

Florida's Total Maximum Daily Load Program: the First 5 Years
A Report to the Legislature and Governor



Division of Water Resource Management
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Executive Summary

The Watershed Restoration Act of 1999 (s. 403.067, F. S.) directs the Department of Environmental Protection to scientifically evaluate the quality of Florida's surface waters and promote the mechanisms necessary to clean up pollution. The Act was created specifically to implement the federal Total Maximum Daily Load (TMDL) program, which is a systematic approach to establishing how much pollution water bodies can assimilate while still meeting water quality standards. The Act directs the DEP to report to the Governor and legislature after five years on the implementation of the TMDL program and recommend statutory changes necessary to improve it.

To streamline the TMDL program, DEP adopted a five-year cycle that divides Florida into five groups of surface water basins in which different activities take place each year; the cycle is reiterated continuously to evaluate the success of clean-up efforts, refine water quality protection strategies, and account for the changes brought about by Florida's rapid growth and development. Activities include preliminary basin assessments; identification of pollutant-impaired waters; targeted water quality monitoring and data analysis; TMDL development and adoption; basin planning with local stakeholders to establish the actions necessary to reduce pollution; and implementation through regulatory actions, funding, pollution prevention strategies, and other measures.

Since passage of the Watershed Restoration Act, DEP has adopted an Impaired Waters Rule, which establishes the methods by which surface waters are evaluated and the need for TMDLs is determined. The principles established in that rule were endorsed by the National Academy of Sciences in 2001 after its review of the nationwide TMDL program. The agency has publicly adopted verified lists of impaired waters for two of the five groups of surface water basins in Florida and is now developing the list for Group 3.

DEP has developed and adopted, by rule, 52 TMDLs as of December 2004; another 61 TMDLs have been proposed or are in draft (see Attachment 1), all of which must also be adopted by rule. More than 1,000 additional TMDLs are anticipated. Across the state, DEP has held 136 formal public meetings to introduce local stakeholders to the TMDL program, the watershed management cycle, the way water bodies are evaluated, and what they can do to help protect their local water resources. Another 150 basin "focus meetings" and presentations to local governments along with innumerable individual contacts and small-group gatherings have been conducted to broadcast the benefits of the TMDL program, solicit information and ideas from local stakeholders, and identify local leaders who will motivate others to act in cleaning up impaired waterways.

At the same time, DEP has worked with the Florida Department of Agriculture and Consumer Services and the state's five water management districts to improve the mechanisms local governments, utilities, industries, and agricultural operations can use to implement pollution reductions and improve water quality. Perhaps most significantly, these efforts are leading to the development and adoption of a full range of agricultural and non-agricultural best management practices to prevent the pollution that historically has come from these "nonpoint" and generally unregulated sources. DEP has instituted verification methods by which to determine the effectiveness of these practices in reducing pollutant loading and protecting water quality. The Department of Agriculture and Consumer Services has invested significant resources in this effort and is making real progress in targeting best management practices to particular agricultural commodity groups and demonstrating why it is in their best long-term economic and social interests to implement them.

DEP has invested approximately \$17.5 million to date on research and development of non-agricultural best management practices and implementation of targeted monitoring expressly for the TMDL program. The bulk of this funding has come from Documentary Stamp revenues that DEP splits with the Department of Agriculture and Consumer Services, which uses its split to develop and implement agricultural best management practices. DEP has awarded another \$26 million in federal section 319 grants to local governments to implement better urban stormwater treatment projects and practices, which can be exploited by other local governments across Florida. The investments DEP has made in other water quality monitoring efforts, its implementation of more traditional regulatory programs, and the more than \$120 million the agency awards in State Revolving Fund loans to local

governments each year have also fostered early successes in the TMDL program, as have the critical surface water restoration efforts of the regional water management districts.

The first five years of TMDL implementation also have fleshed out issues that could not have been fully anticipated when the Watershed Restoration Act of 1999 was adopted. This report sets forth those issues in some detail, identifies the solutions DEP has implemented under existing authority, and offers for consideration a few modifications to the Act that would improve the TMDL program. Those considerations include:

- Formally recognizing basin planning and making adopted basin plans enforceable to promote the “reasonable and equitable” allocation of pollutant load reductions among all pollutant sources that already is required by law.
- Authorizing the refinement of TMDLs in adopted basin plans, where necessary.
- Clearly establishing the legal relationship between basin plans and related permits.
- Modifying the best management practice verification process to make it more flexible and effective.
- Authorizing DEP to adopt pollutant trading rules after reporting to the legislature and Governor the results of its evaluation of pollutant trading.

Finally, the report reviews operational funding for the TMDL program over the last three years and recommends that future funding be considered to promote successful completion of the mandates and opportunities created by the Watershed Restoration Act of 1999.

For more detailed information on the TMDL program, watershed management, and related activities discussed in this report, please visit the DEP website at www.dep.state.fl.us/water/tmdl/index.htm. Specific information on best management practices also is available from the Department of Agriculture and Consumer Services at www.floridaagwaterpolicy.com and from DEP at www.dep.state.fl.us/water/nonpoint/index.htm.

Florida's Total Maximum Daily Load Program: The First Five Years

Introduction

The Florida legislature adopted s. 403.067, F. S., the Watershed Restoration Act of 1999, authorizing the Department of Environmental Protection (DEP) to assess the quality of Florida's surface waters, identify pollutant-impaired waters, develop mechanisms to clean them up, and work with other agencies and local stakeholders to finance and implement those mechanisms. The law requires DEP to prioritize impaired waters for clean-up and develop and adopt by rule scientifically-based pollutant reduction objectives—Total Maximum Daily Loads (TMDLs)—that can be accomplished in a reasonable and equitable manner. It further directs DEP to promote, in conjunction with Florida's water management districts, the Department of Agriculture and Consumer Services, local governments, and other affected parties, the specific mechanisms to accomplish the pollutant reductions necessary to meet the TMDL.

Each TMDL represents the capacity of a surface water body or water body segment to assimilate a specific pollutant or pollutants while still meeting water quality standards; it identifies how many pounds of that pollutant (metals, nitrogen, bacteria, etc.) can be discharged to the water body without impairing its designated uses, whether for fishing, swimming, shellfish harvesting, or as a safe source of drinking water. Each TMDL requires the gathering and analysis of a substantial amount of data, meeting rigorous quality assurance specifications, as well as extensive computer modeling. And, as noted, every TMDL must be adopted through Florida's public rulemaking process and subsequently given meaning through detailed planning and pragmatic implementation strategies.

