

PART I: EXECUTIVE SUMMARY/OVERVIEW

Summary of Louisiana's Water Quality Assessment Program

Louisiana, well known for its abundance of water resources, contains over 66,294 miles of rivers and streams, 1,078,031 acres (1,684 square miles) of lakes and reservoirs, 5,550,951 acres (8,673 square miles) of fresh and tidal wetlands, and 4,899,840 acres (7,656 square miles) of estuaries. These figures, some of which are taken from the U.S. Environmental Protection Agency's (U.S. EPA) River Reach 3 file, are believed to be low in comparison to the actual total area of Louisiana's rivers, lakes, wetlands, and estuaries. It is the responsibility of the Louisiana Department of Environmental Quality (LDEQ) to protect the chemical, physical, biological, and aesthetic integrity of the water resources and aquatic environment of Louisiana. This responsibility is undertaken through the use of public education, scientific endeavors, water quality management, and regulatory enforcement, in order to provide the citizens of Louisiana with clean and healthy water now and in the future.

The *2006 Integrated Report* documents LDEQ's progress toward meeting this responsibility. Louisiana's *Integrated Report* is produced, in part, to meet requirements of the Federal Water Pollution Control Act commonly known as the Clean Water Act (CWA) (CWA, 1972). The primary CWA sections addressed by the *2006 Integrated Report* are §303(d) and §305(b). Section 303(d) requires states to list impaired water bodies and to develop a Total Maximum Daily Load (TMDL) for those water bodies. Section 305(b) of the CWA requires each state to provide the following information to the Administrator of the U.S. EPA:

1. A description of the water quality of all navigable waters in the state;
2. An assessment of the status of waters of the state with regard to their support of recreational activities and fish and wildlife propagation;
3. An assessment of the state's water pollution control activities toward achieving the CWA goal of having water bodies that support recreational activities and fish and wildlife propagation;
4. An estimate of the costs and benefits of implementing the CWA; and
5. A description of the nature and extent of nonpoint sources of pollution and recommendations for programs to address nonpoint source pollution.

For the *2006 Integrated Report*, LDEQ used U.S. EPA's *Consolidated Assessment and Listing Methodology* (U.S. EPA, 2002), which contains the Integrated Report (IR) guidance, as well U.S. EPA's guidance document, *Guidance for 2006 Assessment, Listing and Reporting Requirements Pursuant to Sections 303(d), 305(b) and 314 of the Clean Water Act* (U.S. EPA, 2005). Louisiana's water quality regulations (Environmental Regulatory Code (ERC), 2006) were used to determine water quality uses and criteria and, in some cases, assessment procedures. One of the primary focuses of U.S. EPA's IR guidance is on the use of seven categories to which water bodies or water body/impairment combinations may be assigned. Categorization under IR guidance allows for a more focused approach to water quality management by clearly determining which actions are required to protect or improve individual waters of the state. The seven IR categories can be found in Table 1.1.1.

Summary of Overall Water Quality in Louisiana

While many challenges remain, water quality in Louisiana has improved considerably in the years since passage of the CWA of 1972 and Louisiana's Environmental Quality Act of 1983. LDEQ recognizes three primary designated uses for most waters of the state. These are primary contact recreation (PCR) (swimming), secondary contact recreation (SCR) (boating), and fish and wildlife propagation (FWP) (fishing). Because water quality assessment procedures have remained unchanged since the 2000 IR cycle, LDEQ is now able to provide a reasonable estimate of water quality trends since that time. Figure 1.1.1 shows designated use support for the three primary uses for all Louisiana water body types, combined. This indicates that the number of water body subsegments fully supporting their designated uses has increased slightly between 2000 and 2006. The values reported in Figure 1.1.1 are based on the percentage of subsegments assessed during a given IR cycle, removing any effect of changes in the number of subsegments

assessed each cycle. As defined by Louisiana regulation (ERC, 2006), “subsegment” is the regulatory term for those water bodies or portions of water bodies assessed for IR purposes.

Table 1.1.1.

U.S. Environmental Protection Agency Integrated Report Methodology guidance categories used to categorize water body/pollutant combinations for the *Louisiana 2006 Integrated Report*.

