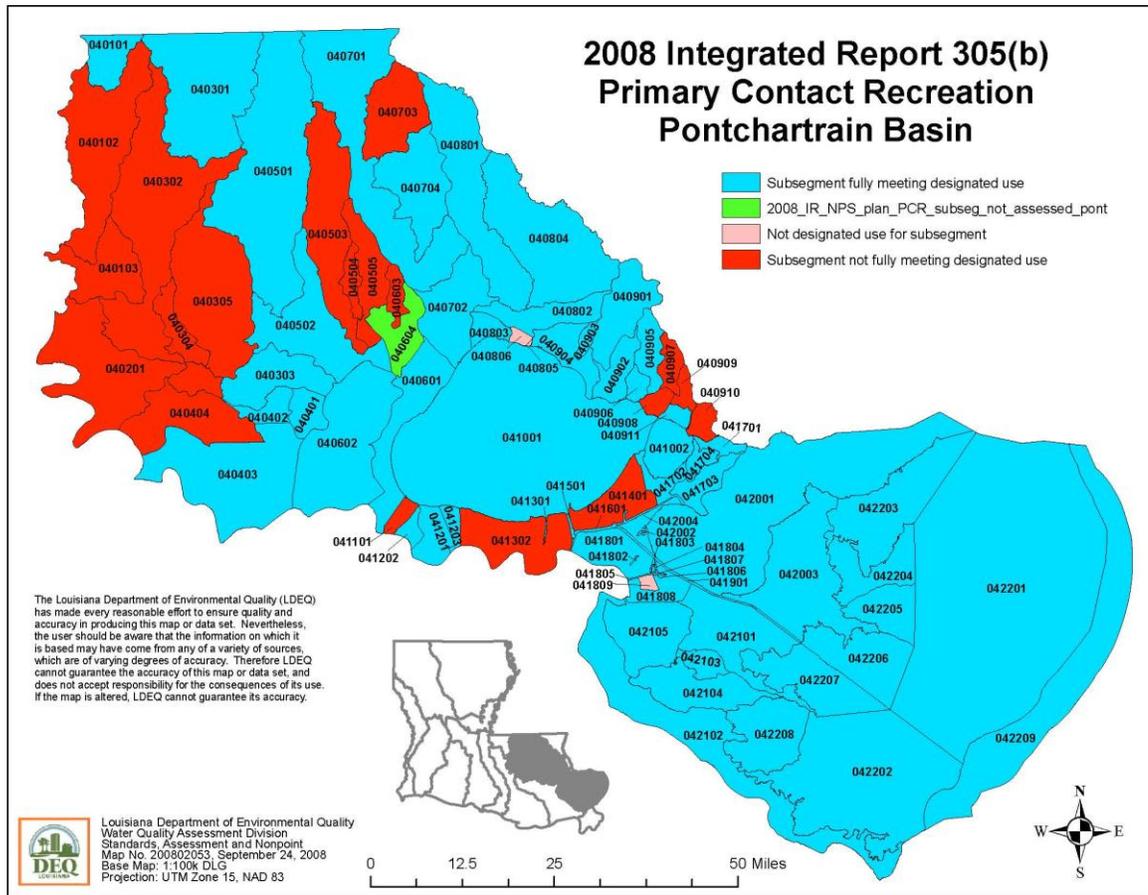
The first set of sediment samples at an intermediate river stage level were collected and analyzed. Seventeen cross sections from 10 reach sites were measured for bathymetric profiles of configurations of channel bottoms and bank elevations. Cross sections were marked with semi-permanent stakes to monument their locations and will be revisited in June 2009 to measure channel and bank profiles to quantify sediment erosion rates. These estimates of sediment erosion rates will be used to calibrate the qualitative geomorphic surveys conducted at the same locations. Although most field sampling was completed in 2008, validation of sediment flux estimates will not be completed until after channel cross-sections have been revisited in June.

Other accomplishments in 2008 include the formation of the Lower Pearl River Conservation Alliance and organization of a BMP Workshop for Pearl River sand and gravel mining operators.



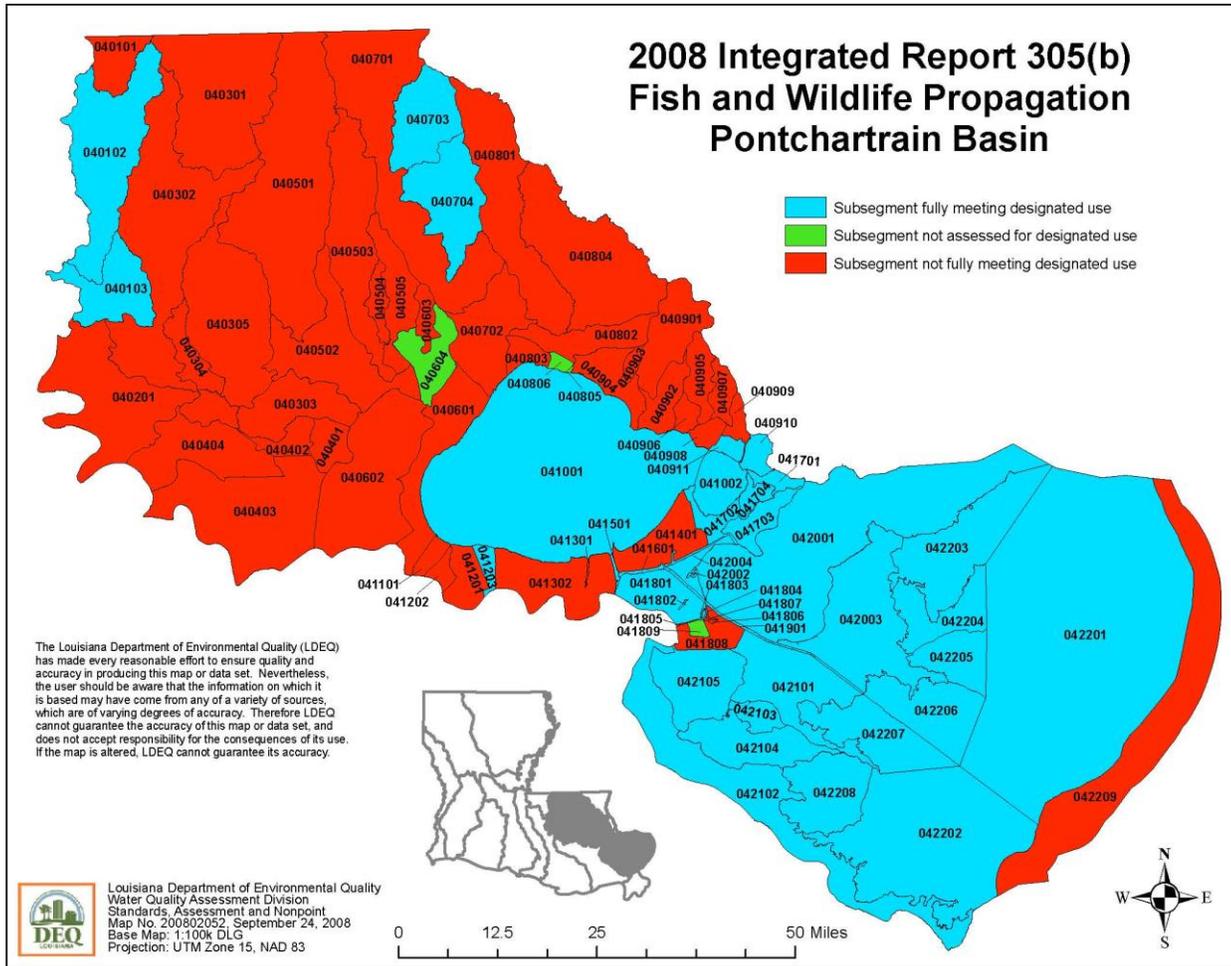
Implementation and Improvement

Pontchartrain Basin



The water quality information from the draft 2008 IR indicated that there had been substantial improvement in the number of water bodies impaired for contact recreation. The 2008 IR indicated that there were 20 water bodies impaired for contact recreation compared to 32 in the 2006 IR. These improvements can be attributed to the on-the-ground work of the Lake Pontchartrain Basin Foundation, the Natural Resource Conservation Service (NRCS) and the parishes and cities that are working to improve water quality from rural and urban areas.

Implementation and Improvement



The water quality information from the draft 2008 IR indicated that there was a decline in water quality for the fish and wildlife propagation use, with four additional watersheds moving to the category of non-attainment of water quality standards. This includes the Comite River from Little Comite Creek and Comite Creek at Mississippi state line to Wilson-Clinton Highway; Pass Manchac from LakeMaurepas to Lake Pontchartrain; Bayou St. John and W-14 Main Diversion Canal from headwaters to Salt Bayou.



Implementation and Improvement

The most recent water quality data for the Tickfaw and Tangipahoa Rivers indicated that the average dissolved oxygen concentration continued meet the state's water quality standard, but the fecal coliform numbers for these two water bodies had increased.

Average Dissolved Oxygen Concentrations Measured in mg/L for Selected Water Bodies in the Pontchartrain Basin												
Water Body (subsegment)	1996	1997	1998	2000	2001	2002	2003	2004	2005	2006	2007	2008
Tickfaw River (040501)	no data	no data	no data	8.09	7.36	7.69	7.67	7.60	8.17	8.06	8.18	7.98*
Tangipahoa River (040701)	no data	no data	no data	8.43	7.67	7.83	8.12	8.08	7.80	8.36	8.55	8.30*
*partial year data												

Average Fecal Coliform Concentrations Measured in Cells per 100 mL Sample for Selected Water Bodies in the Pontchartrain Basin												
Water Body (subsegment)	1996	1997	1998	2000	2001	2002	2003	2004	2005	2006	2007	2008
Tickfaw River (040501)	no data	no data	no data	114	644	2308	717	1399	814	579	207	735*
Tangipahoa River (040701)	no data	no data	no data	100	282	3078	1998	2589	680	1203	240	2161*
*partial year data												

USDA Programs

During FY 2008, the USDA implemented approximately 7,832 acres of BMPs within the Pontchartrain Basin through the EQIP. An additional 1,141 acres of practices were implemented through the Conservation Reserve Program (CRP), and 1,279 acres of practices were implemented through the WHIP.

Implementation and Improvement

Wastewater Treatment Plant Assistance in North Shore Watersheds

This project is currently in progress, and its goal is to meet the remaining conditions on the Louisiana Coastal Nonpoint Pollution Control Program for Urban Existing Onsite Disposal Systems (OSDS). This project will provide assistance to existing OSDS in accordance with the Management Measures listed in the Guidance Specifying Management Measures for Sources of Nonpoint Pollution in Coastal Waters. A survey of post-Katrina land use and wastewater needs in the southern portion of St. Tammany and Tangipahoa Parishes and assistance to the owners of existing OSDS will be performed. Owners of existing OSDS will receive material on the correct operation and maintenance of their system. An emphasis will be placed on small home units.

An inspector was trained by the LPBF on the functioning of WWTPs, permitting regulations and federal programs impacting water quality. The inspector took the Class 1 WWTP operator exam in the summer of 2008. The inspector and the LPBF met with and are assisting LDEQ to assist WWTPs in watersheds that had TMDLs analyses performed this summer including Bayou Cane, Bayou Lacombe and Bayou Liberty. The LPBF and the WWTP inspector are working with St. Tammany Parish in creating and comparing databases for LDHH permitted plants and the LDEQ permits. The disconnect between the two agencies has led to many WWTPs (40-60%) being permitted to be built but not permitted to discharge.

Storm Water BMPs in Wetland Landscape Design Planning, Construction at Woodlawn High School

Woodlawn High School in the East Baton Rouge Parish School System has a detention pond that receives stormwater runoff from the high school parking lot and a nearby dairy farm. Stormwater runoff from Woodlawn High School flows into a channel along the west edge of the parking lot, past the football field, and into the detention pond, and then into another drainage channel that connects to the Amite River.

A meandering wetland channel was proposed to be constructed in the detention pond in order to remove pollutants from stormwater runoff. The project as originally conceived was altered due to new construction plans by the East Baton Rouge Parish School System to build near the area occupied by the original detention pond. This delayed the project for approximately one year. The new construction plans called for a new detention pond to be built nearby, which occurred in the spring of 2008, and the proposed meandering wetland channel was constructed in the new detention pond in summer 2008.

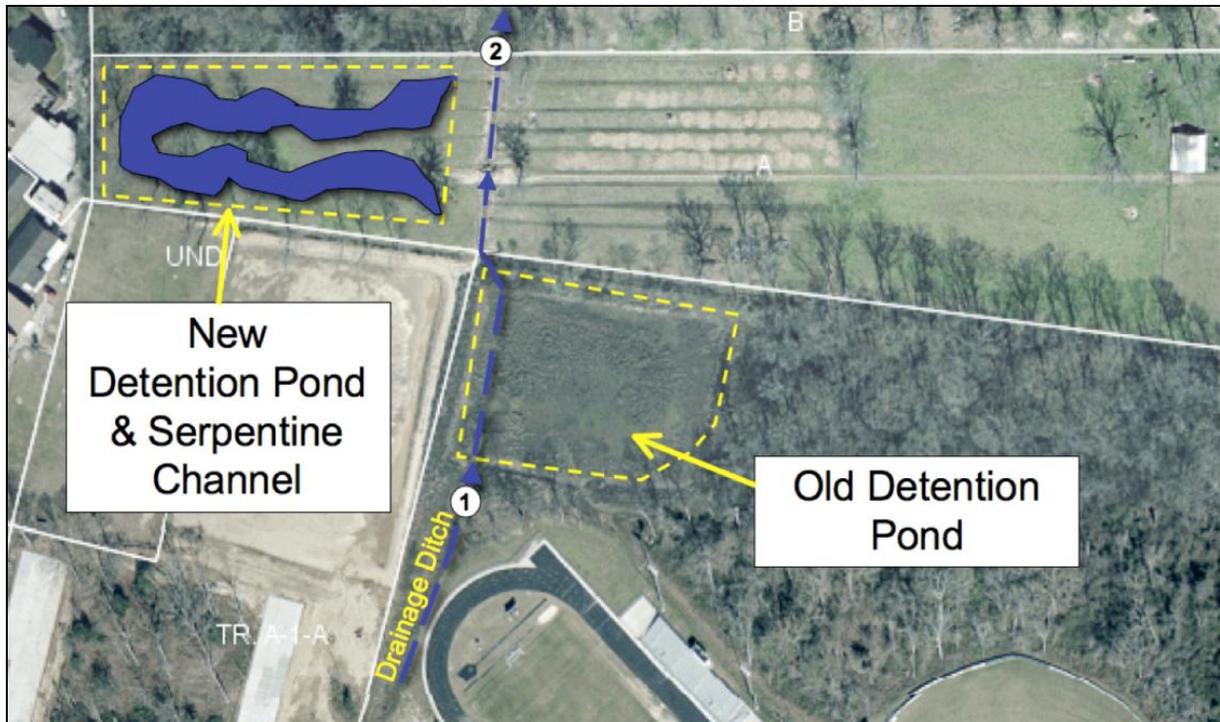
The Principal Investigators held several meetings in 2007 with Earl Kern, the project manager for the new construction at Woodlawn High School, to review the original construction plans. The PIs were able to work with contractors and architects to modify the original construction plans to incorporate the project.

The meandering wetland channel was designed with a capacity to retain the “first flush” of a 10-year storm: the volume of water that drains during the first hour of a storm event and carries the highest concentration of nutrients, sediments, and other pollutants. The hydromorphology of a wetland largely determines plant species diversity and productivity. The meandering wetland channel was

Implementation and Improvement

graded to provide hydromorphological conditions beneficial to wetland plant diversity. The vegetation planting process began in January of 2009.