Because the TMDL program was, for practical purposes, new in 1999 and the Watershed Restoration Act created a variety of complicated requirements and administrative processes, the legislature required DEP to report to the Governor and legislature after five years, as follows:

The department, coordinating with the water management districts and the Department of Agriculture and Consumer Services, shall evaluate the effectiveness of the implementation of total maximum daily loads for a period of 5 years from the effective date of this act. The department shall document that effectiveness, using all data and information at its disposal, in a report to the Governor, the President of the Senate, and the Speaker of the House of Representatives by January 1, 2005. The report shall provide specific recommendations for statutory changes necessary to implement total maximum daily loads more effectively, including the development or expansion of pollution prevention and pollutant trading opportunities, and best management practices. The report shall also provide recommendations for statutory changes relating to pollutant sources which are not subject to permitting under chapter 403, Florida Statutes, or chapter 373, Florida Statutes, and which do not implement the nonregulatory practices or other measures outlined in the basin plan prepared under s. 403.067, Florida Statutes, in accordance with the schedule of the plan, or fail to implement them as designed. [Section 6 of Chapter 99-223, Laws of Florida.]

This report provides background information along with a summary of the fundamental actions taken to date to assess impaired rivers, lakes, and estuaries; develop and adopt TMDLs; and begin the local planning efforts and follow-through necessary to clean up polluted waterways. The TMDL program has been successful in fulfilling the initial objectives of the Watershed Restoration Act. Because of the extensive time and effort necessary to accomplish these objectives, however, actual on-the-ground local implementation of TMDLs lies largely in the future. DEP's efforts to date have allowed the agency to identify several problems in implementing the law that were not apparent at the time of its adoption. The report documents those problems and sets forth recommendations to improve the TMDL program's effectiveness at restoring Florida's impaired surface waters and protecting them for the future.

The Watershed Approach

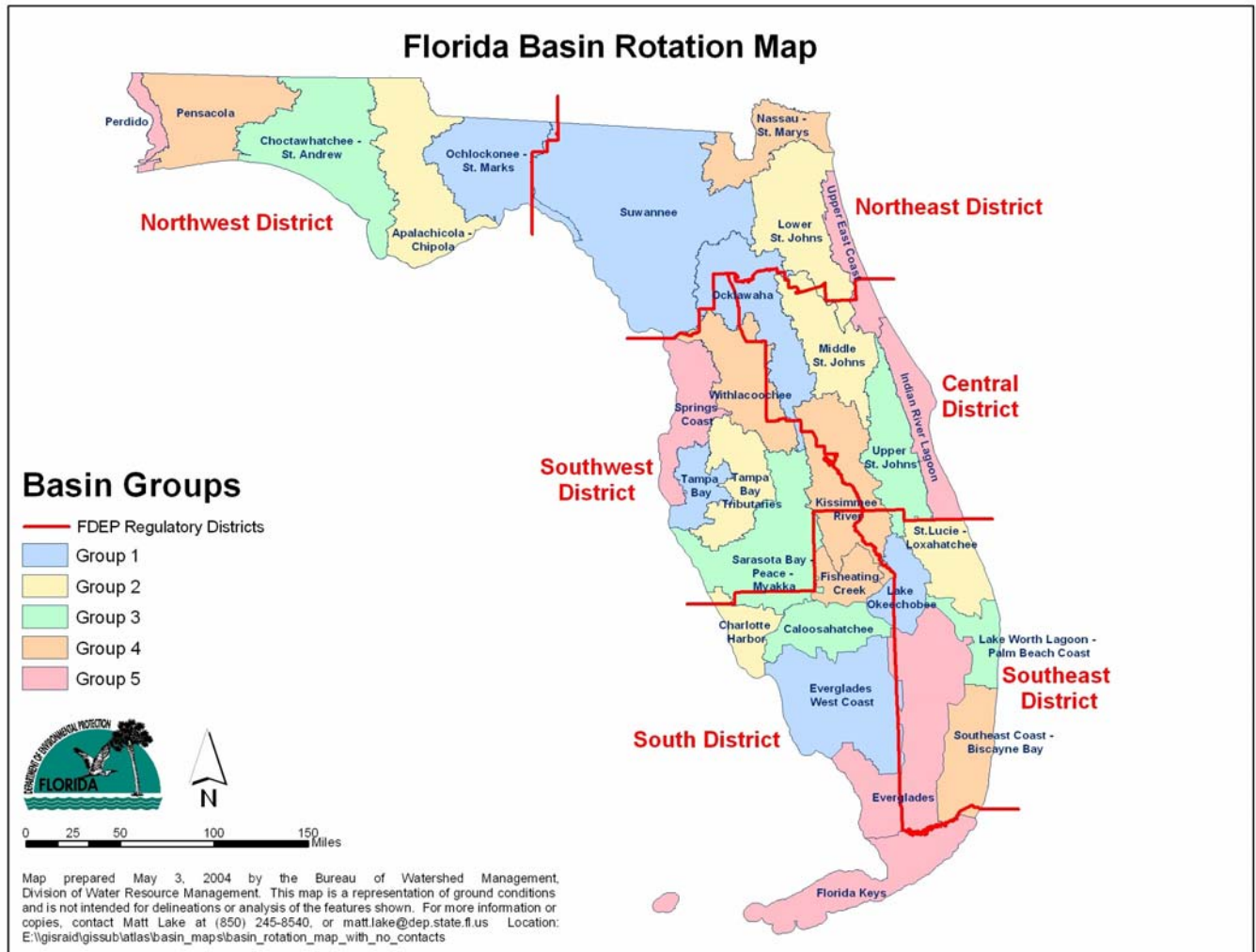
The Watershed Restoration Act and the rules DEP has subsequently adopted are intended to identify Florida's surface waters impaired by pollutants; establish scientifically-based pollutant reduction objectives (TMDLs); develop locally-based plans to reduce pollutants as determined necessary by the TMDL; and promote the physical and financial mechanisms necessary to implement those plans. The scope of this mandate is both enormous—given 52,000 miles of rivers and streams, nearly 800 lakes, 4,500 square miles of estuaries, more than 700 springs, and 17 million people and growing—and complicated.