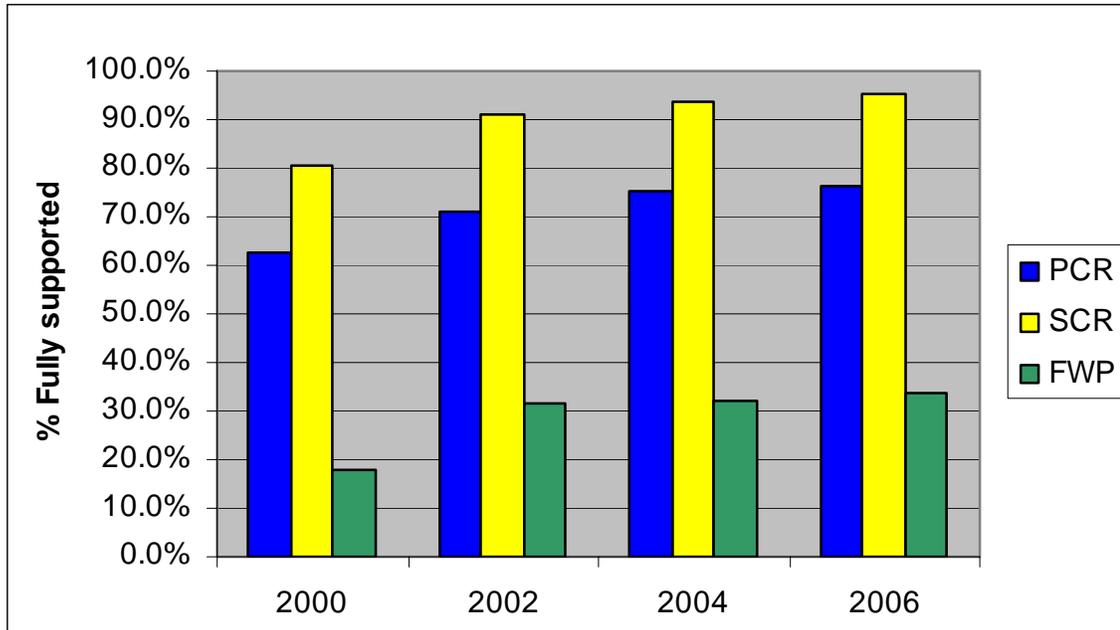
IR Category (IRC)	IR Category Description
IRC 1	Specific Water body Impairment Combination (WIC) cited on a <i>previous</i> §303(d) list is now attaining all uses and standards. Also used for water bodies that are fully supporting all designated uses.
IRC 2	Water body is meeting some uses and standards but there is insufficient data to determine if uses and standards associated with the specific WIC cited are being attained.
IRC 3	There is insufficient data to determine if uses and standards <i>associated with the specific WIC</i> cited are being attained.
IRC 4a	WIC exists but a TMDL has been completed for the <i>specific WIC</i> cited.
IRC 4b	WIC exists but control measures other than a TMDL are expected to result in attainment of designated uses <i>associated with the specific WIC</i> cited.
IRC 4c	WIC exists but a pollutant (anthropogenic source) does not cause the <i>specific WIC</i> cited.
IRC 5	WIC exists for one or more uses, and a TMDL is required for the <i>specific WIC</i> cited. IRC 5 represents Louisiana’s §303(d) list.

Table 1.1.2 shows the actual number of subsegments fully or not supporting designated uses along with the total number of subsegments assessed each cycle. Not all subsegments are assessed each cycle due to Louisiana’s four-year rotating monitoring and assessment process. Through this process, if recent data is not available, assessments for subsegments are carried forward from the previous cycle to the next. Once more recent data is obtained, new assessments will be developed during the next reporting cycle. This typically results in assessments being updated every other IR cycle, with new assessments being made on approximately one-half of Louisiana’s subsegments during any given IR cycle.

As shown in Figure 1.1.1, a large percentage of Louisiana water bodies are fully supporting their designated uses of primary and secondary contact recreation. These two uses are assessed primarily by the density, or concentration, of fecal coliform bacteria. Fecal coliforms are used as an indicator of possible contamination by sewage, livestock manure, or even wildlife. If fecal coliforms are present in high densities, there is a higher probability that pathogenic, or harmful, organisms could be present. Through the efforts of LDEQ, the Louisiana Department of Health and Hospitals (LDHH), and local parish governments, these sources of fecal coliforms are being addressed throughout Louisiana. LDEQ works to regulate the discharge of water from industrial or municipal sewage treatment plants and small package plants used by communities and businesses. LDEQ also administers a loan program to assist communities in building or upgrading their sewage treatment plants. Finally, LDEQ’s Nonpoint Source (NPS) Program works on ways to encourage homeowners to properly utilize their home sewage treatment systems. The NPS program also works to prevent contaminated runoff from agricultural fields and animal feed lots. At the same time, LDHH and local parish governments work to improve and enforce regulations for home sewage treatment systems. As can be seen by the high percentage of water bodies meeting the designated uses of primary and secondary contact recreation, these programs are having a positive effect on Louisiana’s water quality.