Three wetland zones were delineated by water level and topography, and a TR-55 hydrologic model was used to determine the flux and retention of materials and pollutants that moved through the detention pond. Hydrologic flow, retention time, and pollutant uptake were modeled through each wetland zone. The expected percent of reduction of each pollutant was calculated as documented in the East Baton Rouge Parish Stormwater Management BMP Manual.



Plans, goals, and background information for this project were prepared and submitted to Woodlawn High School for publishing on their website (under Wetland Project at <http://woodlawnhigh.ebrschools.org/>). The website was updated in October 2008. Four 24" by 36" color posters illustrating the project goals, process, and design were prepared. Copies of the posters were printed, mounted, and delivered to Woodlawn High School for display on hallway bulletin boards.

Peak flow and volume of stormwater runoff were used as indicators of pollution load because changes in nutrient concentration may be difficult or impossible to determine in the next few years due to disturbances caused by construction activities. Flows and volumes of water entering the Woodlawn High School detention pond were compared to those exiting, with success criteria defined as decreases in peak flow and total water volume. Water quality and flux data were collected to establish pre-construction conditions before stormwater was channeled into the new site. Monitoring was conducted at the inlet and outlet of the study area where automatic water level recorders were installed and discrete water quality samples were collected.

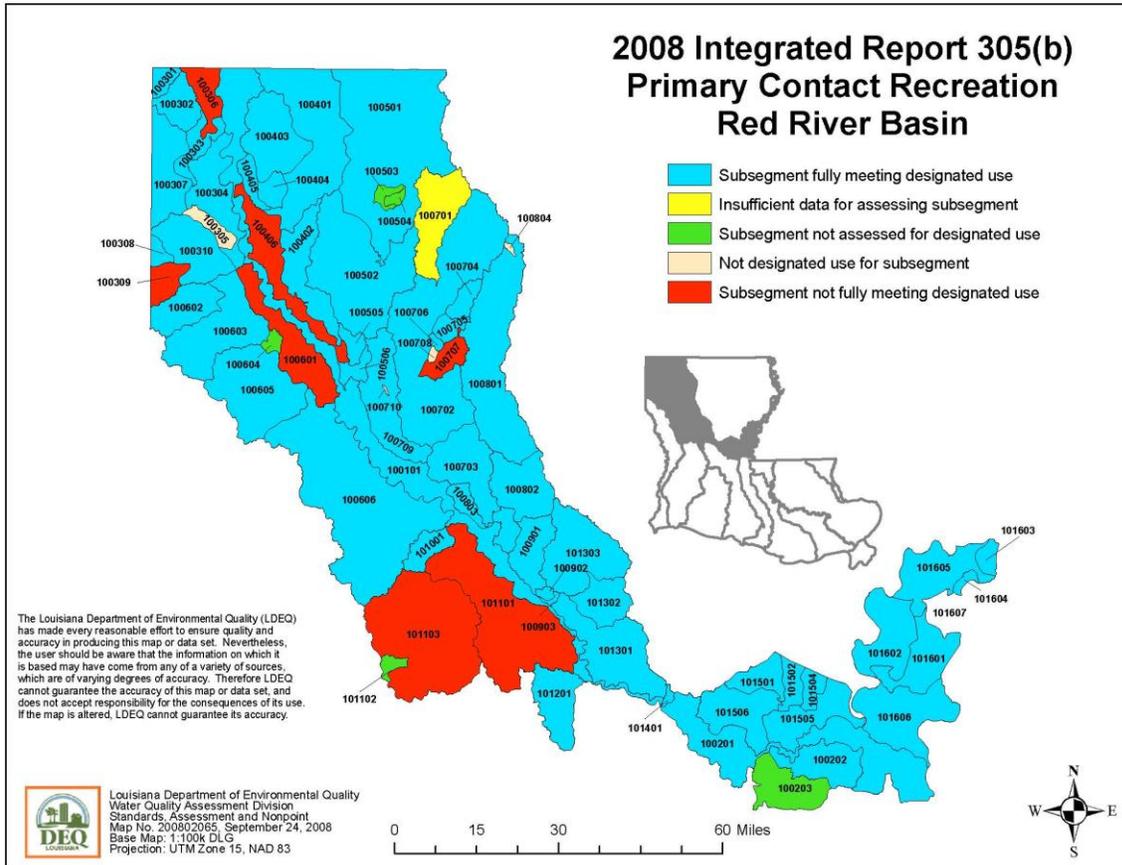
Implementation and Improvement

Water flux measurements were taken for three different storm events on July 9, August 1, and August 12, 2008. Peak inflows for these dates were 3.1, 3.9 and 4.8 cfs, respectively, and peak outflows were 1.8, 2.6 and 3.0 cfs, respectively. This discharge satisfied the first aspect of the criteria for success, which is defined as a decrease in peak flow and total water volume. However, the volume of stormwater exiting the study site was always greater than that entering. The volume of water that entered the study site on July 9 was 8,059 ft³, while that which exited was 10,892 ft³. On August 1, 20,451 ft³ entered the study area and 32,262 ft³ exited, and on August 12, 14,881 ft³ entered while 23,086 ft³ exited. This extra water was derived from surrounding areas, and it will be accounted for in the post-construction monitoring plan.



Implementation and Improvement

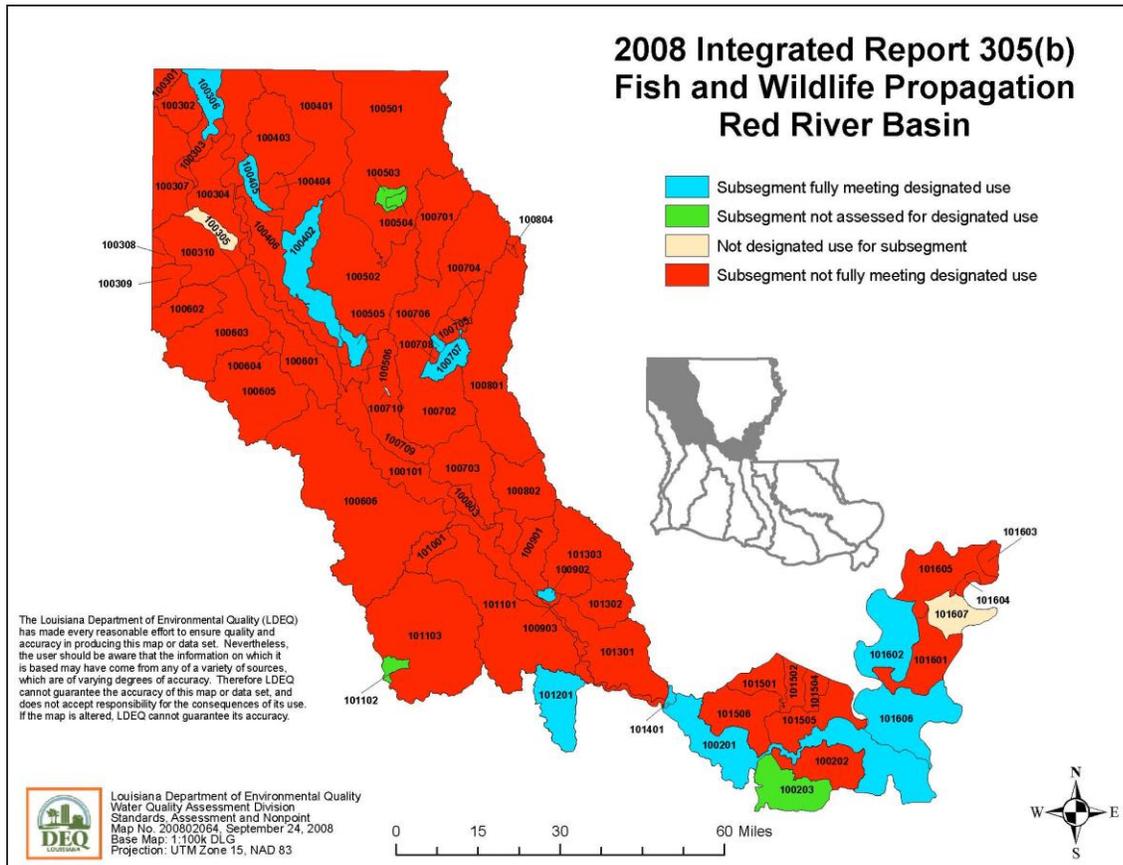
Red River Basin



The draft 2008 IR indicated that there were eight watersheds listed as impaired for primary contact recreational uses compared to seven in 2006. Some of the water bodies that were listed in 2006 improved and were removed from the impairment list, but others declined and were added.

The draft 2008 IR indicated that there were a few improvements in the number of impaired watersheds in the lower portion of the Red River Basin but the upper portion of the basin indicated declines in several of the watersheds, resulting in more water bodies being listed for fish and wildlife propagation in 2008.

Implementation and Improvement



Implementation and Improvement

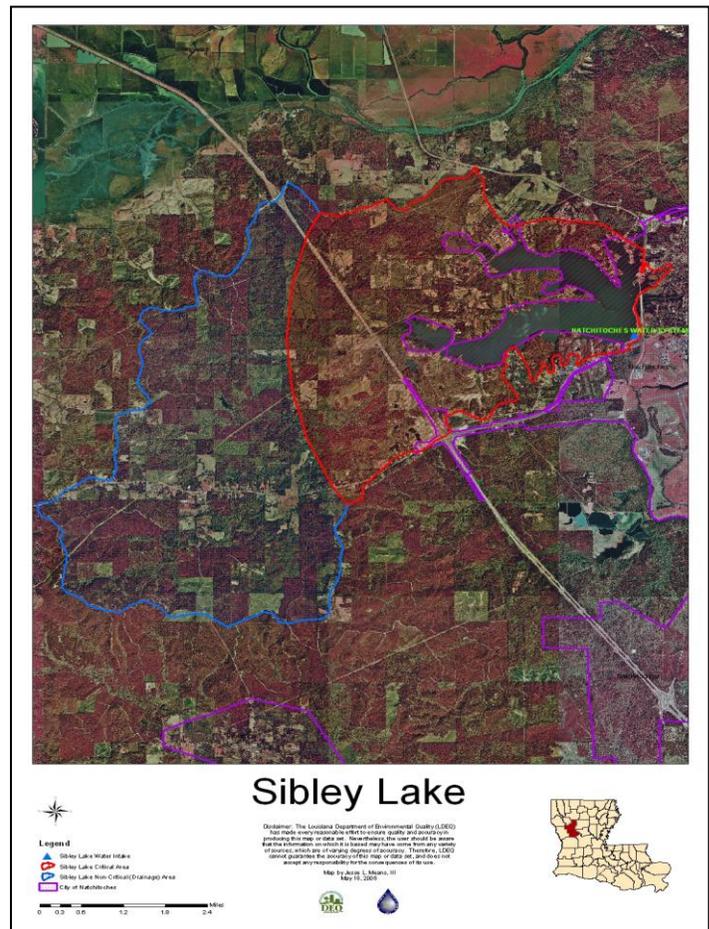
Source Water Protection Program Work in Natchitoches Parish

Sibley Lake Watershed Individual Sewage Treatment System Improvement Project

This is a current example of one way LDEQ addresses specific nonpoint sources of contamination around a water source. Located in the Red River Basin in Natchitoches Parish, Sibley Lake is the drinking water supply for the City of Natchitoches, the Village of Clarence, and the community of Hagewood. It is also the water supply for the unincorporated areas around the lake and along the water distribution system between the above listed municipalities. The total population served is almost 25,000. The critical watershed drainage area (a maximum of 5 miles upstream from the intake) is outlined in red on the map at right. The area in blue represents the lake's total watershed. The watershed surrounding the lake consists of urban and rural land. The area immediately surrounding the lake has a significant amount of residential development and most of this development is located outside the corporate limits for the City of Natchitoches. On the map, the corporate limits of the City of Natchitoches are shown in purple. Because most of this development is located outside the municipal limit, no centralized sewage system exists there, and therefore it is served by individual sewage treatment systems. These sewage treatment systems are in varying degrees of operational condition. Many of these systems are located within only a few hundred feet of the lake or its tributaries. Development of the property directly adjacent to and around the lake is expected to continue, which will increase the potential for sewage loading going into the lake.

LDEQ is working with the City of Natchitoches to protect their water source. As part of this effort, the City of Natchitoches, with LDEQ's encouragement and assistance, submitted a proposal for the Sibley Lake Watershed Individual Sewage Treatment System Improvement Project and it was approved by the Louisiana Office of Contractual Review. The project became effective on May 1, 2007, was to terminate on October 31, 2008, but has been extended to October 31, 2009.

The 319-funded project enables the City of Natchitoches to inventory and inspect all individual sewage treatment systems within a half-mile of Sibley Lake, and, to the extent permitted by time and funding, additional areas beyond a half-mile which are immediately adjacent to tributaries. As part of the project, these systems will be located by GPS and all pertinent information on each system will be entered into the city's GIS System. Owners of failing individual sewage treatment units will be served notice that their systems



Implementation and Improvement

must be repaired or replaced. Funding will be provided for the repair/replacement of failed systems on a cost-share basis. Owners of repaired/replaced systems will be required to sign a document stating that they will abide by continued maintenance requirements for as long as they own the repaired/replaced system. This project will enable the City of Natchitoches to mitigate the future threat of sewage loading in Sibley Lake and protect their source of drinking water and the health of those that swim and boat in the lake.

By September 2007, the City of Natchitoches reported that 115 properties within 0.5 miles of Sibley Lake were inspected and inventoried. Overall, most sewage systems inventoried thus far were found to be in good working order, with three or four having major problems and about ten or so having minor problems.

By December 2007, a total of 179 properties within 0.5 miles of Sibley Lake were inspected and inventoried. Most of the sewage treatment systems inventoried during this quarter were also found to be in good working order. However 36 of the systems inspected were in need of further work ranging from minor repair to total replacement. Each sewage system owner was educated on the proper maintenance of their system when it was inspected.

By March of 2008, a total of 635 properties within 0.5 miles of Sibley Lake had been inspected and inventoried. A portion of the systems inspected so far are in need of further work ranging from minor repair to total replacement. Also, each sewage system owner is educated on the proper maintenance of their system when it is inspected. Inspections were targeted to have been completed by February 2008, however an extension was granted.