Given this challenge, DEP has developed a phased approach to implementing the law. DEP's comprehensive "watershed management" strategy views the state based on its natural boundaries, like river and estuary basins, rather than political boundaries. These naturally-bounded areas have been organized into five "groups" of basins (see the color-coded map below). In 2000, DEP began addressing the first group of basins (Group 1) and continues to initiate activities in a new group (Groups 2 through 5) each year over a five-year cycle to cover the entire state. The five-year cycle will then begin again in the Group 1 basins and continue through Groups 2-5 to re-evaluate the status of impaired waters, determine the successes and problems associated with ongoing activities, make necessary changes, and consider and address new circumstances associated with growth and development. The cycle will be repeated methodically and continuously over time.

Dividing the state this way has allowed DEP efficiently to manage different activities in each of the water body groupings leading to the development and, ultimately, implementation of TMDLs throughout Florida. The general sequence of the five-year cycle is as follows:

1. Preliminary basin assessment focusing on existing data.
2. Strategic water quality monitoring to obtain additional detailed scientific evidence of water quality conditions and adoption of basin-specific verified lists of impaired waters.
3. Data analysis and TMDL development and adoption where impairment exists.
4. Development of a Basin Management Action Plan, in conjunction with local stakeholders, to allocate, among the local sources of pollution, reductions necessary to meet the TMDL.
5. Implementation of the TMDL.

As noted, the sequence illustrated below generally will take five years and will be repeated continuously to refine what is known about the basin and evaluate success in restoring impaired waters.



DEP District	Group 1 Basins	Group 2 Basins	Group 3 Basins	Group 4 Basins	Group 5 Basins
NW	Ochlockonee-St. Marks	Apalachicola-Chipola	Choctawhatchee-St. Andrews Bay	Pensacola Bay	Perdido Bay
NE	Suwannee	Lower St. Johns	N/A	Nassau-St. Marys	Upper East Coast
Central	Ocklawaha	Middle St. Johns	Upper St. Johns	Kissimmee	Indian River Lagoon
SW	Tampa Bay	Tampa Bay Tributaries	Sarasota Bay-Peace-Myakka	Withlacoochee	Springs Coast
S	Everglades West Coast	Charlotte Harbor	Caloosahatchee	Fisheating Creek	Florida Keys
SE	Lake Okeechobee	St. Lucie-Loxahatchee	Lake Worth Lagoon-Palm Beach Coast	Southeast Coast-Biscayne Bay	Everglades

To date, DEP has held formal public meetings in each of these basins, with the exception of Perdido Bay, the Florida Keys, and the Everglades, which are yet to come. There have so far been 136 public meetings in these basins designed to introduce local citizens and other stakeholders to the TMDL program, the watershed management cycle, the way water bodies are evaluated, and what they can do to help protect their local water resources. Some of these meetings, in areas where watershed activities have progressed further, have addressed the results of water quality monitoring and which waters appear to be impaired. Public meetings also have taken place when information to prepare a draft TMDL has been compiled and is ready for discussion. Every TMDL is subject to public hearing before it is adopted. During the long-term (sometimes one to two years) expected to develop the basin plan after adoption of a TMDL, more public meetings will be conducted to keep watershed stakeholders and interested parties informed and involved.

Listing of Impaired Waters

Water Body Classifications and Water Quality Criteria

The foundation for identifying and prioritizing impaired surface waters is Florida's water body classification and water quality standards system. "Impaired waters" are those that do not meet standards as a result of human-created pollutants. The state's water quality standards system was initiated in the early 1970s in response to passage of the federal Clean Water Act and, generally, was developed to safely authorize discharges from obvious "point sources" of pollution like domestic and industrial wastewater facilities. In the early 1970s, there was no clear understanding of how, comprehensively, to evaluate overall water quality or protect whole aquatic ecosystems from all sources of pollution, which are the exact objectives of the Watershed Restoration Act of 1999. This contradiction of older standards and newer mandates has led to a number of dilemmas, among them:

- Most Florida waterways are identified as Class III, "fishable and swimmable." It has become clear in recent years that this classification, which includes rivers, streams, lakes and estuaries as well as wetlands, urban drainage ditches, urban lakes, and canal systems, is too broad. Some of these water bodies or water body types never did and indeed should not be expected to provide the same quality of "swimmable or fishable" recreation as others.
- Florida's freshwater dissolved oxygen (DO) criterion requires oxygen levels in surface waters to be at or above five milligrams per liter (5 mg/l) *at all times at all places*, ostensibly in an effort to protect water quality. In fact, wetlands, springs, drainage ditches, and canals do not typically exist, whether naturally or as artificially created, with DO levels as high as 5 mg/l, often because of the significant inflow of low-oxygen ground water into surface waters. In effect, some water bodies are being required to meet unnatural conditions or conditions that are not otherwise caused by pollutants.
- The state's criteria for nutrients (nitrogen and phosphorous, for example) are narrative rather than numeric, which on occasion has led to differing interpretations by third parties on DEP's determination as to whether a water body is impaired by excessive nutrients.
- As noted in the introduction to this section, water quality standards were developed primarily to address regulation of point sources of pollution and they are applied,

typically, at the end of the discharge pipe, to be met at all times. It is not possible to apply this same logic to entire rivers, lakes, streams, estuaries, and other surface waters, the conditions of which vary naturally over distance and time, and which simply will not meet every water quality criterion at every moment in every location.

Florida's existing surface water quality standards are the benchmark against which DEP must measure water body impairment and determine whether TMDLs, and subsequent clean-up actions, are necessary. The circumstances just outlined have required DEP to list as impaired some water bodies that likely are not, in fact, impaired. The result is that DEP may have to develop and adopt unnecessary TMDLs, which others will have to expend significant money to implement, wasting limited resources and diverting attention from real water quality problems.

This dilemma is further compounded by the fact that the initial (1998) impaired waters listing for Florida was based on the state's 1996 Florida Water Quality Assessment [or 305(b) Report]. That federally required report was prepared using the best information available at the time to generally characterize the quality of Florida's waters; it was not designed to establish TMDL priorities and some of the older data are clearly inadequate for this purpose. Nevertheless, the 1998 list was incorporated into a 1999 Consent Decree between the Environmental Protection Agency and Earthjustice—to which Florida was not a party—that imposed a 13-year schedule for development of more than 2,000 specific TMDLs in Florida.