Figure 1.1.1.

Comparison of the percentage of water body subsegments in Louisiana fully supporting the designated uses of primary contact recreation (PCR), secondary contact recreation (SCR), and fish and wildlife propagation (FWP). 2006 Louisiana Integrated Report.



Many of Louisiana's water bodies remain impaired for the designated use of fish and wildlife propagation. This is largely because there are many possible causes and sources of impairment impacting this use. Any one of these causes can result in a water body being considered impaired for fish and wildlife propagation. As shown in Table 1.1.3, there are over 35 different suspected causes of impairment reported as impacting fish and wildlife propagation. With the exception of mercury, all of the top eight suspected causes of impairment can generally be related to what are known as nonpoint sources of pollution. Nonpoint source pollution consists of those forms of pollution caused by the runoff of stormwater from the land such as agricultural fields; forestry areas; construction sites; and urban areas; to name a few. The remaining causes of impairment are generally related to various forms of industry, small business, or municipal sources.

The large number of impairments related to mercury are due to the presence of 41 fish consumption advisories. Each advisory impacts one or more distinct water bodies in a region. Because the sources of mercury are to a large extent national or even international in scope, U.S. EPA has taken the lead in developing ways to address mercury releases to the environment. LDEQ is participating in this effort and has an extensive fish tissue monitoring program to identify areas where mercury is a concern. LDEQ has also developed a Mercury Initiative designed to reduce or eliminate the use and release of mercury to the environment. In addition to the mercury-related advisories, eight fish consumption advisories are due to the presence of organic chemicals. All but one of these organic chemical advisories are the result of past industrial practices or spills. As such, they have been or are being addressed through water quality permits, enforcement actions, remediation activities, or a combination of these. The remaining organic chemical-related advisory, on the Tensas River, is due to DDT and toxaphene. DDT was banned in 1972 while toxaphene was canceled for most uses in 1982 and banned for all uses in 1990. However, legacy contamination continues to be present in some of the soils and sediments of the region. It is anticipated that over time additional fish tissue testing will indicate that fish consumption advisories can be lifted on these water bodies.

Table 1.1.2.

Number of Louisiana water body subsegments for each assessment category and designated use. 2006 Louisiana Integrated Report.

	Fully Supporting Use				Not Supporting Use				Total Assessed Subsegments				Insufficient Data			
	2000	2002	2004	2006	2000	2002	2004	2006	2000	2002	2004	2006	2000	2002	2004	2006
Primary Contact Recreation	168	276	336	339	100	112	111	105	268	388	447	444	194	74	16	18
Secondary Contact Recreation	222	356	427	433	53	36	30	23	275	392	457	456	202	87	22	23
Fish and Wildlife Propagation	53	131	150	155	245	283	318	303	298	414	468	458	174	60	16	16

It is apparent there are a large number of issues facing Louisiana's fish and wildlife propagation use. Fortunately, LDEQ has numerous programs in place to address these problems. Programs include permitting of industry, small businesses, and municipalities; enforcement and remediation actions to identify and correct problems when they occur; and the development and implementation of best management practices to address nonpoint sources of pollution. More information on Louisiana's water pollution control efforts can be found in Part II, Chapter 2. More information on the suspected causes and sources of water pollution in Louisiana can be found in Part III, Chapters 3-6.

Table 1.1.3.

Number of water body subsegments, with the designated use of fish and wildlife propagation, impacted by each suspected cause of impairment. 2006 Louisiana Integrated Report.