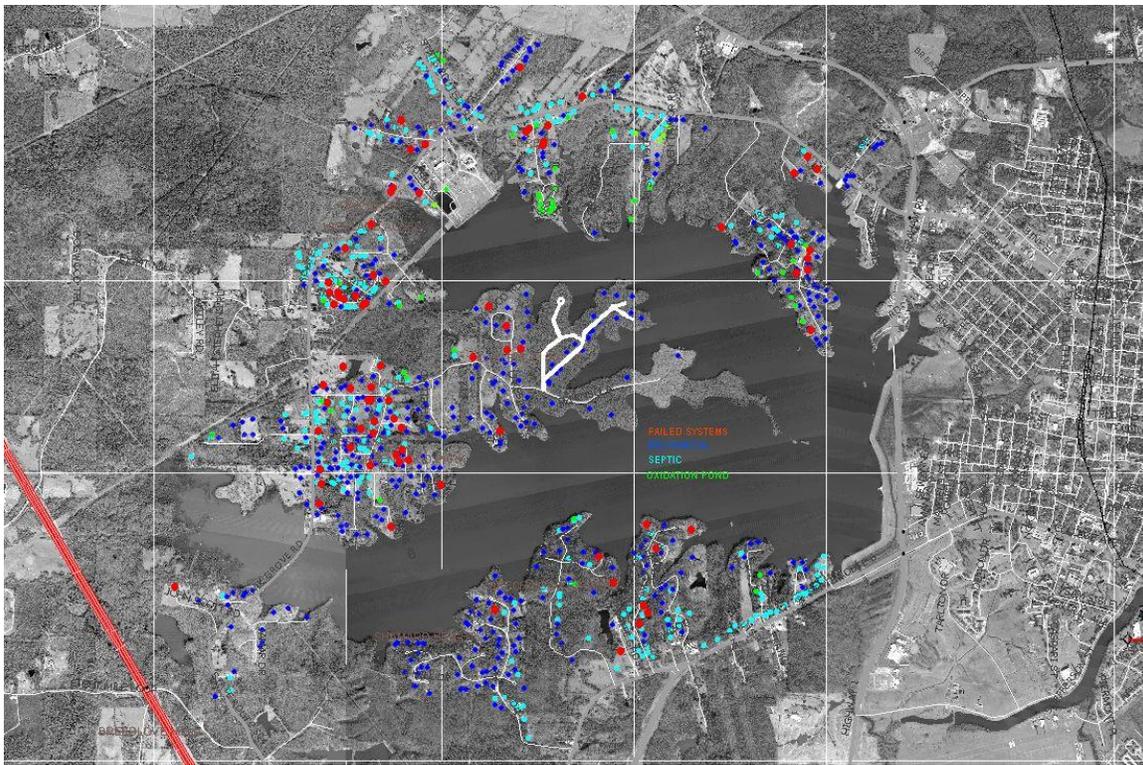
By June of 2008, the contractor completed all initial inspections of individual sewage systems for a total of 816 systems inspected. Out of these, 136 were found to be either failed or malfunctioning. Also during this quarter owners of failed/malfunctioning sewage systems were notified as to what steps need to be taken to rectify their situation (repair/replacement) and were made aware of the availability of funds to assist with this. Using a ranking system to determine priority, the contractor began to disburse funds to sewage system contractors for the repairs/replacement of malfunctioning systems during this quarter.

Below is a total breakdown of the inspections:

Type of System	Total Number of Systems Inspected	Total Number of Failed systems
Septic	284	44
Mechanical	476	81
Oxidation Pond	56	11
TOTALS	816	136

The following is a map of the mechanical plants, septic systems, and oxidation/other sewage systems surrounding Sibley Lake that were inventoried during the project through June of 2008.

Implementation and Improvement



Source Water Protection Program Work in Bossier Parish

The Louisiana Department of Environmental Quality's Drinking Water Protection Team began work in Bossier Parish at the end of June 2007. Staff members visited with representatives of the local water systems and other government officials to introduce the Drinking Water Protection Program. Bossier Parish has twenty-six active public community water systems. There is one surface water system and five water systems that purchase surface water. The surface water system is the City of Bossier, and the source of drinking water is the Red River. There are twenty ground water systems, ten are municipal and ten are non-municipal systems.

The Drinking Water Protection Team advertised for the parish program and community meeting through several media appearances and meeting announcements were mailed to over 250 parish contacts. Two community meetings and two committee meetings were held in the parish in 2007. Twenty volunteers signed up to serve on the Bossier Parish Drinking Water Protection Committee.

The third meeting of the Bossier Parish Drinking Water Protection Committee was held on January 17, 2008. The DHH gave a regulatory update on the Louisiana Safe Drinking Water Program. The update included a regulatory history, a history and overview of the Program, as well as a discussion of contaminant regulations and current and future EPA rules. The LDEQ reviewed the potential sources of contamination (PSOCs) that LDEQ had previously identified near drinking water sources in Bossier Parish through the Source Water Assessment Program. Emphasis was placed on how stormwater runoff can carry misplaced contaminants into area water bodies such as the Red River, a drinking water source for Bossier Parish. After an explanation of how to conduct

Implementation and Improvement

educational visits to these PSOCs, the committee members decided to complete the visits for their respective water supplies, PSOCs within their jurisdiction, or near their neighborhood. LDEQ distributed almost all of the visit packets so the committee could begin work.

LDEQ met with the parish attorney of the Bossier Parish Police Jury at a meeting on March 6, 2008 to introduce the ordinance. A committee meeting was held that evening. The Louisiana Department of Natural Resources (DNR) gave a presentation on oil-field related DNR regulations to protect waters of the state. LDEQ introduced the ground water protection ordinance to the committee.

The Bossier Parish Drinking Water Protection committee held their first meeting of the fourth quarter on Thursday, April 3, 2008. Students gave a presentation on water quality testing they performed on the oxbow lake in C. Bickham Dickson Park. LDEQ staff gave presentations on LDEQ's Nonpoint Source Pollution Program and storm drain marker project and the various educational materials that LDEQ has created along with help from previous drinking water protection committees. The Committee decided it would like to pursue putting up storm drain markers in Bossier parish, as well as develop a used oil recyclers list.

LDEQ staff members and a committee member presented the ordinance to the Bossier Parish Police Jury on May 7, 2008. A committee meeting was held that evening and topics of discussion included used oil recycling updates and ordinance updates.

The committee had its final meeting to celebrate its accomplishments on Wednesday, June 26, 2008. Each committee member was awarded a certificate for their service to the community through drinking water protection efforts. The final project of the committee was to distribute the Bossier Parish used oil recycling fact sheet that was developed, as well as provide the information to the local media.

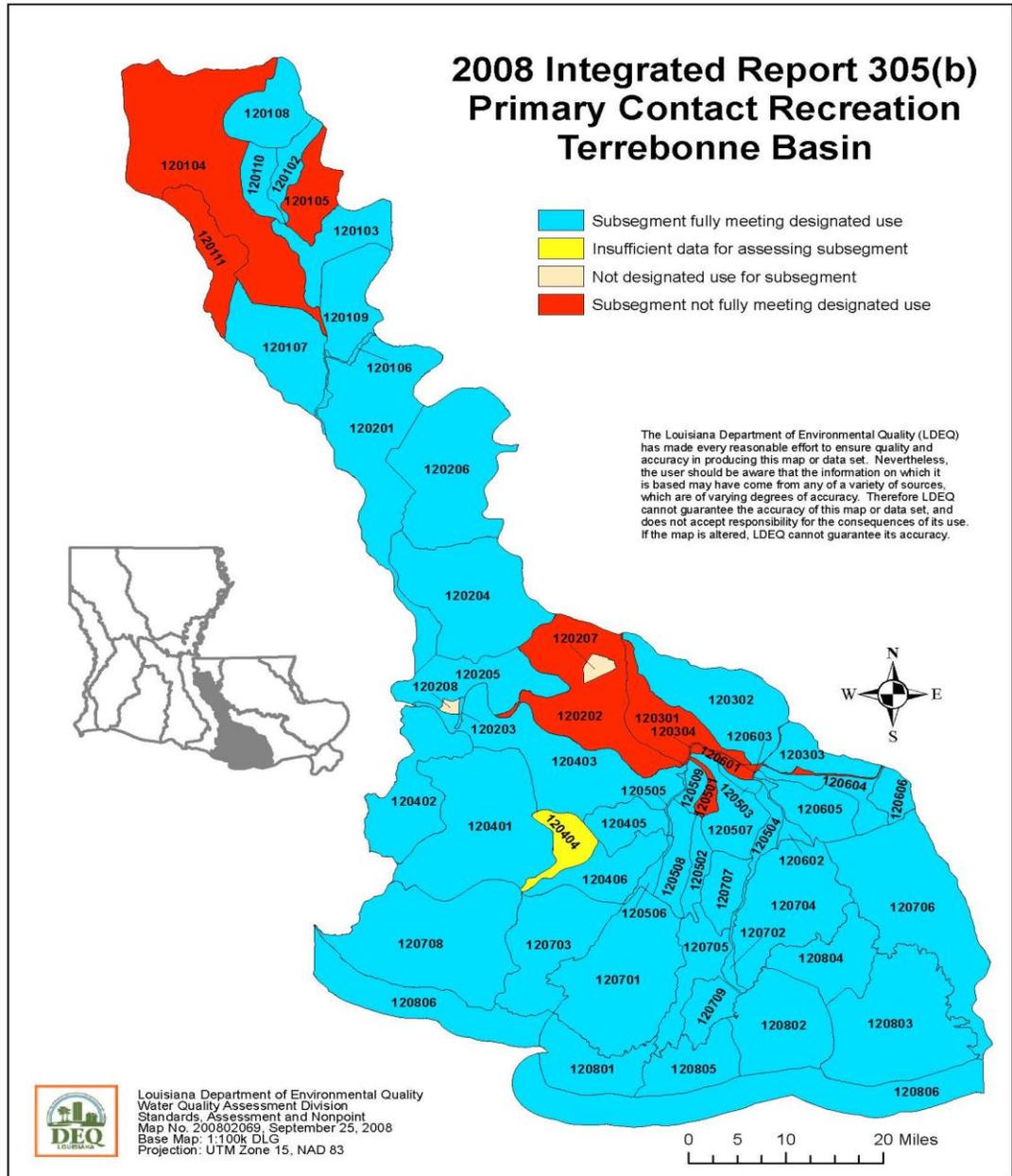
During the fourth quarter, visits to potential sources of contamination were completed. The Town of Haughton passed the ground water protection ordinance on June 12, 2008. The Town of Plain Dealing had previously passed the ordinance on January 8, 2008. The ordinance is currently under review by a special committee of the Bossier Parish Police Jury. The Town of Plain Dealing and Cypress Black Bayou water system elected to participate in the storm drain marking project, and were provided the appropriate materials by LDEQ's Nonpoint Source Section.

USDA Programs

During FY 2008, the USDA implemented approximately 13,085 acres of BMPs within the Red River Basin through the EQIP. An additional 4,009 acres of practices were implemented through the CRP, 2,219 acres of practices were implemented through the WRP, and 823 acres of practices were implemented through the WHIP.

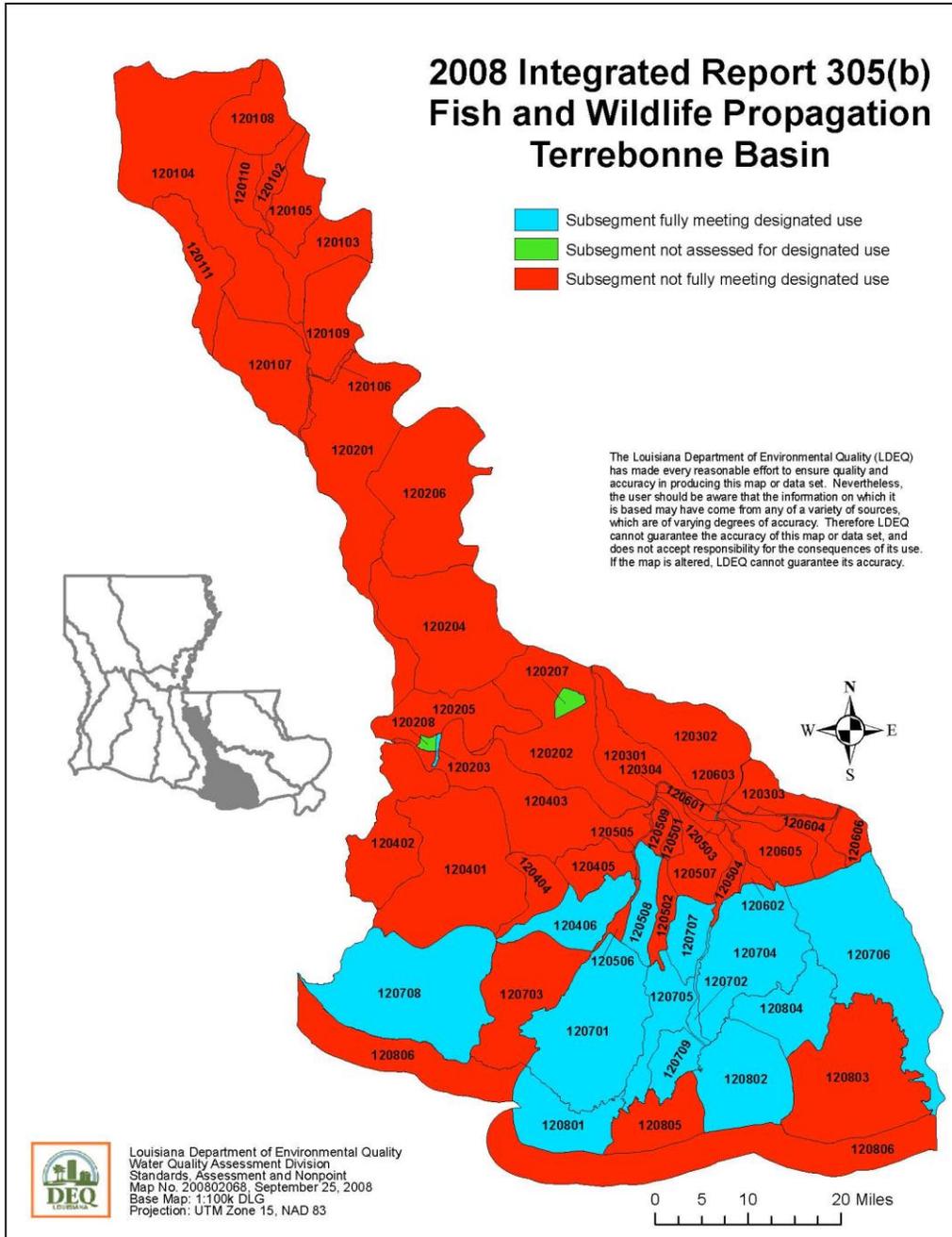
Implementation and Improvement

Terrebonne Basin



The draft 2008 IR indicated that Bayou Blue had improved for fecal coliform and could be removed from the impairment list for primary contact recreation, but Bayou Grand Caillou was added to the list for exceeding the criteria for fecal coliform. The 2008 IR indicated that many additional subsegments did not meet the fish and wildlife propagation use, while a few subsegments improved and were removed from the list.

Implementation and Improvement



The primary problems are low dissolved oxygen and elevated turbidity. EPA and LDEQ are working on a Use Attainability Analysis (UAA) for the Terrebonne Basin to determine what the appropriate water quality criteria should be for dissolved oxygen. Through the UAA process, the chemical and biological data are examined to determine if the use is being met.

Implementation and Improvement

Source Water Protection Program Work in Assumption, Lafourche, and Terrebonne Parishes

A public education campaign was launched for Assumption, Lafourche, and Terrebonne Parishes and four community meetings were held in the area. A source water protection committee was formed for these three parishes which are located within the Barataria and Terrebonne Basins. Bayou Lafourche, which flows from the Mississippi River at Donaldsonville (in Ascension Parish) through Assumption and Lafourche Parishes from north to south toward the Gulf of Mexico, is a major source of drinking water for the entire area. It is the source of drinking water for every public water system in both Assumption and Lafourche Parishes and also for one of the public water systems in Terrebonne Parish. The remaining water systems in Terrebonne Parish also use water from Bayou Lafourche to blend with their existing water sources whenever those sources receive too much salt water from the Gulf of Mexico.