In passing the Florida Watershed Restoration Act of 1999, the legislature prohibited use of the 1998 impaired waters list for any regulatory purpose and further required DEP to develop and adopt by rule a scientific methodology for developing future impaired waters lists. These were reasonable and defensible requirements; however, DEP must cope with the legacy of the 1998 list and the fact that the EPA bases its review of and challenges to Florida's subsequent impaired waters lists on that original list and on its posture with respect to the Consent Decree.

Florida's Impaired Waters Rule

On April 16, 2001 Florida's Environmental Regulation Commission approved chapter 62-303, F.A.C., Identification of Impaired Surface Waters. The rule was developed after extensive consultation with a wide range of expert outside advisors and vetted in a variety of public workshops and hearings and coordinated with EPA Region 4 to assure it would be consistent with federal law. The rule has been under litigation since adoption, having survived intact all legal challenges and appeals at the state level. (These challenges have all come from the same entity, the Clean Water Network.) One federal case remains pending. Beyond this legal support, the rule's scientific approach to identifying and listing impaired waters was conceptually endorsed by the National Academy of Sciences in 2001 after its review of the nationwide TMDL program required by Congress. [See *Assessing the TMDL Approach to Water Quality Management* (2001), available at <http://books.nap.edu/catalog/10146.html>.]

The rule provides for developing a **planning list**, to include those waters that may not be meeting water quality standards but for which sufficient scientific data are not available to judge; and a **verified list**, to include waters determined based on sufficient, reliable data to be failing water quality standards because of specific pollutants from human sources. The verified lists are

publicly adopted, subject to administrative challenge, for each of the 29 basins into which DEP has divided the state as part of its watershed management cycle. TMDLs must be developed and adopted for each instance of impairment identified on the verified lists. DEP must submit the verified lists to EPA for approval. Each water body on the planning list is further monitored to establish whether it truly is impaired. As suggested above, the planning list includes many remnants of the original (1998) impaired waters list.

The fundamental distinction between the planning and verified lists is the availability of reliable water quality data to determine impairment. Where data are absent or unreliable, DEP cannot, by law, list the water as verifiably impaired and must secure additional data. DEP works with Florida's five water management districts and some 70 local governments and other entities throughout Florida that routinely collect ambient water quality data. It is difficult to capture and qualify such a massive amount of information, and DEP is continually working on database improvements to streamline the process and encourage more data collectors to timely upload their data.

Environmental Protection Agency Oversight

As noted in the preceding section, DEP coordinated development of the Impaired Waters Rule with EPA and, in fact, secured EPA's written support. However, in the more than three years of impaired waters list development since then, EPA has repeatedly added waters to the state's verified list, for which TMDLs must then be completed. EPA has added waters to Florida's verified list, among other instances, when:

- DEP has been unable to identify a causative (man-induced) pollutant and for which the water quality condition may be natural;
- When DEP has determined data to be insufficient to warrant a conclusive determination but EPA has concluded otherwise; and
- Based on EPA's interpretation of information from the federal Food and Drug Administration's shellfish sanitation program that is inconsistent with Florida's interpretation of the causes of impairment.

DEP has been negotiating these complicated issues with EPA for three years, with incremental progress to date, but negotiations continue in good faith. On a hopeful note, Florida is evaluating potential changes to its water quality standards, related to the issues identified in "Water Body Classifications and Water Quality Criteria," above, to better distinguish naturally occurring conditions from true pollution likely, which should resolve some of the disagreements.

In the meantime, it must be acknowledged that the differences between DEP and EPA over the listing process will confuse the public and regulated entities because of its occasional, but not insignificant, inconsistency. When EPA adds waters to Florida's list, it creates an expectation that specific water quality improvements will have to be financed and undertaken in those areas when, in fact, the data may not support that conclusion. The whole purpose of DEP's planning list is to avoid this circumstance, to create contingent waters in need of further data gathering and investigation to resolve uncertainties, and to avoid diverting attention away from waters that are demonstrably impaired and in need of restoration.

Development of TMDLs

Impaired Waters Listing

DEP divided the state into 29 basins to manage the evaluation of water body impairment, the development and implementation of TMDLs, and the assessment of progress. To date, DEP has adopted Verified Lists of Impaired Waters for Groups 1 and 2, with Group 3 now in development. The primary pollutants that are causing the impairment of Florida's surface waters include:

- *Nutrients*, such as nitrogen and phosphorus, which promote the growth of algae and other aquatic plants that cause wide swings in oxygen levels and lead to fish kills and damaged habitat.
- *Bacteria*, which may threaten public health and can close waters to swimming or shellfish harvesting.
- *Metals*, such as iron, silver, copper, cadmium, and zinc that adversely affect the health and reproduction of aquatic organisms.
- *Mercury*, based largely on the existence of Department of Health fish consumption advisories. (It generally is agreed that mercury is predominately the result of atmospheric deposition, but the relative contributions of local, regional and even global sources remains the subject of debate.)

The table below lists the pollutants most often identified as responsible for causing water body impairment during the development of the Groups 1 and 2 lists.

Pollutants	Number of Water Body Segments Impaired
Nutrients	373 segments
Bacteria	236 segments
Metals	61 segments
Mercury (fish tissue)	40 segments

There is no reason to expect a significant difference in the relative relationships among pollutants after DEP completes evaluation of the basins in Groups 3, 4 and 5.

TMDLs Adopted to Date

DEP has adopted, by rule, 52 TMDLs as of December 2004. Another 61 TMDLs have been proposed or are in draft. The status of these TMDLs is identified in Attachment 1. As outlined earlier, Florida law authorizes DEP to adopt TMDLs only for waters verified as impaired based on specific scientific evidence. However, the Consent Decree between EPA and Earthjustice requires EPA to ensure timely development of all TMDLs identified in the decree, including many that Florida would not adopt under state law because documentation is problematic or inconclusive. For these waters, including any waters that EPA adds to Florida's impaired waters list, the federal agency must propose (if not necessarily adopt) TMDLs. As suggested during the specific discussion of impaired waters listing, this complicated relationship creates confusion for the public and regulated entities and makes implementation of the TMDL program difficult.