Suspected Causes of Impairment	Rivers	Lakes	Estuaries	Wetlands	Total
Oxygen, Dissolved (Low DO)	145	22	6	1	174
Mercury	76	15	9	2	102
Turbidity	64	17	2		83
Nitrate/Nitrite (Nitrite + Nitrate as N)	63	11	5		79
Phosphorus (Total)	61	11	5		77
Total Suspended Solids (TSS)	56	7	2		65
Total Dissolved Solids	48	5		1	54
Sedimentation/Siltation	38	5	2		45
Sulfates	29	4		1	34
Chloride	27	4		1	32
Non-Native Aquatic Plants	27	16	1		44
Carbofuran	23	1	1		25
pH, Low	19	2			21
Ammonia (Total)	8	2	1		11
Color	7				7
Lead	7	2			9
DDT	6				6
Fipronil	5				5
Atrazine	4				4
Polychlorinated biphenyls	3	3			6
Benzo(a)pyrene (PAHs)	2				2
Dioxin (including 2,3,7,8-TCDD)	2				2
Polycyclic Aromatic Hydrocarbons (PAHs) (Aquatic Ecosystems)	2				2
Toxaphene	2				2
1,1,1,2-Tetrachloroethane	1				1
1,2-Dichloroethane	1				1
Bromoform	1				1
Chlorine	1				1
Copper	1				1
Hexachlorobenzene	1	1			2
Hexachlorobutadiene	1	1			2
Methoxychlor	1				1
Methyl Parathion	1				1
Oil and Grease	1	2			3

Table 1.1.3.

Number of water body subsegments, with the designated use of fish and wildlife propagation, impacted by each suspected cause of impairment. 2006 Louisiana Integrated Report.

pH, High	1	2			3
Phenols	1				1
Temperature, water		1			1
Total	736	134	34	6	910

Summary of River Quality in Louisiana

Figures 1.1.2 through 1.1.4 summarize support of the three most common designated uses for Louisiana rivers. The uses are primary contact recreation (PCR) (swimming), secondary contact recreation (SCR) (boating), and fish and wildlife propagation (FWP) (fishing). Other uses are established for selected water bodies in Louisiana. The status of these uses can be found in Part III, Chapter 3.

Figure 1.1.2. Support for primary contact recreation (swimming) for Louisiana rivers, 2006 Integrated Report. (Based on 339 assessed rivers.)

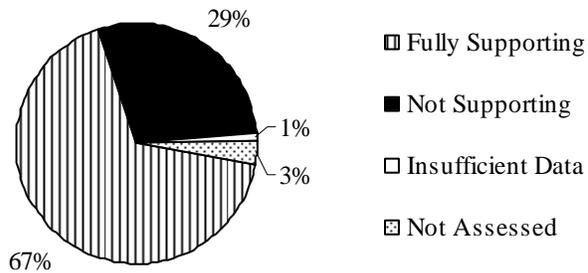


Figure 1.1.3. Support for secondary contact recreation (boating) for Louisiana rivers, 2006 Integrated Report. (Based on 352 assessed rivers.)

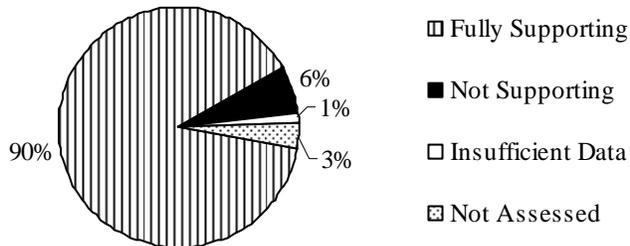
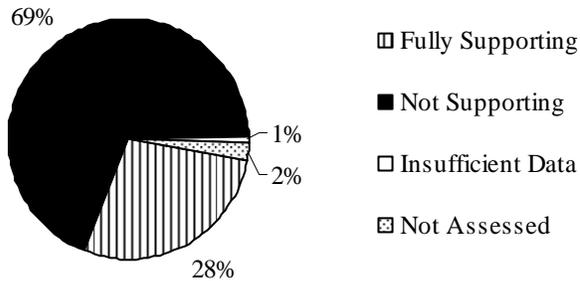


Figure 1.1.4. Support for fish and wildlife propagation (fishing) for Louisiana rivers, 2006 Integrated Report. (Based on 347 assessed rivers.)