Algae in Bayou Lafourche

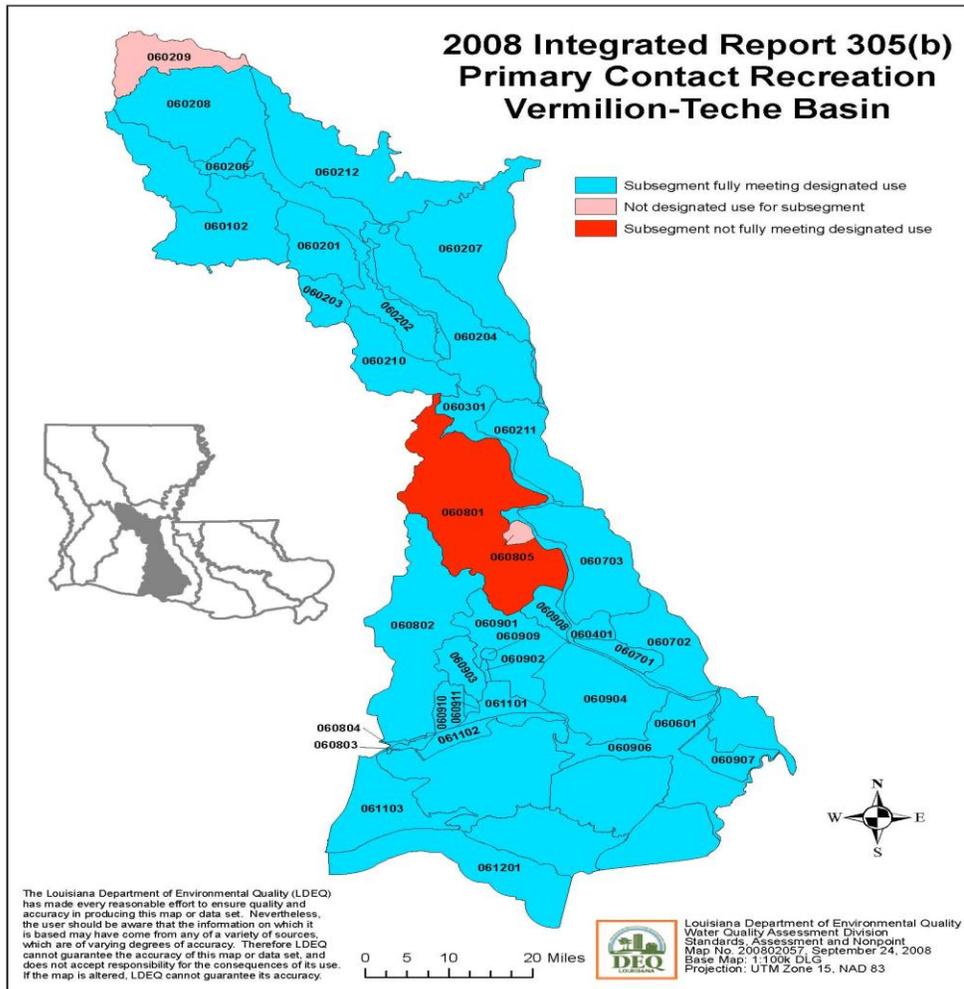
LDEQ's sampling efforts show that where Bayou Lafourche is a drinking water source, it is not meeting its primary contact recreation (swimming) and fish and wildlife propagation (fishing) designated uses. Dissolved oxygen and total fecal coliform criteria are not being met. Further downstream, toward the Gulf of Mexico, where the bayou is not a drinking water source, it isn't meeting its fish and wildlife or its oyster propagation designated uses. The dissolved oxygen criterion is not being met. These sampling results highlight a problem of sewage loading in the bayou.

USDA Programs

During FY 2008, the USDA implemented approximately 6,773 acres of BMPs within the Terrebonne Basin through the EQIP. An additional 150 acres of practices were implemented through WRP, and 5 acres were implemented through the WHIP.

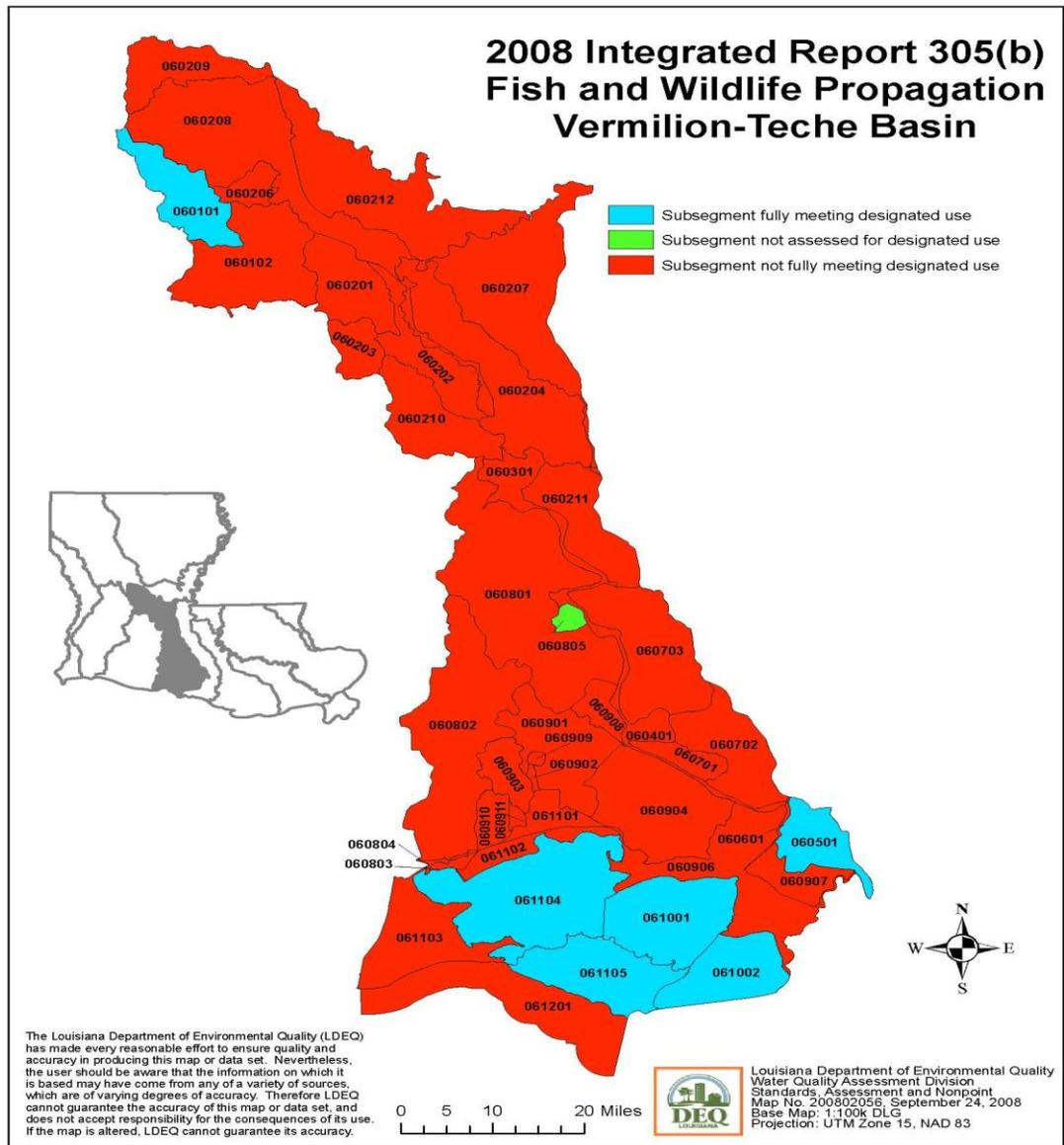
Implementation and Improvement

Vermilion-Teche River Basin



The draft 2008 IR indicates that there has been substantial water quality improvement in the Vermilion-Teche River Basin since 2006. The 2006 IR indicated that 13 watersheds were not in compliance with the primary contact recreational use while the draft 2008 IR indicated that there were only two watersheds that were still impaired for fecal coliform bacteria. These improvements can be attributed to local and state governments and the general public that lives within the basin. LDEQ has worked with the Acadiana Resource Conservation and Development District and the Bayou Vermilion District along with local soil and water conservation districts and the Natural Resource Conservation Service (NRCS) to improve the use of BMPs on rural lands and educational programs on home sewage systems.

Implementation and Improvement



The draft 2008 IR also indicated that there had been improvements in the number of watersheds listed for not meeting the fish and wildlife propagation use. The 2006 IR only had four watersheds within this basin meeting this use whereas the draft 2008 IR indicated that there were six watersheds meeting the fish and wildlife propagation use. The improvements were in Spring Creek, Bayou Teche, and West Cote Blanche Bay.

Implementation and Improvement

Average Dissolved Oxygen Concentrations Measured in mg/L for Selected Water Bodies in the Vermilion-Teche River Basin							
Water Body (subsegment)	1998	2003	2004	2005	2006	2007	2008
Vermilion River (060802)	5.27	4.31	4.03	4.83	4.98	4.05	4.14*
Bayou Teche (060401)	5.24	4.10	4.70	4.89	4.51	4.59	5.09*
*partial year data							

The data from 2008 indicated a slight improvement in dissolved oxygen for both the Vermilion River and Bayou Teche, but higher concentration of fecal coliform bacteria.

Average Fecal Coliform Concentrations Measured in Cells per 100 mL Sample for Selected Water Bodies in the Vermilion-Teche River Basin							
Water Body (subsegment)	1998	2003	2004	2005	2006	2007	2008
Vermilion River (060802)	1860	1412	2861	239	137	168	752*
Bayou Teche (060401)	2194	943	480	439	152	136	213*
*partial year data							

Identifying Critical Nonpoint Source Areas of Pollution to Bayou Courtableau

Bayou Courtableau was defined as impaired for its high level of total fecal coliform, turbidity, total suspended solids, sulfates and nitrogen, especially ammonia nitrogen. It is not clear where the sources of pollution come from. This project is to conduct a modeling assessment, utilizing historical water quality and hydrology data, in order to identify critical areas of non-point source pollution with the Bayou Courtableau watershed. The project goal will be achieved through the performance of a combination of remote-sensing analysis and integrated watershed modeling.

Although the project was initially proposed to begin in May 2008, it was not approved until end August 2008. A draft QAPP was completed and submitted to LDEQ/EPA for review in June 2008. The draft was revised several times to incorporate the comments from EPA. The final version of this QAPP document was submitted to EPA in October, and it was approved in December 19, 2008. Because of this delay our original projected work could not be completed. This project is scheduled to end in September 2009. While we will make our best efforts to achieve the project's main goal, we will request a non-cost extension for the contracted work.

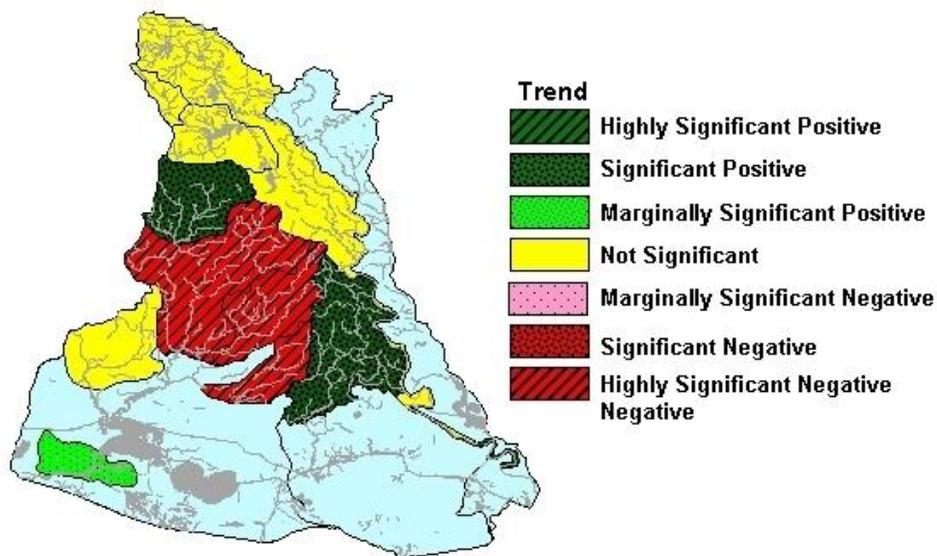
Statistical Evaluation of the Effectiveness of BMPs in Improving Water Quality within the Mermentau and Vermilion-Teche River Basins

This project ended in 2008 and the Final Report is currently being reviewed. For more than two decades, a large number of projects were conducted on water quality along Louisiana's shore of the Gulf of Mexico. However, little knowledge has been actually gained about the impact of hydrological and hydrometeorological variability on the dynamics of water quality parameters and the effectiveness of BMPs on the health and integrity of ecosystems and coastal watersheds. The goal of this project was to provide critical insights into the interrelationships between BMPs, hydrological and hydrometeorological conditions, land use, and the water quality of inland

Implementation and Improvement

streams, wetlands, and coastal estuaries in Louisiana. The knowledge and results gained from this project will contribute to the understanding of whether or not other factors, such as climate and land-use changes, are making it difficult to detect water quality benefits that may have resulted from BMP utilization.

The results of this project have shown that water quality in the Mermentau and Vermilion-Teche River Basins displays a clear seasonal variation characterized by the low water quality in the period of February – May and the high water quality in the fall. February and April are the two critical months of the worst water quality. Waterbody impairments in February and March are mainly caused by recent wet weather runoff and associated sediments/solids (TSS, TDS, Turbidity), nutrients (TKN), and bacterial growth. The severe pollution in April and May is mainly caused by releases of muddy rice field water but wet weather runoff makes the water quality even worse. There is a strong negative correlation between DO and temperature in February – May at all sites. Rainfalls play a more important role in controlling DO than water temperature in summer (May - September). In addition, fecal coliform, TDS, TSS, Turbidity, and TKN also affect DO to some extent, depending on sites and seasons. The fecal coliform count depends to a large extent on recent precipitation and subsequent transport of sediments and nutrients (TKN, TSS, TDS, and Turbidity). Sediments are the primary vector of fecal coliform bacteria while stormwater runoff is the main driver of the sediments and associated contaminants (TSS, TDS, Turbidity) and nutrients (TKN) in water bodies. Both the highest TSS and the highest Turbidity occur in February in the Vermilion-Teche River Basin, implying that the main pollution source in this basin is the soil/sediment erosion caused by wet weather runoff and high river flow. However, both the highest TSS and the highest Turbidity occur in April in most watersheds in the Mermentau River Basin except the Bayou Plaquemine Brule watershed, signifying that the main pollution source in this basin is the releases of muddy rice field water.



Implementation and Improvement

A Comprehensive Strategy for Implementing Best Management Practices to Improve the Quantity and Quality of Storm Water Entering the Vermilion River

This project started in the summer of 2008. The Lafayette Parish Bayou Vermilion District aims to teach residents and business property owners along the river about the problems that runoff from erosion of their stream banks and yards creates, while demonstrating ways they can effectively reduce its quantity and filter the water that does run off into Bayou Vermilion. The BVD Office will be an educational center to demonstrate porous pavements and wetland rain gardens as BMPs that can be implemented along the bayou to improve water quality.

In the future, the wetland plant propagation nursery may become a central wetland plant distribution center for both BVD-initiated projects and those of other groups. The plant nursery will be devoted to improving water quality and supporting restoration and mitigation projects, water gardens, and native landscaping along the Vermilion River. In addition to providing free plants for mitigation and restoration projects to residents along the Vermilion River the plant nursery will serve as an educational resource where university classes, school groups, families, and others can learn about alternative natural retention and filtration systems such as bioretention, and native wetland plants.