TMDL Development Problems

Beyond the conundrum just outlined, with EPA requiring waters to be listed as impaired that DEP cannot list pursuant to Florida law, several other problems have arisen associated with the development and adoption of TMDLs. These include:

- The EPA-Earthjustice Consent Decree’s binding schedule for TMDL development makes it difficult to conduct the comprehensive watershed assessments necessary to establish TMDLs, even for some water bodies DEP has identified as impaired. Consequently, DEP must sometimes choose to adopt premature TMDLs to enable EPA to comport with the Consent Decree or defer to EPA to develop these TMDLs—which DEP will later have to redo and adopt pursuant to the requirements of Florida law.
- On a related note, even when sufficient time exists to establish the assimilative capacity of a water body, the timeframes in the federal Consent Decree often preclude developing an appropriate allocation of pollutant load reductions as part of the TMDL, as required by EPA. More time often is needed to accurately determine loadings from all point and nonpoint sources of pollution within a watershed and work with basin stakeholders to develop and allocate the reasonable and equitable reductions required by state law.
- TMDLs are required only to abate pollutants from anthropogenic (man-made) activities. Bacteria and dissolved oxygen levels in certain Florida waterways may appear to reflect impairment upon superficial consideration but, in fact, represent naturally occurring conditions. Ideally, a water body would not be listed as impaired until after the apparent “pollution” has been determined to be man-made. The Consent Decree deadlines once again make it impossible in some instances to conduct this necessary level of evaluation until after a TMDL has been adopted, whether by EPA or DEP.

The State of Florida cannot, of course, change the federal Consent Decree to make its schedule comport with the Florida Watershed Restoration Act. However, revisions DEP is considering to Florida’s water quality standards, through rulemaking, should relieve some of the complications just identified. DEP also recommends that consideration be given to authorizing DEP to adopt all or part of a Basin Management Action Plan (discussed in more detail, below) to allow a final TMDL allocation to be developed as part of the basin plan rather than at the time of initial TMDL adoption, when adequate time may not be available.

TMDL Allocations

Once a TMDL for an impaired water body has been developed, the allowable pollutant loads and necessary load reductions from point and nonpoint source dischargers must be determined so that their implementation, in conjunction with other management and restoration activities, will enable attainment of water quality standards. Many factors must, by law, be considered in these allocations, among them: existing treatment and management practices; available treatment technologies and other pollution reduction measures; economic factors, including cost-benefit considerations; and reasonable timeframes necessary to implement pollution reductions.

Pollutant Load Allocations

Because a TMDL represents the assimilative capacity of a surface water body to withstand pollutants, it must identify how many pounds of specific pollutants can be “discharged” while still allowing the water body to meet its designated uses. In concept, at least, the reasonable and equitable allocation of the pollutant load reductions required to meet the TMDL is part of its implementation phase. However, because EPA requires the initial TMDL to include such allocations, DEP must sometimes establish a preliminary (and often premature) allocation when the TMDL is first adopted, refining it later through the development of a local Basin Management Action Plan.

The preliminary allocation, then, is typically broad, addressing individual point sources (wastewater treatment facilities, for example) but treating nonpoint sources (agriculture, urban stormwater, septic tanks, etc.) as a whole, with no distinction among these nonpoint sources. In some cases, the initial allocation will be too broad to be useful. The final allocation arrived at through the local Basin Management Action Planning process is necessary to establish the fair and equitable allocation of pollutant load reductions and must identify individual point source dischargers and each nonpoint source discharger or category of dischargers.

Through this basin planning process, DEP and local stakeholders collect the additional data necessary to refining pollutant loading estimates. Better information allows full consideration of the reasonable and equitable factors for allocating pollutant load reductions specified in the Watershed Restoration Act. Because the final allocation developed as part of the Basin Management Action Plan may differ from the preliminary allocation included in the initially adopted TMDL, consideration should be given to modifying the Watershed Restoration Act to allow formal adoption of all or part of a Basin Management Action Plan in the event substantive changes to an initial TMDL or its allocation are necessary.

Allocation Report to the Legislature

The approach DEP is taking in the pollutant load allocation process is based largely on the issues summarized in the agency’s January 2001 *“Report to the Governor and Legislature on the Allocation of Total Maximum Daily Loads in Florida.”* The report outlined several critical considerations that the agency has been implementing to the extent possible under current law:

- *Level the playing field* between point and nonpoint sources of pollution. Point sources have spent billions of dollars over the past 25 years to provide high levels of treatment or eliminate their discharges to surface waters and reuse (reclaim) the water. There is no equivalent record of success with nonpoint sources. Therefore, DEP has focused initial pollutant load reduction strategies on nonpoint sources.
- Pollutant sources generally should *reduce in proportion to what they contribute*.
- Pollutant loadings should be *reduced in the most cost-effective manner*.

In order to promote the most cost-effective opportunities to accomplish necessary pollution reductions in a basin, consideration must be given to pollutant trading. Trading is based on the fact that sources in a watershed may confront very different costs to control the same pollutant.

Trading programs allow facilities facing higher pollution control costs to meet pollution reduction obligations by purchasing environmentally equivalent (or superior) reductions from other sources at lower cost, thus achieving equal or better water quality protection at a lower overall cost. Given the disparities between point and nonpoint sources of pollution, both in characteristics and resources, it is unlikely that the Watershed Restoration Act can be fully realized without an equitable and rational system of pollutant trading. Such trading is not currently authorized by Florida law although it is envisioned. DEP has engaged a Pollutant Trading Policy Advisory Committee to evaluate the opportunities and pitfalls of trading. Consideration should be given to amending the law to authorize DEP to adopt pollutant trading requirements, by rule, after reporting to the legislature and Governor the results of its evaluation.

Basin Management Action Plans

A Basin Management Action Plan, like the implementation plan developed for Lake Okeechobee discussed below (“TMDL Implementation”), sets forth the various projects, programs, and other activities to be undertaken by basin stakeholders to reduce pollutant loading and restore the beneficial uses of an impaired water body. It refines the pollutant load allocations that may only generally have been addressed in the TMDL and equitably allocates the reductions among the maximum possible number of pollutant sources in the basin. The plan attempts to integrate appropriate management strategies and provide for phased implementation of these strategies to promote timely, cost-effective actions.

Plans must be developed with the active participation of basin stakeholders, including affected point and nonpoint source dischargers, representatives from local governments, the Department of Agriculture and Consumer Services, agricultural commodity groups, the local water management district, area businesses and industries, homeowner groups, and environmental groups. It is this stakeholder involvement that must achieve buy-in for the often extensive, expensive actions that will have to be undertaken to reduce pollutant loadings and restore water quality. Because stakeholder involvement—and commitment to act—is essential, DEP already has devoted considerable staff and time and resources in conducting nearly 300 formal basin meetings and presentations along with hundreds of other contacts with individuals, elected officials, utility managers, farmers, environmental groups, and professional organizations. Beyond laying out specific actions that are necessary to improve water quality and agreeing on responsibilities, these meetings are designed to identify and energize local leaders who will motivate others to act.