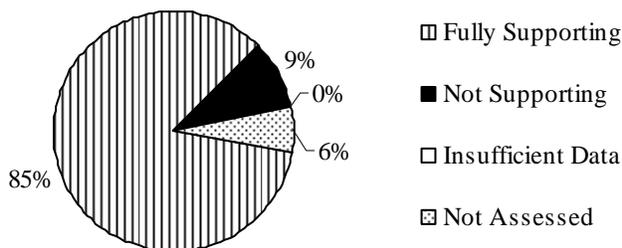


The most frequently identified suspected impairments found in Louisiana rivers include: low dissolved oxygen (3,263 miles); fecal coliforms (2,840 miles); mercury (2,386 miles); turbidity (2,270 miles); total suspended solids (1,950 miles); nitrate/nitrite (1,589 miles); total phosphorus (1,525 miles); sedimentation/siltation (1,274 miles); and total dissolved solids (1,184 miles). The most frequently cited suspected sources of impairment include: unknown sources (3,629 miles); atmospheric deposition (2,317 miles); irrigated crop production (2,079 miles); non-irrigated crop production (1,820 miles); natural conditions¹ (1,388 miles); septic systems (1,306 miles); and municipal sewage discharges (780 miles).

Summary of Lake Quality in Louisiana

Figures 1.1.5 through 1.1.7 summarize support of primary contact recreation (PCR) (swimming), secondary contact recreation (SCR) (boating), and fish and wildlife propagation (FWP) (fishing) in Louisiana lakes. Other uses are established for selected water bodies in Louisiana. The status of these other uses can be found in Part III, Chapter 4.

Figure 1.1.5. Support for primary contact recreation (swimming) for Louisiana lakes, 2006 Integrated Report. (Based on 65 assessed lakes.)



¹ Natural conditions consists of “Natural Conditions-Water Quality Standards Use Attainability Analyses Needed” and “Natural Sources.”

Figure 1.1.6. Support for secondary contact recreation (boating) for Louisiana lakes, 2006 Integrated Report. (Based on 65 assessed lakes.)

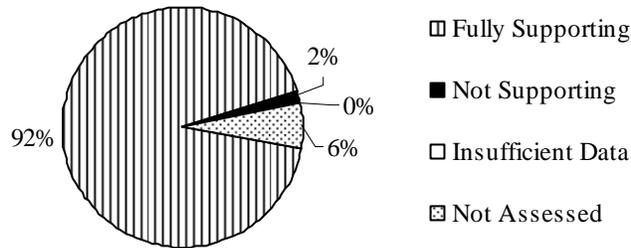
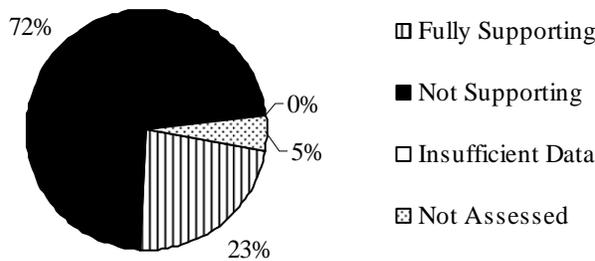


Figure 1.1.7. Support for fish and wildlife propagation (boating) for Louisiana lakes, 2006 Integrated Report. (Based on 65 assessed lakes.)



The most frequently identified suspected impairments found in Louisiana lakes include: non-native aquatic plants (319,163 acres); mercury (reported primarily due to fish consumption advisories) (267,814 acres); turbidity (253,053 acres); low dissolved oxygen (174,612 acres); total suspended solids (156,343 acres); sedimentation/siltation (155,098 acres); and nitrate/nitrite and total phosphorus (124,931 acres). The most frequently cited suspected sources of impairment include: introduction of non-native aquatic plants (319,163 acres); unknown sources (309,089 acres); atmospheric deposition (267,814 acres); non-irrigated crop production (120,340 acres); natural conditions (88,910 acres); irrigated crop production (84,048 acres); and drought-related impacts (54,080 acres).

Summary of Estuary Quality in Louisiana

Figures 1.1.8 through 1.1.10 summarize support of primary contact recreation (PCR) (swimming), secondary contact recreation (SCR) (boating), and fish and wildlife propagation (FWP) (fishing) for Louisiana estuaries. Other uses are established for selected water bodies in Louisiana. The status of these uses can be found in Part III, Chapter 5.

Figure 1.1.8. Support for primary contact recreation (swimming) for Louisiana estuaries, 2006 Integrated Report. (Based on 52 assessed estuaries.)