The specific goal of this project is to develop demonstration sites for erosion control and runoff from residences along the Vermilion River, as a way to filter the water that runs directly into the river. The techniques to be implemented have four primary goals:

- To reduce runoff volume through infiltration, retention, and evaporation;
- To improve runoff quality through the creation of infiltration sites on previously impervious surfaces; and
- To find beneficial uses for water rather than exporting it as a waste product down storm sewers.
- To raise the public awareness about BMPs known to reduce water quantity, improve water quality, and about the beneficial uses and types of different native wetland plants.

Source Water Protection Program Work in Lafayette Parish

Since its inception in June of 2006, the Lafayette Parish Drinking Water Protection Committee has worked diligently on efforts to protect drinking water. The committee completed 248 visits to businesses within Source Water Protection Areas. A professor of Geology at the University of Louisiana Lafayette, recruited his students to conduct the visits for the City of Lafayette and the Town of Youngsville. The LSU Cooperative Extension Service organized a group of 4-H Club students to visit businesses in the City of Carencro. To help educate the public, the Environmental Division of the Lafayette Parish Consolidated Government participated in a radio show to promote drinking water protection. Committee members invited the Drinking Water Protection team to give presentations in several Lafayette Parish Schools, nursing homes, and a Lafayette Utilities System operator training session. An award ceremony was held on August 23, 2007 in Lafayette to recognize the committee members for their dedicated efforts to protect their drinking water.

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Drinking Water Protection ordinances were adopted by the Town of Youngsville, the Town of Duson, and the City of Carencro. An ordinance for the Lafayette Consolidated Government is pending. If the Lafayette Consolidated Government passes the ordinance it will affect all public water supply wells within Lafayette City limits and all wells in unincorporated areas of the parish, including Lafayette Parish Water Districts North and South and Milton Water System.

Source Water Protection Program Work in Rapides Parish

During the first and second quarters of FY 2008, Rapides Parish Drinking Water Protection committee members worked to visit local businesses identified as potential sources of contamination to educate the owners and/or operators on how to protect drinking water. A model ground water protection ordinance was presented to the committee in July, 2007.

During the third quarter of FY 2008, the Rapides Parish Drinking Water Protection committee continued to meet on a monthly basis. Presentations included the Louisiana Department of Health and Hospitals on on-site sewage disposal systems management, the Louisiana Department of Transportation and Development on proper plugging and abandonment of water wells, and the U.S.D.A. Office of Rural Development on assistance available to rural water systems. The committee completed a used oil recyclers list for the parish. Five-thousand copies of the list were printed and distributed to local businesses that sell motor oil. The City of Alexandria also distributed copies of the Used Oil Recyclers list at their Earth Day on April 19, 2008 and their Household Hazardous Materials Collection Day on May 17, 2008. The list was also printed in local newspapers. Improper disposal of used oil is a potential nonpoint source of contamination to aquifers and water bodies. The staff began ordinance presentations to local governments during this quarter.

During the fourth quarter, on April 10, 2008, an award ceremony was held in the City of Alexandria to recognize the committee members for their service to the community by helping to protect their drinking water. Drinking Water Protection Team members attended town council meetings at the Town of Glenmora, the Town of Cheneyville, the Town of Lecompte, and the Village of McNary to present the model drinking water protection ordinance for their consideration. The Town of Lecompte adopted the ordinance in June, 2008.

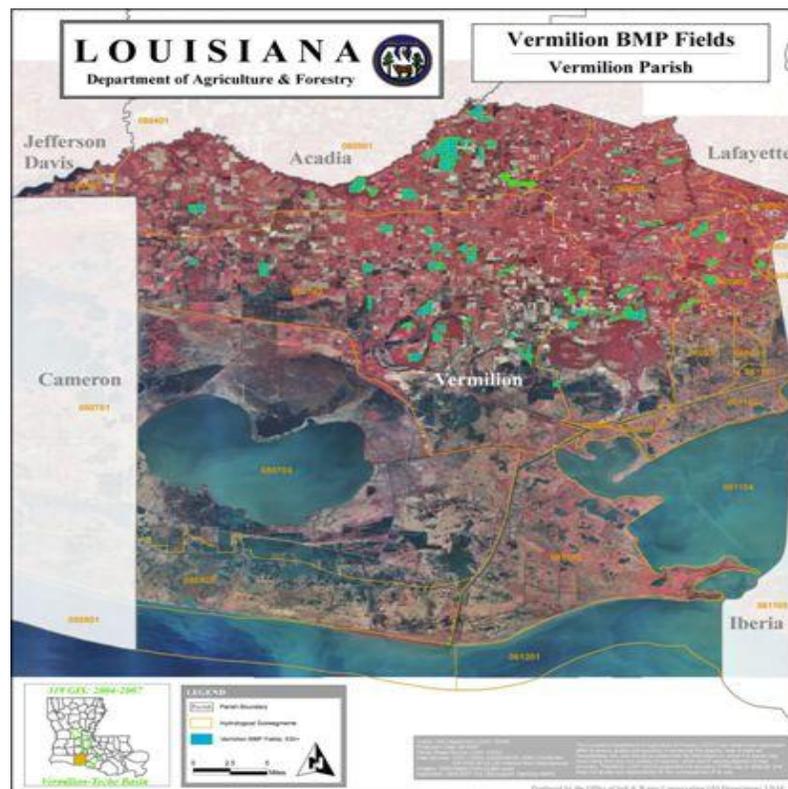
Implementation and Improvement

USDA and SWCD Programs

During FY 2008, the USDA implemented approximately 12,321 acres of BMPs within the Vermilion-Teche River Basin through the EQIP. An additional 730 acres of practices were implemented through the CRP, 54 acres of practices were implemented through the CSP, 892 acres of practices were implemented through the WRP, and 37 acres of practices were implemented through the WHIP.

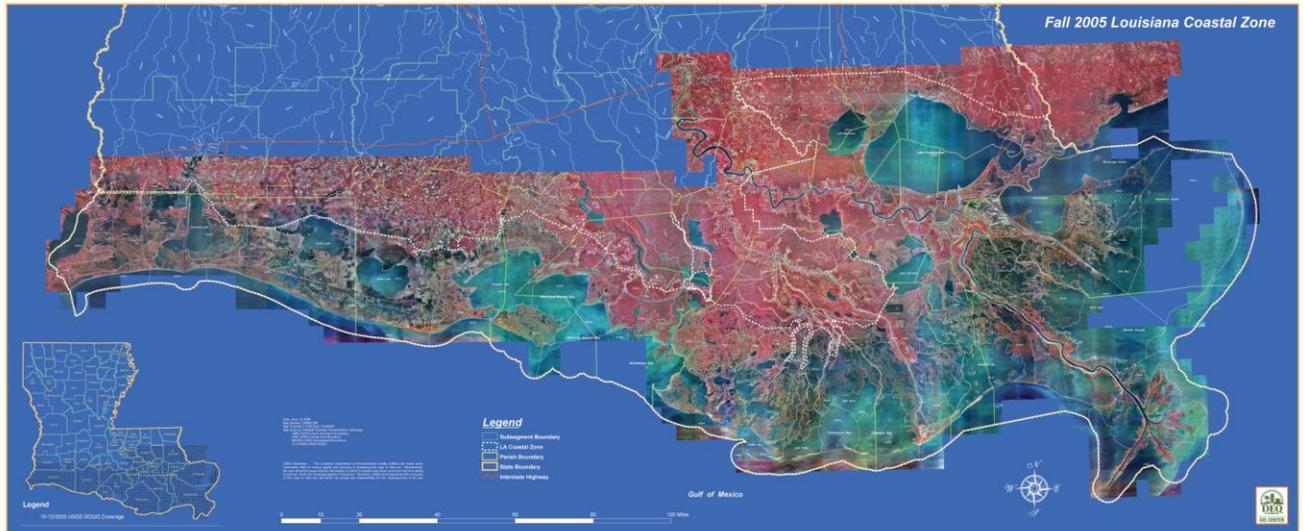
In addition to the work that LDEQ funded in the Vermilion-Teche River Basin, the Office of Soil and Water Conservation utilized incremental funds to implement agricultural BMPs within this river basin. The map and table provide details on the type and number of acres implemented through these incremental Section 319 funds.

Best Management Practice	Amount
Residue Management	4544 acres
Prescribed Grazing	566.6 acres
Irrigation Land Leveling	1345.2 acres
Irrigation Water Management	4375.8 acres
Grade Stabilization Structure	16
Shallow Water for Wildlife	3125.9 acres
Managed Field Borders for Sugarcane	77.1 acres



Implementation and Improvement

Coastal



The purpose of the Coastal Nonpoint Pollution Control Program (CNPCP) is to reduce pollutants that may impact the coastal waters of Louisiana through identifying, educating, and implementing available Best Management Practices (BMP) for users of Louisiana coastal resources.

The Coastal Management Division of the Louisiana Department of Natural Resources (LDNR) is implementing and developing the CNPCP as a voluntary program based on BMPs. BMPs are technically and economically feasible practices to control and reduce pollutants in our coastal waters. In addition, many BMPs may provide valuable wildlife habitat and can also be an economic benefit to farmers, foresters, marina operators, and many other business operators and individuals.

Coastal nonpoint source pollution is a nationwide problem but has special significance in Louisiana because of the detrimental impact on the valuable coastal fisheries and shellfish industries, as well as causing serious human health concerns. The CNPCP entered into Cooperative Endeavor Agreements with DEQ's statewide nonpoint pollution control program for the use of EPA 319 grant funds for three CNPCP projects.

Coastal Nonpoint Pollution Control Program BMP Development

In order to fulfill federal guidance requirements and to address the remaining conditions that were placed on Louisiana's Coastal Nonpoint Pollution Control Program for full approval, a portion of the FY 2003 Section 319 fund has been dedicated to meeting conditions on urban stormwater runoff for roads, highways and bridges, and hydromodification.

This project will correlate the Louisiana Department of Transportation and Development (DOTD) manuals of BMPs with the Management Measures listed in the Guidance Specifying Management Measures for Sources of Nonpoint Pollution in Coastal Waters. This correlation of Louisiana DOTD

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BMPs with the 6217 Measures will facilitate 6217 reporting requirements for BMP implementation. A BMP manual and brochure will be created for use by local entities, contractors, governmental permitting agencies, and educators.

A Hydromodification BMP manual and an Urban Storm Water Runoff BMP manual was created specific to the State of Louisiana, and the coastal nonpoint hydromodification management measures, and the coastal nonpoint urban management measures. This manual was designed to be used by local entities, contractors, governmental agencies, and educators. The final product is the basis for educational outreach.

Louisiana Coastal Nonpoint Pollution Control Program BMP Manual Training and Outreach

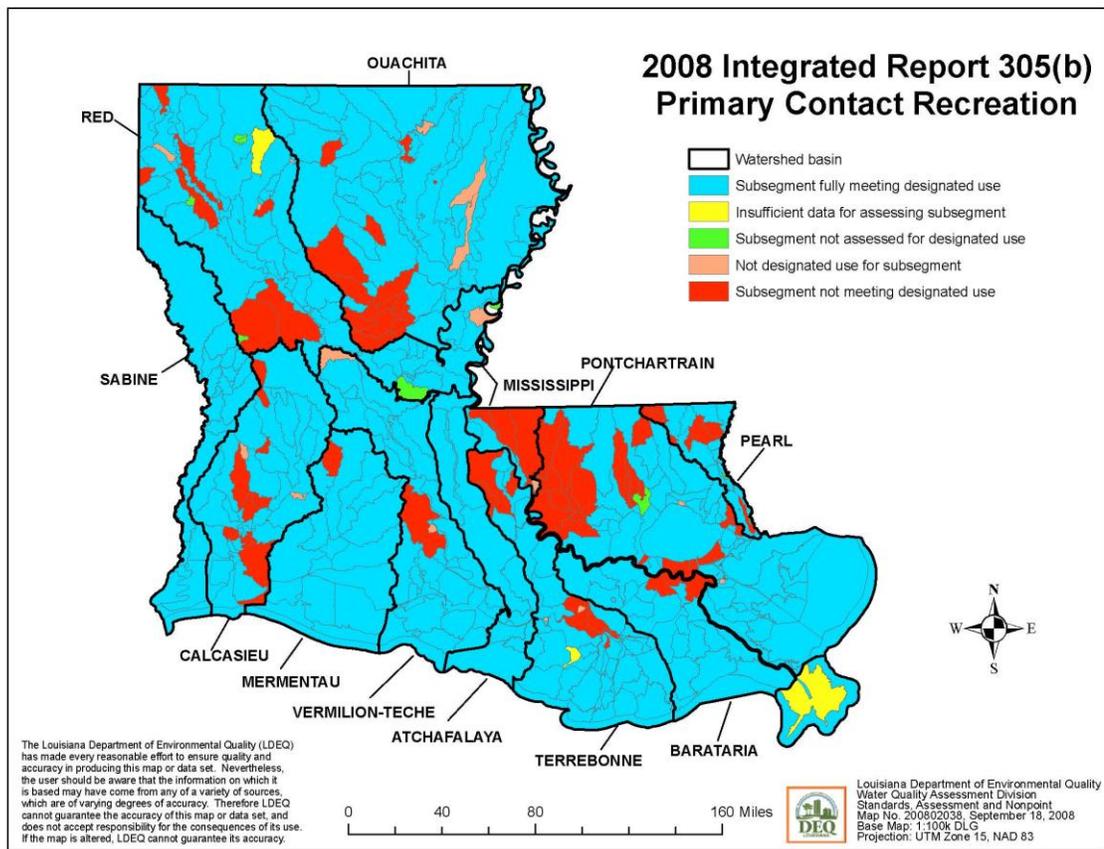
The goal of this project is to meet the remaining conditions on the Louisiana CNPCP for urban stormwater runoff for roads, highways and bridges, and appropriate sections of hydromodification. The purpose of the program is to encourage the adoption of best management practices and policies in construction and maintenance of roads, bridges, and highways in the coastal areas of Louisiana. These practices are outlined in the *“Coastal Nonpoint Pollution Control Program Best Management Practices Manual”*.

The subcontractor proposes to assist the Department of Natural Resources by developing and conducting training sessions and providing outreach and educational opportunities on the practices outlined in the *“Coastal Nonpoint Pollution Control Program BMPs Manual.”* The subcontractor will target efforts towards reaching local people involved in the construction and maintenance of roads, bridges, and highways, encouraging the adoption of BMPs and policies in construction and maintenance of roads, bridges and highways in the coastal areas of Louisiana. This project will serve as a model which can be used in the future throughout the Coastal Nonpoint Pollution Control Program area. Meetings were scheduled in 2008, but all had to be rescheduled due to Hurricane Ike.



Implementation and Improvement

Statewide



In addition to nonpoint source projects that have been targeted at the watershed level, there have also been programs implemented during 2008 to address nonpoint source concerns on a statewide scale. This allows progress to be made across the state rather than only in targeted watersheds. The NPS Management Plan also included tasks and milestones for implementation of statewide programs for agriculture, forestry, urban runoff, home sewage, hydromodification, construction and resource extraction. During 2008, LDEQ has worked with many entities to make progress in implementing the statewide NPS Programs.

Progress in Sand and Gravel Mining BMPs

During 2008, LDEQ completed the BMP manual for sand and gravel mining, sent it out for public review and comment and had it printed and distributed to the Concrete and Aggregate Association. A workshop was held with CAAL in the fall of 2008 to discuss the reason for the manual and the need for all existing and new operations to utilize the BMPs that were described in the manual.