TMDL Implementation

Regulated vs. Unregulated Sources of Pollution

In using the Basin Management Action Planning process to establish refined pollutant load allocations and identify the responsible parties for bringing about reductions, it is critical to distinguish between regulated and unregulated sources of those pollutants. Regulated sources, which are subject to permitting or other similar authorizations, typically are “point sources,” those discharges to surface waters typically having a continuous flow via a discrete conveyance, such as a pipe—domestic and industrial wastewater treatment facilities, as examples. On the

other hand, “nonpoint sources” of pollutants are characterized as intermittent, rainfall driven, and diffuse, associated with everyday activities, including runoff from urban areas, agriculture, forestry, mining, septic tanks, and atmospheric deposition. Historically, these nonpoint source activities have not been regulated. Nonpoint sources also include pollution resulting from the things people do every day, often without thinking, like mismanaging household pesticides, fertilizers, and yard trash, and wasting water.

More recently, some formerly nonpoint pollution sources have been redefined by Congress as point sources, subject to regulation under the EPA’s National Pollutant Discharge Elimination System (NPDES) Program, the same federal program that regulates wastewater treatment facility discharges to surface waters. These sources include urban stormwater discharges from larger local government master drainage systems, stormwater from construction sites over one acre and certain industry sectors, and various animal feeding operations.

Wastewater Permits

Implementation of TMDLs for wastewater facilities should be fairly straightforward, with specific permit effluent limits based on the pollutant loadings established in the TMDL or Basin Management Action Plan. Whether to impose these limits immediately or wait until the facility’s permit comes up for renewal will require case-by-case decisions. In general, permits would be “re-opened” to include these new limits if they have more than three years before expiration or at any time public health issues are at stake.

Regardless of when the facility-specific load allocations are incorporated into wastewater permits, DEP recognizes that permittees will need reasonable amounts of time to come into compliance with new requirements. The time needed for design, financing, and construction will be negotiated with permittees as part of the permitting process and in conjunction with development of the Basin Management Action Plan. Compliance will be required according to a prescribed schedule.

As noted above, facility-specific load allocations in a Basin Management Action Plan (or TMDL) likely will be incorporated directly into wastewater permits. Where the exact same effluent limits are imposed in the different documents (basin plan and permit, for example), it is inappropriate to make the limits subject to administrative challenge both times. DEP recommends consideration be given to clearly establishing the legal relationship between the basin plan and permits, specifically to prevent third party administrative challenges to permit revisions that implement the exact requirements set forth in a basin plan that already has been adopted and subject to challenge. (Neither DEP nor regulated entities should have to defend the exact same action twice.) All other aspects of the permit would, of course, remain subject to challenge under chapter 120, F.S.

Stormwater Permits

Unlike wastewater facilities, municipal stormwater discharges do not lend themselves to effluent limits achievable through standard treatment processes. Instead, TMDL implementation and compliance with NPDES stormwater permits will depend on the use of stormwater treatment

best management practices, which will be set forth in the Basin Management Action Plan. DEP will require in any related NPDES permit that municipal stormwater dischargers undertake the activities specified in the relevant basin plan. As with wastewater facilities, where the exact same requirements are imposed in a stormwater permit and Basin Management Action Plan, they should be subject to challenge only once.

Nonpoint, Non-Regulated Sources

Nonpoint sources of pollution generally are agreed to be the largest contributor of pollutants to Florida's surface and ground waters. Nonpoint source pollution is created either by rainfall flushing the pollutants from the landscape (stormwater runoff) or by the leaching of pollutants through the soil into the ground water. Typical sources include agricultural and silvicultural lands; erosion and sedimentation from unvegetated lands, construction sites and unpaved roads; onsite sewage treatment and disposal systems, such as septic tanks; and uncontrolled urban stormwater runoff.

Florida has been a national leader in addressing nonpoint sources of pollution for more than 20 years, through both non-regulatory and a limited repertoire of regulatory mechanisms. As noted above, certain municipal stormwater systems, agricultural sites, and industry sectors now are subject to permitting. However, most agricultural and forestry operations, older developments, and many urban areas remain exempt from effective stormwater treatment regulation. Traditional regulation of some or all of these remaining areas is not necessarily the most effective approach to pollution control, which has led to the development of an ever-increasing catalog of best management practices and mechanisms for applying them, which are discussed in some detail below.

The Lake Okeechobee Protection Plan

The Lake Okeechobee Protection Plan is the first TMDL implementation plan to be developed in full and where large-scale implementation is underway; it is a cooperative effort among DEP, the Department of Agriculture and Consumer Services, the South Florida Water Management District, the Natural Resources Conservation Services, and stakeholders in the Lake Okeechobee watershed. The Lake Okeechobee Protection Plan sets forth the myriad projects (public works, best management practices, and others) needed to reduce phosphorus loadings to the lake and addresses a watershed covering more than 3.4 million acres of citrus, sugar cane, dairy, row crops, pastureland, sod farms, woodlands, and urban environment. The total estimated cost of the plan is well over \$800 million, with a little more than half that amount anticipated to be funded through the Comprehensive Everglades Restoration Plan.

Development of Best Management Practices

The Watershed Restoration Act provides authority and guidance to DEP, the Department of Agriculture and Consumer Services and the water management districts to develop and adopt, by rule, best management practices to address both agricultural and non-agricultural sources of surface water pollution. Best management practices—generally, site-specific or activity-specific designs, technique, or other measures that reduce runoff of specific pollutants—are essential to

effective implementation of TMDLs, especially for non-point sources of pollution. There are many different types of best management practices, both structural and non-structural, and they are developed alone or in combination to deal with specific circumstances.

The Act also requires DEP to verify the adequacy of these best management practices at achieving water quality standards. In exchange for appropriately implementing adopted and verified practices, agricultural operations are granted a “presumption of compliance” with water quality standards for the specific “pollutant(s) of concern” along with a limited “waiver of liability” for any practices that unexpectedly prove not to be effective in protecting water quality with respect to that pollutant(s). And, where the measures, in fact, prove ineffective, the Act requires the state agencies to re-evaluate and improve the best management practices.