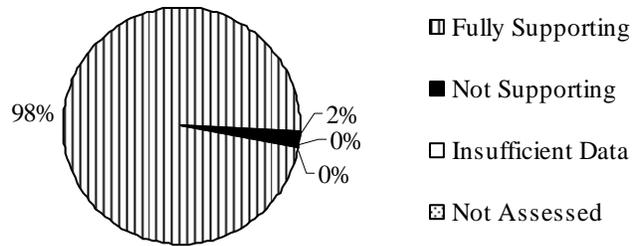


Figure 1.1.9. Support for secondary contact recreation (boating) for Louisiana estuaries, 2006 Integrated Report. (Based on 52 assessed estuaries.)

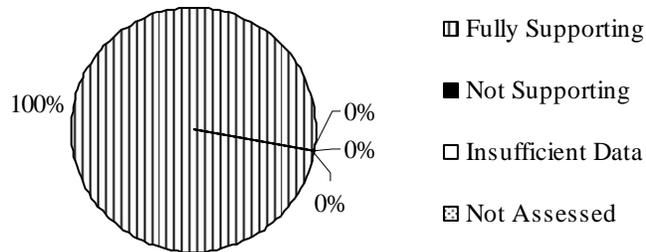
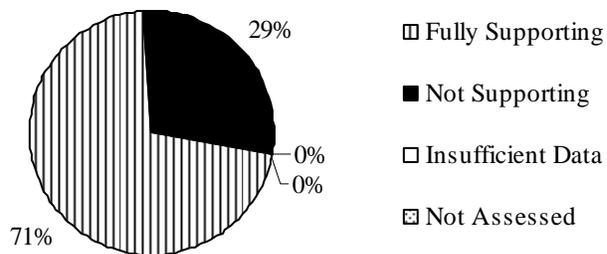


Figure 1.1.10. Support for fish and wildlife propagation (fishing) for Louisiana estuaries, 2006 Integrated Report. (Based on 52 assessed estuaries.)



The most frequently identified suspected impairments found in Louisiana estuaries include: mercury (reported primarily due to fish consumption advisories) (1,657 square miles); fecal coliforms (1,524 square miles); low dissolved oxygen (299 square miles); nitrate/nitrite and total phosphorus (297 square miles); and turbidity, sedimentation, and total suspended solids (193 square miles). The most frequently cited suspected sources of impairment include: unknown sources (2,086 square miles); atmospheric deposition

(1,657 square miles); package plants (588 square miles); natural sources and petroleum/natural gas production activities (581 square miles); municipal point sources (200 square miles); and irrigated and non-irrigated crop production (193 square miles).

Summary of Wetland Quality in Louisiana

Figures 1.1.11 through 1.1.13 summarize support of primary contact recreation (PCR) (swimming), secondary contact recreation (SCR) (boating), and fish and wildlife propagation (FWP) (fishing) in Louisiana wetlands. Other uses are established for selected water bodies in Louisiana. The status of these uses can be found in Part III, Chapters 6.

Figure 1.1.11. Support for primary contact recreation (swimming) for Louisiana wetlands, 2006 Integrated Report. (Based on 6 assessed wetlands.)

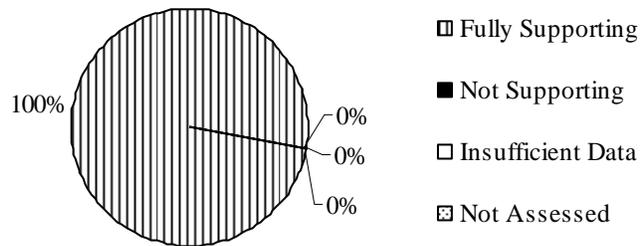


Figure 1.1.12. Support for secondary contact recreation (boating) for Louisiana wetlands, 2006 Integrated Report. (Based on 10 assessed wetlands.)

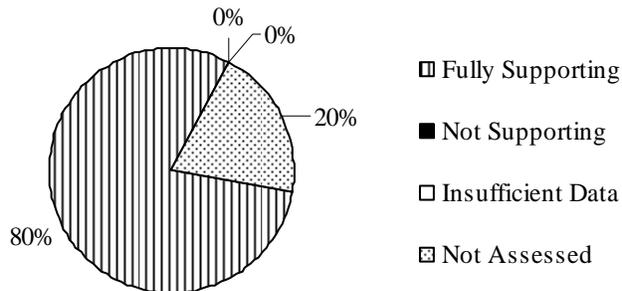
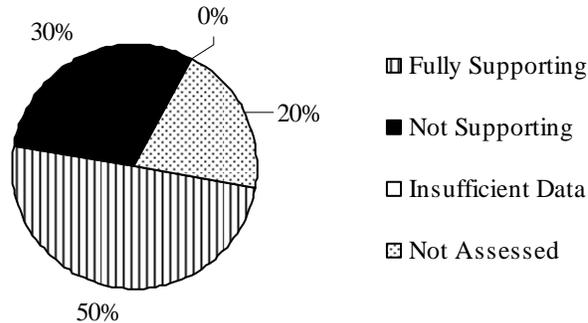


Figure 1.1.13. Support for fish and wildlife propagation (fishing) for Louisiana wetlands, 2006 Integrated Report. (Based on 10 assessed wetlands.)