Implementation and Improvement

Model Landscape Code Design Standards: A Technical Document for Designers and Developers

To help restore and protect local receiving streams from nonpoint source water pollution, the LDEQ NPS Program has developed a Model Landscape Code designed specifically for Louisiana's unique environment. The Model Code is a tool that will be made available to municipalities, parishes, developers, landscapers, and the public as a guide for environmentally friendly landscaping. With the completion of Louisiana's Model Landscape Code, there is a need for design standards, which illustrate and describe how to create and implement the different types of Best Management Practices (BMPs) that are listed in the code. These design standards will be a source of technical information to assist architects, engineers, landscape architects, developers, builders and public officials. This information will provide a better grasp of how the Model Landscape Code can be calibrated to reduce urban nonpoint water pollution, including run off pollution generated from lawns, gardens and parking areas by the use of well designed plantings, properly selected plant species, and efficiently sized and constructed storm water BMPs.

The document to be prepared will explain to users of the Model Code, in technical language and drawings, how they may adjust the baseline design standards in the code to meet community needs by recalculating the formulas and the design decisions used to determine the spatial, linear, volume and unit values of the water or vegetation that is central to the use of the model code. Simply put, this work will allow code adaptors to adjust the code requirements for BMPs, parking lots, street buffers, rain gardens, planted buffers and other landscaping and water management elements of the Model Code to meet their community needs while still maintaining the intent of the code which is to reduce non-point pollution coming out of urban areas.

The cooperator agrees to provide a project directory, a schedule of technical standards, and a detailed work program; a statement of approximately 30 design standards contained within the model code; meeting minutes; a design standards fact sheet to include definitions, code clause citations, written explanations, formulas and specifications, as well as a detailed, drawings, graphics, and computer generated illustrations for use in the design standards fact sheet. A CD slide show illustrating the design standards and fact sheets; any written documents, preliminary fact sheets, peer review list and response; and minutes from meetings with consultants, clients, and other project contributors will be submitted to LDEQ.

The specific goal of this project is to provide technical design standards for landscaping, on-site storm water management, irrigation, and habitat preservation for any community wishing to adapt the State of Louisiana Model Landscape Code to local conditions. The objective of the project is to prepare a set of specific landscaping design guidelines and local adjusted BMPs in written, graphic and digital format to be used by designers, builders, developers and public officials to protect public waters while reducing site run off.

The following has been accomplished thus far:

- Mobilization of project team. This task proceeded very smoothly since the principal investigator has been continuing his research into the subject of landscape codes and storm water first began in 2003. Mobilization consisted of reviewing all previous studies, documents and drawings and preparing a detailed calendar of events, activities and work tasks. Part of this work has been involved with identifying the software packages that will be used on this project. Work

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assignments for team members have been assigned to office staff members and a job file has been created. The deliverables for this task include the project directory, project calendar, schedule of technical standards being, and the detailed work plan. Meeting minutes, notes and preliminary sketches that support this work are archived at the office.

- **Background Development Work.** This task brings the work into focus where the proposed design standards are brought into coordination with the Model Code. The landscaping and storm water design components are carefully identified and their preliminary specifications for physical design are identified and set forth with text that will be used to guide the development of the drawing. Guidelines, written explanations, formulas and written specification are developed. These eventually will be included on the drawing but at this stage are considered guide specifications so they will be evolved and resolved over the next two tasks. Deliverables included for this phase include general review or work in progress documents. The documents are primarily text documents. During this period of time a paper was presented in Orlando, Florida and some assistance was provided to East Baton Rouge Parish. Additional public service has been provided to West Baton Rouge Parish, Ascension Parish and St. Tammany Parish with the possibility of more interaction in the months to come.
- **Writing.** This task involves writing and preliminary work for drawing and assembling of technical data. This task is underway and at this point deliverables are in work in progress format only. They include page mock ups for the fact sheets and preliminary text defining landscape design components and storm water BMPs to be developed in this project. Page mock up design include page layout, formatting of graphics, text, page titles, typography and general color scheme. Drawings, specifications, formulas and technical descriptions are being created as the content aspect of this Task. Twenty percent of this task is complete.
- **Drawing.** This task involves design, drawing, and preparing finish graphics. Presently drawings are underway for the green landscape design components. The approach being used is to design these drawings in a manner in which the specification calibration can be measured for appropriateness and flexibility. Similar work is being done with storm water. In these drawings, preliminary site engineering designs are being prepared and calibrated according to the amount of rain water that can be treated with a variety of BMP's applied to our Model Development Site. Landscape Design Components are being analyzed by gauging the specifications (area, length, width, quantity, materials and cost) used to meet the landscape design standards. BMP's designs are being analyzed by gauging the specifications (area, length, width, volume, flow rate, facility design, materials and cost) used to meet the storm water design standards. We are also comparing our BMP specs to those being prepared for St. Tammany Parish which are the best in the State of Louisiana at this time. In addition, our BMP specifications are also being compared to those represented in the State of Maryland Storm Water Design Manual which have been cited by some as the best in the country. This task is underway and at this point deliverables are in work in progress format only. Twenty percent of this task is complete.

Implementation and Improvement

Louisiana Forestry Best Management Practices Education Project, Phase 2

Forestry in Louisiana continues to provide timber as a primary export crop for the state, and agricultural land use in Louisiana is dominated by forestry. According to the 2000 305(b) Report, forestry is responsible for the impairment of approximately 286 stream miles of rivers. The 2000 NPS Management Plan includes goals “to reduce the concentration of sediment, nutrients, and total organic carbon in areas of the state where forestry activities have been indicated as one contributing source of non point source pollution”. The importance of establishing and implementing a code of Best Management Practices (BMPs) is indisputable. The Forestry agencies of Louisiana are unable to keep up with the demand for information on Forestry BMPs, which is currently available in leaflet form. The LSU Agricultural Center proposes the synthesis of a web site and DVD dealing specifically with Louisiana State Forestry BMPs to be made available to all stakeholders and the general public. The project also incorporates workshops to raise awareness among stakeholders, particularly clientele from the logging sector, regarding the existence and uses of the website and DVD.

The overall goal of the project is to establish and maintain an online education resource dealing with Best Management Practices for Forestry management. The aim is to educate a diverse audience of loggers, foresters, forest industry leaders, non-industrial private forest landowners, educators, other interested stakeholders, and the general public.

Currently, the production is almost complete for interactive website that promotes adoption of Louisiana’s voluntary Forestry Best Management Practices (FBMPs) and educates clients as to the benefits of FBMPs. Once this is done, they will be able to produce an interactive DVD that closely mirrors the website so that FBMP information is readily available to stakeholders without easy access to the Internet and to facilitate FBMP education in those areas or classrooms/workrooms without Internet access.



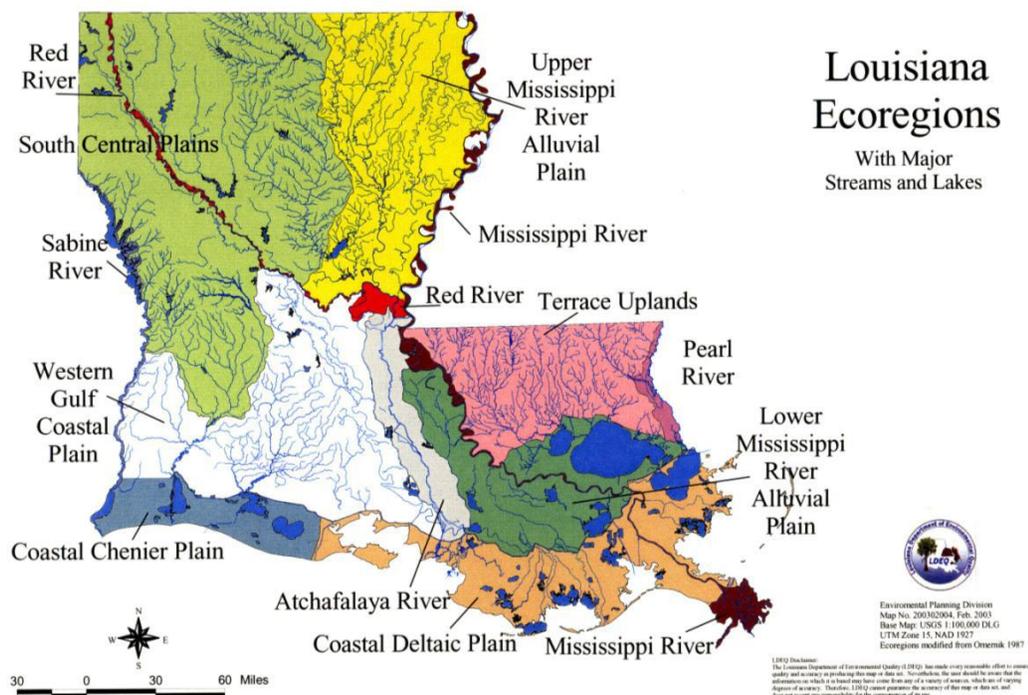
Implementation and Improvement

Standards Development for Nutrient Criteria for Wetlands

This project started in 2008 and is currently in progress. EPA has required that States develop numerical criteria for nutrients in surface waters of the United States. In an effort to develop regionally based water quality criteria for Louisiana, LDEQ began establishing an ecoregional framework for surface water standards. To develop numerical criteria for freshwater wetlands in Louisiana, both ecoregion and wetland classifications will be considered. A classification scheme can be used to provide a common framework for the development of nutrient criteria within a group of similar wetlands. Thus, within the ecoregion framework, wetlands will be classified and examined for functional similarities or differences.

The goal of this project is to develop nutrient criteria for freshwater wetlands within Louisiana. The following specific tasks will assist in this goal:

- Review an existing wetland classification scheme for wetlands within Louisiana and modify, if necessary, for use in developing nutrient criteria in wetlands. Identify wetland characteristics that may influence nutrient assimilation efficiency.
- Gather and review existing data for nutrient assimilative capacity, response to nutrient loading rates, nutrient fate (e.g., denitrification, permanent burial), and other variables, including seasonal relationships, relevant to nutrients in wetlands. Identify data gaps and areas of future research.
- Identify or develop a procedure to determine best attainable conditions for each wetland classification.
- Determine appropriate parameters for monitoring and assessing wetland response to nutrients.
- Conduct a statistical analysis of data to develop best attainable nutrient conditions in each class of wetland.
- Develop options for prototype nutrient criteria for classified freshwater wetlands in Louisiana for consideration by LDEQ.



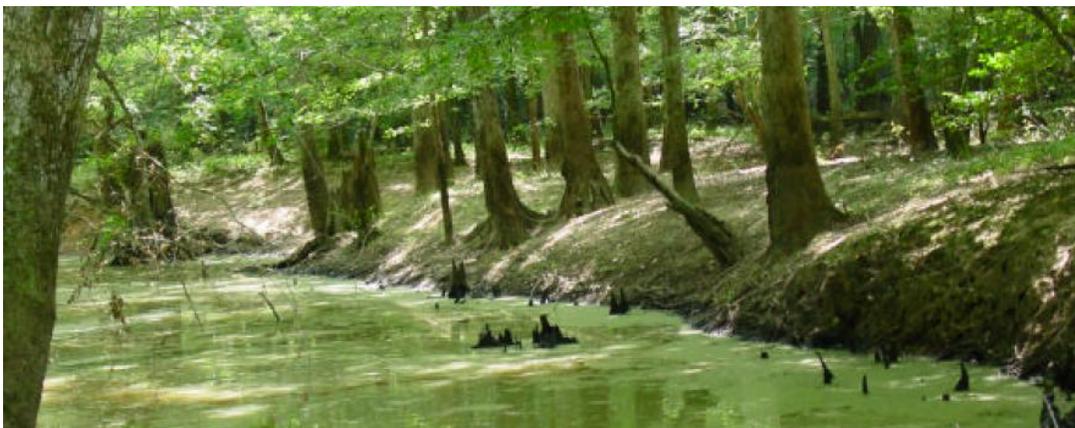
Implementation and Improvement

Approaches for Developing Attainable Nutrient Criteria for Louisiana Water Bodies: Rivers and Streams

This project ended in 2008 and the Final Report is currently being reviewed. Anthropogenic eutrophication of the nation's surface waters resulting from excess nutrient additions (primarily nitrogen and phosphorous) has been an ongoing problem in the U.S. for many years. In response, the Environmental Protection Agency (EPA) has required that States either adopt federally imposed numerical criteria for nutrients or develop their own. LDEQ reviewed EPA's guidance manuals and recommended criteria, and elected to develop nutrient criteria for Louisiana state waters independently in accordance with EPA's guidance for nutrient criteria development.

The EPA nutrient criteria recommendations for TN at all four ecoregions were lower than the percentiles calculated for the reference and all-streams datasets. Recommendations for TP were also lower at the SCP and TU ecoregions, but were between the 25th and 33rd percentiles of the all-streams dataset at the UMR and WGP ecoregions. These results reveal the unique status of Louisiana state waters, which have naturally higher nutrient concentrations than rivers in other regions of the country, and validates LDEQ's approach of independently developing state nutrient criteria, rather than adopting and implementing national recommendations.

There are a number of potential problems with using water quality data from 'reference' river reaches to define natural background conditions. Foremost, pristine reference streams for the most part no longer exist due to atmospheric deposition, the use of anthropogenic fixed nitrogen in farming, and extensive land conversion from a natural state to something very different. Any method for using reference site data to determine natural background conditions should consider that anthropogenic sources, such as atmospheric deposition, may affect areas far removed from human activity. Other studies have shown great natural variability in nutrient yields at reference sites, varying by more than two orders of magnitude because of variations in climate, hydrology, vegetation, and soil mineral composition, making it difficult to determine a numerical background condition. Additionally, reference sites may be unaffected because of specific characteristics that make them undesirable for human uses (i.e., clay soils unsuitable for cropland), and may not be reflective of conditions across a region. These issues need to be considered when analyzing the reference reach data during the development of nutrient criteria for rivers and streams in Louisiana.



Implementation and Improvement

The Relationships Between Nutrients, D.O. Conditions, Habitat, and Fish Assemblage Composition in Louisiana Streams

This project ended in 2008 and the Final Report is currently being reviewed. The primary goal of this project was to determine the relationship between DO conditions, stream habitat, nutrients and the abundance and species composition of the resident fish assemblage. Hypoxia (DO levels less than 2.0 ppm) has probably been a periodic if not pervasive condition affecting fish assemblages in many Louisiana streams for centuries. The central questions focus on whether DO conditions in streams on the 303(d) list have deteriorated as Louisiana land use patterns have changed, and if so, what are the relative contributions of natural and anthropogenic factors to hypoxic conditions, how can anthropogenic impacts be mitigated, and what effects have hypoxic conditions had on resident stream biota.

Throughout the course of the study, several streams could not be sampled due to high water levels, low water levels, or dense stands of aquatic vegetation. Overall, we were able to obtain 59 electrofishing samples from the 16 stream systems (1-5 per system), which yielded 32,497 fishes representing 98 species (plus unidentified juvenile sunfishes and darters). Individual collections yielded from 8 to 32 taxa per stream, and individual stream sites supported from 15 to 38 taxa summed over the study period. Individual collections for each stream site generally yielded over 100 individuals, and average numbers per sample ranged from 188 in Six Mile Creek to 2,255 in West Fork Thompson Creek. Variability in fish abundance, both among streams as well as within streams across sampling dates, was evident in the standard deviations and ranges of fish abundances during the study.