Agricultural Activities

The Florida Department of Agriculture and Consumer Services, in coordination with DEP, has concentrated its extensive efforts on developing agricultural best management practices in areas where waters are impaired and for priority agricultural sectors, like citrus, cow/calf operations, and containerized nurseries. It has worked with producers and experts at the University of Florida’s Institute of Food and Agricultural Sciences (IFAS) to identify practices or combinations of practices that are likely to have the biggest water quality benefit while balancing technological and economical feasibility.

Working with the affected agricultural sectors to determine which measures are practical and economical increases the likelihood that agricultural operations will buy into the process and implement the practices—the nature of the water quality problems must be clear as must the fact that it is in operators’ best long-term interests, both economic and social, to reduce pollution. Federal and state cost-share assistance is also critical to defraying the significant capital costs associated with some measures. Buy-in is essential given that agricultural operations are largely unregulated at this time and success is dependent on cooperative implementation.

This strategy to address pollution from agricultural sources has made tremendous progress over the last five years. The Department of Agriculture and Consumer Services has successfully developed a broad range of best management practices and, working with the various commodity groups, is securing commitments to implement them. Funding the implementation of these practices—leveraging private and state resources to secure federal money—remains a significant challenge although, here again, progress is being made and the Department of Agriculture and Consumer Services has invested millions of dollars in these efforts. In the end, the key will be whether, over the long term, agricultural operators successfully operate and maintain verified best management established in each Basin Management Action Plan.

Non-Agricultural Activities

DEP has been working with the water management districts, local governments, the development community, the landscaping and golf course communities, and the state’s universities to improve existing urban stormwater treatment best management practices and develop new ones. Indeed, over the last five years, DEP has funded nearly \$26 million in stormwater treatment projects in

an effort to develop better practices that can be deployed statewide; the total cost of these projects has been more than \$65 million. Research is ongoing to improve the treatment removal efficiency of traditional urban stormwater practices such as wet detention ponds, especially for nutrients. Other research is investigating the environmental and economic benefits of “green roofs,” which involve more or less complicated soil and vegetation covers to reduce the volume and pollutant loading of runoff, particularly crucial for large footprint developments, industrial warehouses and other large structures. Similarly, research on pervious (permeable) concrete and stormwater reuse is demonstrating the potential for use in more urbanized areas to reduce stormwater volume and pollutants. Research by the Institute of Food and Agricultural Sciences is generating critical data on optimal fertilization and irrigation to maintain turf grass and ornamental landscaping, which currently are major sources of nutrient pollution.

Detailed best management practices for non-agricultural situations have been under development longer than they have in the agricultural arena, at least in terms of their deployment for pollution control. In some instances, they have been incorporated into permitting and other regulatory programs.

Verifying the Effectiveness of Best Management Practices

Best management practices may be as much art as science. That is, given the complexities and varying character of nonpoint sources of pollution, the many different and changing land uses, the range of pollutants involved, and the different types of resources of owners and operators, one size definitely does not fit all. Furthermore, it may take multiple iterations of some measures to achieve success in protecting water quality. For these reasons, verifying the effectiveness of best management practices is critical—both to protect water quality and to avoid unwarranted granting of the presumptions of compliance and waivers of liability contemplated in the Watershed Restoration Act discussed above. Under the law, DEP is responsible for verifying that best management practices protect water quality.

For **agricultural best management practices**, DEP’s verification process is undertaken in conjunction with the Department of Agriculture and Consumer Services. Because of the diversity of Florida’s agricultural industry, there is a wide range of available and evolving best management practices to account for local, regional, and watershed differences as well as commodity differences. Verifying each specific practice in each specific area, or on every farm, simply is not practical or affordable. DEP must be able to employ a generalized verification process using expert assistance to extrapolate from representative circumstances the implications, in terms of effectiveness and feasibility, for deployment of best management practices on a watershed scale. This approach is bolstered by water quality monitoring data gathered before and after implementation to validate success. Any best management practice that proves deficient over time will be reevaluated and modified or replaced.

Unlike agricultural operations, many other nonpoint sources of pollution are at least partially regulated, with **non-agricultural best management practices** being an integral component of that regulation. Data and experience from implementing stormwater treatment regulations for new development over the last 20 years has led to the verification of a number of long-standing stormwater treatment best management practices. However, verifying the effectiveness of some

non-agricultural best management practices has similar limitations to verification of agricultural practices, requiring a generalized rather than site-by-site approach. And, as with all best management practices, appropriate monitoring is critical to evaluating long-term success.

Improving the Implementation of Best Management Practices

As just outlined, best management practices are in various stages of development. A number have been adopted or are nearing adoption. Verification is a complicated and sometimes iterative process. In order to assure that it will be as meaningful as possible, DEP believes changes to the Watershed Restoration Act should be considered to promote a more flexible and effective verification strategy. Furthermore, best management practices must meet the environmental objectives of the TMDL and there must be broad participation among the agricultural community and others to implement them or they will be worthless. For that reason, DEP also believes consideration should be given to making the best management practices and other pollutant loading reductions for non-regulated entities in adopted basin plans legally binding. Entities that fail to live up to commitments in the basin plan should be subject to appropriate sanctions. These changes would help assure that the statutorily required “reasonable and equitable” allocation of pollutant load reductions among all parties, point and non-point source alike, in a given basin has a realistic chance of being achieved. The changes also are necessary to assure EPA that nonpoint sources will be held accountable for their fair share of pollutant load reductions in a basin—without that assurance, it has become clear that EPA will step in and force regulated entities (public utilities, local governments, industrial facilities) to bear the burden of achieving all reductions, no matter how disproportionate that burden.

Summary of Progress and Potential Statutory Changes

The Florida Watershed Restoration Act requires DEP to undertake many actions before on-the-ground implementation of TMDLs can occur: assessments of the state’s waterways; determination and documentation of impairment; adoption of priority lists of impaired waters; development and adoption, by rule, of TMDLs; and negotiation of basin plans to establish and promote the specific actions necessary to achieve the TMDL-based pollution reductions. It is these actions that have consumed DEP’s attention since adoption of the Act in 1999. For that reason, full-scale implementation of the 52 TMDLs adopted to date is just beginning.