The most frequently identified suspected impairments found in Louisiana wetlands include: mercury (reported primarily due to fish consumption advisories) (394,880 acres) and low dissolved oxygen (195,840 acres), which is primarily due to the natural condition of waters in wetlands. The most frequently cited suspected sources of impairment include: unknown sources and atmospheric deposition (394,880 acres), non-irrigated crop production and petroleum/natural gas production activities (195,840 acres).

When looked at across all water body types, a pattern of both suspected causes and sources of impairment emerges. The most frequently cited suspected causes of impairment for all water bodies combined are fecal coliforms primarily from septic tanks and municipal sewage treatment systems; low dissolved oxygen from sewage, agriculture, or natural causes; sediment-related problems such as turbidity, suspended solids, and siltation caused by agriculture or natural causes; and mercury related to fish consumption advisories due primarily to atmospheric deposition of mercury on the watershed. Many of the suspected sources of water quality impairment are known collectively as nonpoint source pollution. Nonpoint source pollution is discussed in detail in Part II, Chapter 2.

Ground Water Quality

The Water Quality Assessment Division's Baseline Monitoring Program provides water quality data from fresh water aquifers around the state. Wells producing from a common aquifer are sampled in a narrow time frame. The smaller aquifers can be sampled in one or two days, whereas, the larger aquifers may take several months to complete. When all assigned wells of a particular aquifer have been sampled, a summary report is written.

For this report, U.S. EPA has encouraged States to select an aquifer or hydrogeologic setting and discuss available data that best reflects the quality of the resource. For 2006, the baseline monitoring network for the Evangeline aquifer is discussed.

Water Pollution Control Programs

LDEQ has been given the responsibility of managing the quality of Louisiana's surface waters by upgrading the quality where man's activities have caused degradation and by preserving the integrity of those waters where good quality exists. Water pollution controls employed by the agency include municipal and industrial wastewater discharge permits, enforcement of permit requirements, review and certification of projects affecting water quality, implementation of best management practices for nonpoint source pollution, and regular water quality monitoring of the state's surface waters.

In 1997 the LDEQ was granted National Pollutant Discharge Elimination System (NPDES) delegation by the U.S. EPA. As a result of delegation, most facilities that discharge to waters of the state are required to obtain only one permit, a Louisiana Pollution Discharge Elimination System (LPDES) permit, rather than

both an NPDES permit and a state permit as in the past. In addition to LDEQ's permitting responsibilities, grants and loans for construction and upgrade of municipal treatment facilities are also awarded by U.S. EPA through the LDEQ. In the past, the majority of pollution control programs have been directed at point source discharges through the issuance of wastewater permits, compliance assurance activities, and enforcement activities. While this is still the case, nonpoint source pollution control efforts continue to increase.

Total maximum daily loads (TMDLs) indicate that the majority of the pollutant load entering state waters comes from nonpoint sources of pollution; therefore, LDEQ is implementing a watershed-based approach to reducing those loads in the water bodies where TMDLs have been completed. Presently, LDEQ utilizes both regulatory and non-regulatory mechanisms to control nonpoint sources of pollution. Urban storm water for cities with populations of 50,000 or greater and construction sites of one acre or more are regulated through the LPDES permit program. Home sewage treatment systems are regulated through the LDHH. LDEQ's Water Quality Assessment Division (WQAD) currently houses the state's Nonpoint Source Management Program, which has been successful in implementing voluntary programs for forestry and agricultural sources of pollution. This has been done through coordination with other concerned agencies, such as the Louisiana Department of Agriculture and Forestry (LDAF), the U.S. Natural Resource Conservation Service (NRCS), and the Louisiana State University (LSU) AgCenter. LDEQ will continue to monitor state waters through the four-year cyclic process to determine whether the current implementation strategy is successful in restoring and maintaining water quality and the designated uses within Louisiana.