Discharge in most of these streams appears to be highly variable after storm events, and can decline to almost zero during extended periods of no rainfall. As a consequence, fishes in these systems may be quite mobile in response to storm- and drought-related changes in water velocity and habitat quality and may commonly move downstream in search of habitat refuge as discharge profiles in these small streams change. It is clear that a single visit to these types of streams is inadequate for assessing fish assemblage structure, and the presence/absence and relative abundances of fishes in these systems likely change with season as well as with the periodicity, magnitude and duration of rainfall events.



Implementation and Improvement

USDA Programs

Throughout the state of Louisiana, the USDA implemented approximately 36,730 acres of BMPs through the CRP, 65 acres through the CSP, 8,102 acres through the WRP, 126,068 through the EQIP, and 4,006 acres through the WHIP.

Through all of its programs, the USDA implemented a total of 451,780 acres of BMPs throughout the state. The following chart shows approximately the total number of acres of implemented BMPs per basin.

Basin	Acres of USDA Implemented BMPs
Atchafalaya	16,631
Barataria	34,995
Calcasieu	27,557
Mermentau	62,325
Mississippi	14,063
Ouachita	129,690
Pearl	4,886
Pontchartrain	37,237
Red	51,691
Sabine	13,335
Vermilion-Teche	21,672
Terrebonne	37,698

Source Water Protection Program

LDEQ's Source Water Protection Strategy is implemented through its Source Water Assessment Program and Source Water Protection Program. LDEQ's Source Water Protection Program is officially known in Louisiana as the Drinking Water Protection Program, however for this document, it will be referred to as the Source Water Protection Program to fit with EPA's nomenclature. The main goal of the LDEQ's Protection Strategy is to protect all sources of potable water for public water systems from contamination. Under the Source Water Assessment Program, LDEQ has located all public water supply sources and evaluated their susceptibility to contamination. The information derived from this Program is used by various sections within LDEQ, by various outside agencies, and directly in the implementation of the Source Water Protection Program in order to protect water supplies. The Source Water Protection Program operates on a parish or regional (combination of parishes) basis, depending on the local situation.

Key elements of the Louisiana Source Water Protection Strategy consist of the following:

1. Maintenance of updated Source Water Assessment Program data, which includes information on sources of drinking water (wells or intakes) and a list of potential sources of contamination located near those drinking water sources.
2. Development of contingency plans for all water systems in each targeted community that will give those water systems a plan in place in the event of an emergency or the loss of the water supply.
3. Implementation of public education/awareness campaigns to educate the local public on where drinking water comes from, why it's important to protect it, and how it can be protected.
4. Formation of Source Water Protection Committees made up of local residents from the parish(s) being targeted at the time. Each Committee is trained on its role in drinking water source protection within its community and best management practices (BMPs) that may be used to control pollution in the vicinity of their drinking water supplies. Source water protection goals are set and carried out with each committee.
5. Distribution of BMPs to various businesses/activities that are considered potential sources of contamination as identified in the Source Water Assessment Program, in conjunction with the Source Water Protection Committees.
6. Development and distribution of educational/outreach material as needed for the community to help protect its drinking water, in conjunction with the Source Water Protection Committees.
7. Addressing the most threatening potential sources of contamination in each community.
8. Addressing specific issues affecting water sources that each committee and local community deems necessary.
9. Addressing the specific nonpoint sources of contamination that have been identified as affecting water supplies.
10. Working with each committee to get an ordinance passed by local governments which affords further protection of the drinking water source.

Implementation of scheduled source water protection strategies over the past year included:

- Signage: 101 Drinking Water Protection Area Signs were delivered to communities in Grant and Calcasieu parishes for placement on the highways at the boundaries of Source Water Protection Areas,

Source Water Protection Program

- Workshops: 4 community meetings, 1 open house, 22 local committee meetings, and 3 award ceremonies took place within 7 parishes (Assumption, Lafourche, Terrebonne, Grant, Lafayette, Rapides and Bossier),
- Public Education and Outreach: 307 potential sources of contamination were visited by committee members, mainly in urban areas, educating citizens about potential pollution of their local drinking water source with an emphasis on nonpoint source pollution,
- Introduction of ordinances: 13 ordinances were presented to local governments; 8 ordinances were passed by local governments in 5 parishes prohibiting some nonpoint type activities within a certain distance from public drinking water wells during FY 2008,
- Wellhead Protection Programs/Contingency Plans: 22 Wellhead Protection Programs and contingency plans were worked on by LDEQ staff.

LDEQ strives to address specific nonpoint sources of contamination that have been identified as affecting water supplies within the framework of its Source Water Protection Program. This has become particularly important when working with surface water supplies. However, it is done as well for ground water supplies. Specific projects are utilized to address nonpoint source contamination, some of which have been mentioned above, such as used oil recycling education and visits to potential sources of contamination (some of which are nonpoint sources). LDEQ has also worked in some communities to educate citizens on individual sewage treatment system maintenance.



The LDEQ Source Water Protection Team

Appendix A

Appendix A List of projects by Basin that were active during FY 2008.

Project Title	Grant Year	Basin
Upper Barataria Basin Watershed Protection/St. James Sugarcane Project	2000	Barataria Basin
Bayou Lafourche Sewage Project	2003	Barataria Basin
Urban BMP Training for Construction Runoff and Home Sewage Education Awareness	2001	Barataria and Terrebonne Basin
Central Calcasieu River Watershed NPS Project	2001	Calcasieu
Coastal Nonpoint Pollution Control Program BMP development	2001 and 2003	Coastal
Coastal NPS BMP Training and Outreach- Phase 2	2003	Coastal
Mandeville Neighborhoods Project	2001	Lake Pontchartrain Basin
Reduction in Urban NPS pollution in the Lake Pontchartrain Basin	2001	Lake Pontchartrain Basin
Mitigating NPS in Urban Watersheds with Spatial Modeling, BMPs and Community Outreach	2001	Lake Pontchartrain Basin
Amite River Watershed and Tributaries Restoration Project	2001	Lake Pontchartrain Basin
Wastewater Treatment Plant Assistance in North Shore Watersheds	2003	Lake Pontchartrain Basin
St. Tammany Parish Tchefuncte and Bogue Falaya Watershed Implementation Project	2003	Lake Pontchartrain Basin
Storm Water BMPs in Wetland Landscape Design Planning, Construction at Woodlawn High School	2005	Lake Pontchartrain Basin
Coulee Baton Home Sewage Micro-watershed Project	2004	Mermentau River Basin
Modeling NPS and Land-Use in Bayou Plaquemine Brule	2005	Mermentau River Basin
Bayou Wikoff Sub-Watershed of Bayou Plaquemine Brule Watershed Project	2005	Mermentau River Basin
Evaluation of Effectiveness of Forestry Best Management Practices for Water Quality Improvement in the Ouachita Basin: Phase II	2001	Ouachita River Basin
Monitoring the Effectiveness of Forestry BMP Implementation in the Flat Creek	2002	Ouachita River Basin
Monitoring the Effectiveness of Forestry BMP Implementation in the Flat Creek, Phase 2	2004	Ouachita River Basin
Reduction in NPS Load in Bayou Chauvin	2005	Ouachita River Basin
Reduction of Pesticides and Nutrients in Bennett's Bayou Following Implementation of Best Management Practices (BMPs)	2005	Ouachita River Basin
Development of Site Conservation Plan and Addressing Nonpoint Source Pollution on the Pearl River	2001	Pearl River Basin
Pearl River Watershed Monitoring and Source Identification	2003	Pearl River Basin

Appendix A

Project Title	Grant Year	Basin
Water Quality and Crop Production Response to the Use of BMPs and Poultry Litter, Phase 2	2000	Red River Basin
Evaluation of Application of Poultry Litter on Water Quality and Wood Production in Forested Lands, Phase 2	2000	Red River Basin
Cross Lake Watershed Individual Sewage Treatment System Improvement Project	2001	Red River Basin
Constructed Wetlands to Improve Water Quality for Whole-Farm Operations	2002	Red River Basin
Sibley Lake Watershed Individual Sewage Treatment System Improvement	2005	Red River Basin
Development of TMDLs for the Red and Sabine River	2003	Red and Sabine River Basin
Lower Vermilion River Watershed NPS Project	2001	Vermilion-Teche River Basin
Evaluating the Effects of Reduced Cultivation/Elimination of Burning of Combine Harvest Residue	2002	Vermilion-Teche River Basin
Statistical Evaluation of the Effectiveness of BMPs in the Mermentau/Vermilion-Teche Basin	2005	Vermilion-Teche and Mermentau River Basin
Creating and Maintaining an Interactive BMP Website and CD-ROM to Promote the Understanding and Adoption of Louisiana's Forestry BMPs	2000	Statewide
Promoting the Adoption of BMPs through the Use of Model Farms	2001	Statewide
GIS Analysis for Watershed Implementation Planning and Management	2002, 2004, and 2007	Statewide
NPS and Source Water Protection Program Support	2003	Statewide
Technical assistance for Watershed Monitoring and Quality Assurance in the NPS Program	2003 and 2007	Statewide
Nonpoint Source Pollution: Louisiana State Surface Water Quality Conference 2007	2004	Statewide
Standards Development for Nutrient Criteria for Wetlands	2004	Statewide
Model Landscape Code Design Standards	2004	Statewide
Louisiana Forestry Best Management Practices Education Project Phase 2	2004	Statewide
Approaches for Developing Attainable Nutrient Criteria for Louisiana Water Bodies: Rivers and Streams	2004	Statewide
Nutrients, Dissolved Oxygen Conditions, Habitat and Fish Assemblage	2004	Statewide

Appendix B

Appendix B List of improved waterbodies.

Subsegment	Waterbody	Cause of Impairment	Reason for delisting
LA010401_00	East Atchafalaya Basin and Morganza Floodway South to I-10	Mercury in Fish Tissue	Applicable WQS attained; original basis for listing was incorrect
LA010601_00	Crow Bayou, Bayou Blue and Tributaries	Sulfates	Applicable WQS attained; reason for recovery unspecified
LA020301_00	Bayou Des Allemands-From US-90 to Lake Salvador	Chloride, Sulfates, TDS	Applicable WQS attained; reason for recovery unspecified
LA020302_00	Bayou Gauche	Chloride, Sulfates, TDS	Applicable WQS attained; reason for recovery unspecified
LA020303_00	Lake Cataouatche and Tributaries	Chloride, Sulfates, TDS	Applicable WQS attained; reason for recovery unspecified
LA020304_00	Lake Salvador	Chloride, Sulfates, TDS, Fecal Coliform	Applicable WQS attained; reason for recovery unspecified
LA020401_00	Bayou Lafourche-From Donaldsonville to ICWW at Larose	Chloride, TDS	Applicable WQS attained; reason for recovery unspecified
LA020901_00	Bayou Rigolettes and Bayou Perot to Little Lake	Fecal Coliform	Applicable WQS attained; reason for recovery unspecified
LA020902_00	Little Lake	Fecal Coliform	Applicable WQS attained; reason for recovery unspecified
LA020904_00	Wilkinson Canal and Wilkinson Bayou	Fecal Coliform	Applicable WQS attained; reason for recovery unspecified
LA020905_00	Bayou Moreau	Fecal Coliform	Applicable WQS attained; reason for recovery unspecified
LA030201_00	Calcasieu River-Marsh Bayou to saltwater barrier	Oxygen, Dissolved	Applicable WQS attained; reason for recovery unspecified
LA030402_00	Calcasieu Lake	Fecal Coliform	Applicable WQS attained; reason for recovery unspecified
LA030508_00	Bundicks Creek-From Bundicks Lake to Whiskey Chitto Creek	Lead	Applicable WQS attained; reason for recovery unspecified
LA030601_00	Barnes Creek-From headwaters to Little Barnes Creek	Oxygen, Dissolved	Applicable WQS attained; reason for recovery unspecified
LA030806_00	Houston River-From Bear Head Creek to West Fork Calcasieu	Oxygen, Dissolved	Applicable WQS attained; reason for recovery unspecified
LA031001_00	Bayou Choupique-From headwaters to ICWW	Oxygen, Dissolved; Turbidity	Applicable WQS attained; reason for recovery unspecified
LA040101_00	Comite River-Mississippi State Line to Wilson-Clinton Hwy.	Fecal Coliform	Applicable WQS attained; reason for recovery unspecified
LA040301_00	Amite River-From Mississippi state line to LA-37	Fecal Coliform	Applicable WQS attained; reason for recovery unspecified

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Subsegment	Waterbody	Cause of Impairment	Reason for delisting
LA040403_00	Blind River-From headwaters to Amite River Diversion Canal	Nitrate/Nitrite; Oxygen, Dissolved; Phosphorus (Total); Sedimentation/Siltation; Turbidity	Applicable WQS attained; reason for recovery unspecified
LA040501_00	Tickfaw River-From Mississippi state line to LA-42	Fecal Coliform	Applicable WQS attained; due to restoration activities
LA040505_00	Pontchatoula Creek and Pontchatoula River	Lead	Applicable WQS attained; reason for recovery unspecified
LA040602_00	Lake Maurepas	Fecal Coliform	Applicable WQS attained; reason for recovery unspecified
LA040701_00	Tangipahoa River-From Mississippi state Line to I-12	Fecal Coliform	Applicable WQS attained; due to restoration activities
LA040801_00	Tchefuncte River-From headwaters to Bogue Falaya River	Fecal Coliform	Applicable WQS attained; due to restoration activities
LA040803_00	Tchefuncte River-From LA-22 to Lake Pontchartrain	Fecal Coliform; Oxygen, Dissolved	Applicable WQS attained; reason for recovery unspecified
LA040804_00	Bogue Falaya River-From headwaters to Tchefuncte River	Chloride	Applicable WQS attained; reason for recovery unspecified
LA040804_00	Bogue Falaya River-From headwaters to Tchefuncte River	Fecal Coliform	Applicable WQS attained; due to restoration activities
LA040901_00	Bayou Lacombe-From headwaters to US-190	Sulfates	Applicable WQS attained; reason for recovery unspecified
LA040902_00	Bayou Lacombe-From US-190 to Lake Pontchartrain	Fecal Coliform; pH, Low	Applicable WQS attained; reason for recovery unspecified
LA040903_00	Bayou Cane-From headwaters to US-190	Fecal Coliform	Applicable WQS attained; reason for recovery unspecified
LA040904_00	Bayou Cane-From US-190 to Lake Pontchartrain	Fecal Coliform, Turbidity	Applicable WQS attained; reason for recovery unspecified
LA040908_00	Bayou Bonfouca-From LA-433 to Lake Pontchartrain	Fecal Coliform	Applicable WQS attained; reason for recovery unspecified
LA041202_00	Bayou Trepagnier-From Norco to Bayou Labranche	Turbidity	Applicable WQS attained; reason for recovery unspecified
LA041601_00	Intracoastal Waterway-Inner Harbor Nav. Can. to Chef Menteur	Fecal Coliform	Applicable WQS attained; reason for recovery unspecified
LA041703_00	Intracoastal Waterway-From Chef Menteur Pass to Lake Borgne	Fecal Coliform	Applicable WQS attained; reason for recovery unspecified
LA041802_00	Bayou Chaperon	Oxygen, Dissolved	Applicable WQS attained; reason for recovery unspecified
LA041803_00	Bashman Bayou-From headwaters to Bayou Dupre	Oxygen, Dissolved	Applicable WQS attained; reason for recovery unspecified

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Subsegment	Waterbody	Cause of Impairment	Reason for delisting
LA041804_00	Bayou Dupre-From Lake Borgne Canal to Terre Beau Bayou	Oxygen, Dissolved	Applicable WQS attained; reason for recovery unspecified
LA041901_00	Mississippi River Gulf Outlet-ICWW to Breton Sound	Fecal Coliform	Applicable WQS attained; reason for recovery unspecified
LA042001_00	Lake Borgne	Fecal Coliform	Applicable WQS attained; reason for recovery unspecified
LA042002_00	Bayou Bienvenue-From Bayou Villere to Lake Borgne	Fecal Coliform	Applicable WQS attained; reason for recovery unspecified
LA042004_00	Bayou Bienvenue-From MRGO to Bayou Villere	Fecal Coliform	Applicable WQS attained; reason for recovery unspecified
LA042101_00	Bayou Terre Aux Boeufs	Fecal Coliform	Applicable WQS attained; reason for recovery unspecified
LA042103_00	Bayou Gentilly-From Bayou Terre Aux Boeufs to Lake Petite	Fecal Coliform	Applicable WQS attained; reason for recovery unspecified
LA042104_00	Petit Lake	Fecal Coliform	Applicable WQS attained; reason for recovery unspecified
LA042105_00	Lake Lery	Fecal Coliform	Applicable WQS attained; reason for recovery unspecified
LA050101_00	Bayou Des Cannes-From headwaters to Mermentau River	Fecal Coliform	Applicable WQS attained; reason for recovery unspecified
LA050201_00	Bayou Plaquemine Brule-From headwaters to Bayou Des Cannes	Fecal Coliform, Total Dissolved Solids	Applicable WQS attained; reason for recovery unspecified
LA050301_00	Bayou Nezpique-From headwaters to Mermentau River	Fecal Coliform	Applicable WQS attained; reason for recovery unspecified
LA050304_00	Bayou Blue-From headwaters to Bayou Nezpique	Oxygen, Dissolved	Applicable WQS attained; reason for recovery unspecified
LA050602_00	Intracoastal Waterway-Calcasieu Basin to Mermentau River	Ammonia (Total); Nitrate/Nitrite; Oxygen, Dissolved; Phosphorus (Total)	Applicable WQS attained; reason for recovery unspecified
LA050701_00	Grand Lake	Ammonia (Total); Nitrate/Nitrite; Oxygen, Dissolved; Phosphorus (Total)	Applicable WQS attained; reason for recovery unspecified
LA050702_00	Intracoastal Waterway-Mermentau River to Vermilion Locks	Ammonia (Total); Nitrate/Nitrite; Oxygen, Dissolved; Phosphorus (Total)	Applicable WQS attained; reason for recovery unspecified
LA050702_00	Intracoastal Waterway-Mermentau River to Vermilion Locks	Mercury	Flaws in original listing
LA050802_00	Big Constance Lake; includes associated water bodies	Nitrate/Nitrite; Oxygen, Dissolved; Phosphorus (Total)	Applicable WQS attained; reason for recovery unspecified

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Subsegment	Waterbody	Cause of Impairment	Reason for delisting
LA060101_00	Spring Creek-From headwaters to Cocodrie Lake (Scenic)	Oxygen, Dissolved; Sedimentation/Siltation; Total Suspended Solids (TSS); Turbidity	Applicable WQS attained; reason for recovery unspecified
LA060102_00	Cocodrie Lake	Chloride, Sulfates, Total Dissolved Solids, Turbidity	Applicable WQS attained; reason for recovery unspecified
LA060201_00	Bayou Cocodrie-US-167 to Bayou Boeuf-Cocodrie Div. Canal	Copper	State Determines water quality standard is being met
LA060201_00	Bayou Cocodrie-US-167 to Bayou Boeuf-Cocodrie Div. Canal	Sedimentation/Siltation; TDS; Total Suspended Solids (TSS); Turbidity	Applicable WQS attained; reason for recovery unspecified
LA060203_00	Chicot Lake	Sedimentation/Siltation; Total Suspended Solids (TSS); Turbidity	Applicable WQS attained; reason for recovery unspecified
LA060204_00	Bayou Courtableau-To West Atchafalaya Borrow Pit Canal	Ammonia (Total); Fecal Coliform; Oxygen, Dissolved	Applicable WQS attained; reason for recovery unspecified
LA060206_00	Indian Creek and Indian Creek Reservoir	Temperature, water	Applicable WQS attained; reason for recovery unspecified
LA060208_00	Bayou Boeuf-From headwaters to Bayou Courtableau	Fecal Coliform	Applicable WQS attained; reason for recovery unspecified
LA060209_00	Irish Ditch/Big Bayou-Unnamed Ditch to Bayou Rapides	Chloride	Applicable WQS attained; reason for recovery unspecified
LA060212_00	Chatlin Lake Canal and Bayou DuLac	Fecal Coliform	Applicable WQS attained; reason for recovery unspecified
LA060301_00	Bayou Teche-From headwaters to Keystone Locks and Dam	Fecal Coliform; Sedimentation/Siltation; Total Suspended Solids (TSS); Turbidity	Applicable WQS attained; reason for recovery unspecified
LA060401_00	Bayou Teche-From Keystone Locks and Dam to Charenton Canal	Fecal Coliform	Applicable WQS attained; reason for recovery unspecified
LA060501_00	Bayou Teche-From Charenton Canal to Wax Lake Outlet	Nitrate/Nitrite; Oxygen, Dissolved; Phosphorus (Total); Sedimentation/Siltation; Total Suspended Solids (TSS); Turbidity	Applicable WQS attained; reason for recovery unspecified
LA060701_00	Tete Bayou	Fecal Coliform	Applicable WQS attained; reason for recovery unspecified
LA060702_00	Lake Fausse Point and Dauterive Lake	Nitrate/Nitrite; Oxygen, Dissolved; Phosphorus (Total)	Applicable WQS attained; reason for recovery unspecified
LA060703_00	Bayou du Portage	Fecal Coliform	Applicable WQS attained; reason for recovery unspecified
LA060802_00	Vermilion River-From LA-3073 bridge to ICWW	Fecal Coliform	Applicable WQS attained; reason for recovery unspecified
LA060803_00	Vermilion River Cutoff-From ICWW to Vermilion Bay	Nitrate/Nitrite; Oxygen, Dissolved; Phosphorus (Total)	Applicable WQS attained; reason for recovery unspecified

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Subsegment	Waterbody	Cause of Impairment	Reason for delisting
LA060901_00	Bayou Petite Anse-From headwaters to Bayou Carlin	Fecal Coliform, Total Suspended Solids (TSS)	Applicable WQS attained; reason for recovery unspecified
LA060902_00	Bayou Carlin-From Lake Peigneur to Bayou Petite Anse	Total Suspended Solids (TSS)	Applicable WQS attained; reason for recovery unspecified
LA060904_00	New Iberia Southern Drainage Canal-From headwaters to ICWW	Total Suspended Solids (TSS), Turbidity	Applicable WQS attained; reason for recovery unspecified
LA060909_00	Lake Peigneur	Fecal Coliform	Applicable WQS attained; reason for recovery unspecified
LA060911_00	Dugas Canal-By Tiger Lagoon Oil and Gas Field	Fecal Coliform, Total Suspended Solids (TSS)	Applicable WQS attained; reason for recovery unspecified
LA061001_00	West Cote Blanche Bay	Nitrate/Nitrite; Oxygen, Dissolved; Phosphorus (Total)	Applicable WQS attained; reason for recovery unspecified
LA061103_00	Freshwater Bayou Canal-From ICWW to control structure	Nitrate/Nitrite; Oxygen, Dissolved; Phosphorus (Total)	Applicable WQS attained; reason for recovery unspecified
LA070601_00	Mississippi River Basin Coastal Bays and Gulf Waters	Fecal Coliform	Applicable WQS attained; reason for recovery unspecified
LA080101_00	Ouachita River-Arkansas state line to Columbia Lock & Dam	Nitrate/Nitrite; Oxygen, Dissolved	Applicable WQS attained; reason for recovery unspecified
LA080101_00	Ouachita River-Arkansas state line to Columbia Lock & Dam	Phosphorus (Total)	Applicable WQS attained; reason for recovery unspecified
LA080601_00	Bayou D'Arbonne-From headwaters to Lake Claiborne	Fecal Coliform	Applicable WQS attained; reason for recovery unspecified
LA080603_00	Bayou D'Arbonne-From Lake Claiborne to Bayou D'Arbonne Lake	Fecal Coliform	Applicable WQS attained; reason for recovery unspecified
LA080606_00	Cypress Creek-From headwaters to Bayou D'Arbonne	Total Dissolved Solids	Applicable WQS attained; reason for recovery unspecified
LA080906_00	Turkey Creek-From Turkey Creek Cutoff to Turkey Creek Lake	Chloride	Applicable WQS attained; reason for recovery unspecified
LA081301_00	Little River-From Archie Dam to Ouachita River	Fecal Coliform	Applicable WQS attained; reason for recovery unspecified
LA081501_00	Castor Creek-From headwaters to Little River	Chloride	Applicable WQS attained; reason for recovery unspecified
LA081603_00	Catahoula Lake	Oil and Grease	Applicable WQS attained; according to new assessment method
LA090101_00	Pearl River-From Miss state line to Pearl River Nav Canal	Fecal Coliform	Applicable WQS attained; reason for recovery unspecified
LA090104_00	Peters Creek-From headwaters to Pearl River	pH, Low	Applicable WQS attained; reason for recovery unspecified

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Subsegment	Waterbody	Cause of Impairment	Reason for delisting
LA090107_00	Pearl River-Pearl River Navigation Canal to Holmes Bayou	Chloride	Applicable WQS attained; reason for recovery unspecified
LA090201_00	West Pearl River-From headwaters to Holmes Bayou	Turbidity	Applicable WQS attained; reason for recovery unspecified
LA090301_00	Pushapatapa Creek-Miss state line to Pearl River floodplain	Fecal Coliform	Applicable WQS attained; reason for recovery unspecified
LA090504_00	Lawrence Creek-From headwaters to Bogue Chitto River	pH, Low	Applicable WQS attained; reason for recovery unspecified
LA090505_00	Bonner Creek-From headwaters to Bogue Chitto River	pH, Low	Applicable WQS attained; reason for recovery unspecified
LA100101_00	Red River-From Arkansas state line to US-165 in Alexandria	Color	Applicable WQS attained; reason for recovery unspecified
LA100302_00	Black Bayou Lake-From LA-1 to spillway	Oxygen, Dissolved	Applicable WQS attained; reason for recovery unspecified
LA100309_00	Cross Bayou-From Texas state line to Cross Lake	Color	Applicable WQS attained; reason for recovery unspecified
LA100701_00	Black Lake Bayou-Headwaters to 1 mile north of Leatherman Cr	pH, Low	Applicable WQS attained; reason for recovery unspecified
LA100708_00	Castor Creek Tributary-From headwaters to Castor Creek	pH, Low	Applicable WQS attained; reason for recovery unspecified
LA100709_00	Grand Bayou-From headwaters to Black Lake Bayou	Fecal Coliform	Applicable WQS attained; reason for recovery unspecified
LA100709_00	Grand Bayou-From headwaters to Black Lake Bayou	Mercury in Fish Tissue	Applicable WQS attained; original basis for listing was incorrect
LA100803_00	Saline Bayou-From Saline Lake to Red River	Mercury in Fish Tissue	Applicable WQS attained; original basis for listing was incorrect
LA100901_00	Nantaches Creek-From headwaters to Nantaches Lake	Fecal Coliform	Applicable WQS attained; reason for recovery unspecified
LA101103_00	Bayou Kisatchie-From Kisatchie National Forest to Old River	Oxygen, Dissolved	Applicable WQS attained; reason for recovery unspecified
LA101201_00	Cotile Reservoir	Oxygen, Dissolved	Applicable WQS attained; reason for recovery unspecified
LA101301_00	Rigolette Bayou-From headwaters to Red River	Fecal Coliform; pH, Low	Applicable WQS attained; reason for recovery unspecified
LA101401_00	Buhlow Lake near Pineville	Oxygen, Dissolved; Turbidity	Applicable WQS attained; reason for recovery unspecified
LA101505_00	Larto Lake	Oxygen, Dissolved; Sulfates; TDS; Turbidity	Applicable WQS attained; reason for recovery unspecified

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Subsegment	Waterbody	Cause of Impairment	Reason for delisting
LA101506_00	Big Creek-From headwaters to Saline Lake	pH, Low	Applicable WQS attained; reason for recovery unspecified
LA101602_00	Cocodrie Lake	Oxygen, Dissolved	Applicable WQS attained; reason for recovery unspecified
LA101606_00	Bayou Cocodrie-From Wild Cow Bayou to Red River	Nitrate/Nitrite; Oxygen, Dissolved; Phosphorus (Total)	Applicable WQS attained; reason for recovery unspecified
LA110202_00	Pearl Creek-From headwaters to Sabine River	Fecal Coliform	Applicable WQS attained; reason for recovery unspecified
LA110401_00	Bayou Toro-From headwaters to LA-473	Fecal Coliform	Applicable WQS attained; reason for recovery unspecified
LA110402_00	Bayou Toro-From LA-473 to Sabine River	Fecal Coliform	Applicable WQS attained; reason for recovery unspecified
LA110501_00	West Anacoco Creek-From headwaters to Vernon Lake	Fecal Coliform	Applicable WQS attained; reason for recovery unspecified
LA110502_00	East Anacoco Creek-From headwaters to Vernon Lake	Oxygen, Dissolved	Applicable WQS attained; reason for recovery unspecified
LA110504_00	Bayou Anacoco-From Vernon Lake to Anacoco Lake	Fecal Coliform	Applicable WQS attained; reason for recovery unspecified
LA110601_00	Vinton Waterway-From Vinton to ICWW	Turbidity	Applicable WQS attained; reason for recovery unspecified
LA120103_00	Bayou Choctaw-From Bayou Poydras to Bayou Grosse Tete	Atrazine	State Determines water quality standard is being met
LA120104_00	Bayou Grosse Tete-From headwaters to ICWW near Wilbert Canal	Atrazine	Applicable WQS attained; reason for recovery unspecified
LA120109_00	Intracoastal Waterway-Port Allen Locks to Bayou Sorrel Locks	Sulfates	Applicable WQS attained; reason for recovery unspecified
LA120110_00	Bayou Cholpe-From headwaters to Bayou Choctaw	Sulfates	Applicable WQS attained; reason for recovery unspecified
LA120111_00	Bayou Maringouin-Headwaters to E Atchafalaya Basin Levee	Atrazine	Applicable WQS attained; reason for recovery unspecified
LA120201_00	Lower Grand Riv/Belle Riv-Bayou Sorrel Lock to Lake Palourde	Sulfates	Applicable WQS attained; reason for recovery unspecified
LA120405_00	Lake Hache and Lake Theriot	Turbidity	Applicable WQS attained; reason for recovery unspecified
LA120505_00	Bayou Du Large-From Houma to Marmande Canal	Chloride, Sulfates, TDS	Applicable WQS attained; reason for recovery unspecified
LA120508_00	Houma Nav Canal-Bayou Pelton to so of Bayou Grand Caillou	Fecal Coliform	Applicable WQS attained; reason for recovery unspecified
LA120604_00	Bayou Blue-From ICWW to Grand Bayou Canal	Total Dissolved Solids	Applicable WQS attained; reason for recovery unspecified

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Subsegment	Waterbody	Cause of Impairment	Reason for delisting
LA120606_00	Bayou Blue-From Grand Bayou Canal to Bully Camp Canal	Fecal Coliform	Applicable WQS attained; reason for recovery unspecified
LA120707_00	Lake Boudreaux	Fecal Coliform; Nitrate/Nitrite; Oxygen, Dissolved; Phosphorus (Total)	Applicable WQS attained; reason for recovery unspecified