As noted in the report, the Lake Okeechobee Protection Plan is the first TMDL implementation plan to be developed in full and where large-scale implementation is underway. While the Lake Okeechobee plan cannot be considered a “typical” TMDL, most TMDLs and their subsequent implementation plans will have a similar, if generally less expensive, flavor. Other large implementation plans that are well on their way to completion involve the Oklawaha and Lower St. Johns River basins. The Lake Okeechobee Protection Plan is available at http://www.sfwmd.gov/org/wrp/wrp_okee/projects/protection_plan.html and offers an example of the kinds of issues that will be addressed in basin plans throughout the state.

It is too early, then, to evaluate in general terms the success of TMDL implementation to date. Demonstrable water quality improvements associated with even the simplest TMDL in the least complicated basin with the fewest sources of pollutants may take years to materialize—a fact

that is not formally recognized in the Watershed Restoration Act. The cyclical watershed management process was established, in part, to account for the long-term—to set TMDL objectives, implement programs to meet them, and evaluate the outcomes on a continual basis.

Statutory Changes for Consideration

This report has summarized implementation of the Watershed Restoration Act of 1999 to date, identifying the difficult but successful beginnings of the TMDL program along with a number of implementation problems encountered along the way. One specific purpose of the report, set forth in the law creating the Watershed Restoration Act, is to make recommendations for statutory changes that would improve the implementation of TMDLs. Various recommendations have been suggested in the report and are summarized below. Consideration should be given to the following:

- Formally recognize the Basin Management Action Plan, set forth the requirements of such a plan, and authorize DEP to adopt all or part of the plan, when appropriate, to make it enforceable and afford affected parties an opportunity to challenge it.
- Authorize the development of a preliminary allocation at the time of TMDL adoption with its refinement in the Basin Management Action Plan, when adequate data have become available, and address the situation where substantive changes take place between the initial TMDL and the necessary final allocations.
- Formally recognize that reducing pollutant loadings to achieve water quality standards may require phased implementation over many years, including multiple permitting cycles, because of the costs and physical requirements to implement wastewater and stormwater treatment infrastructure projects and best management practices.
- Clearly establish the legal relationship between the basin plan and permits, specifically to prevent third party challenges to permit revisions that implement the exact requirements set forth in a basin plan that already has been adopted and subject to challenge; all other aspects of the permit would be subject to challenge. The objective is not to reduce public participation but to pre-empt frivolous challenges to actions that already have been documented and previously subject to challenge.
- Slightly modify the best management practice verification process to make it more flexible and effective.
- Preclude a non-regulated entity that does not appropriately implement best management practices adopted in a basin plan from any presumption of compliance with state water quality standards or a waiver of liability; establish that adopted basin plans are legally binding and any entity that fails to implement its commitments is subject to appropriate sanctions. These changes would promote the “reasonable and equitable” allocation of pollutant load reductions among all parties in a given basin already required in the law.
- Authorize DEP to adopt pollutant trading rules after reporting to the legislature and Governor the results of its evaluation of pollutant trading.

Funding

The last issue to be considered in this report is funding, including operational moneys. The report recommends consideration of statutory changes that would improve the TMDL program;

make implementation more efficient and effective; and reduce the costs regulated entities, local governments, agriculture, other businesses and industries, and Florida's citizens would have to bear to improve water quality in this state. At the same time, those changes would increase DEP's responsibilities, workload and corresponding costs. DEP will be unable to absorb these additional costs within its existing budget. To date, DEP has received non-recurring appropriations in each of three years, as follows:

- 2002-03 - \$2.2 million (no FTE), for impaired waters listing, TMDL development, TDML rule adoption, basin management planning, legal assistance, etc.
- 2003-04 - \$2.2 million (no FTE), for the same responsibilities.
- 2004-05 - \$6.6 million (no FTE), for the same responsibilities plus one-time research and development projects to evaluate Florida's existing water quality standards for bacteria, dissolved oxygen, and nutrients.
- 2005-06 – Pending.

In order to more successfully discharge these obligations, implement the additional recommendations in this report, and fulfill the overall mandates set forth in federal law and the Florida Watershed Restoration Act, consideration should be given to funding beyond Fiscal Year 2005-06. DEP recommends consideration of the following:

- Annual appropriations of \$2.5 million to \$4 million. This amount is substantially less than EPA's estimate of the resources required to implement a Florida-equivalent program but would be sufficient to run a successful baseline program. In general, making such funding available for the program would increase the timeliness of TMDL development and adoption, completion of basin management planning, and implementation of on-the-ground projects to clean up Florida's impaired waters.
- Program funding could continue to come from historical sources (the Water Quality Assurance Trust Fund or Land Acquisition Trust Fund), when moneys are available. General Revenues also could be an appropriate source as this program is statewide, broad in scope, and is intended to achieve a public good (water quality and public health protection).
 - Consideration also could be given to generating new revenues through limited water quality protection fees on materials that lead to pollution and the increased use of which is driven by growth, such as fertilizers, cement, asphalt, and pesticides. Depending on the scope of these fees, funds could be generated not simply for program operation, which is relatively inexpensive, but to finance restoration projects across the state, supplementing the hundreds of millions of dollars of local government and private-sector resources that will be required over time to restore and protect Florida's surface waters.

More information on TMDL funding, including project and operational funding as well as information on potential revenue sources, is included in Attachment 2

Attachment 1

TMDLs: Adopted and Proposed as of December 2004

GROUP NAME	BASIN	LISTED IMPAIRMENT	CAUSATIVE POLLUTANT	% REDUCTION OR WATER QUALITY TARGET	STATUS
OCKLAWAHA	TROUT LAKE	NUTRIENTS	TOTAL PHOSPHORUS	80.0%	Adopted
SUWANNEE	FENHOLLOWAY RIVER AT MOUTH	COLIFORMS	TOTAL COLIFORMS	61.0%	Adopted
LOWER ST. JOHNS	LOWER ST. JOHNS RIVER / FRESH	NUTRIENTS	TOTAL NITROGEN	8,570,260 KG/YR	Adopted
LOWER ST. JOHNS	LOWER ST. JOHNS RIVER / FRESH	NUTRIENTS	TOTAL PHOSPHORUS	500,325 KG/YR	Adopted
LOWER ST. JOHNS	LOWER ST. JOHNS RIVER / MARINE	NUTRIENTS	TOTAL NITROGEN	1,472,984 KG/YR	Adopted
OCKLAWAHA	HATCHET CREEK	IRON	IRON	30.8%	Adopted
OCKLAWAHA	HATCHET CREEK	COLIFORMS	TOTAL COLIFORMS	62.0%	Adopted
OCKLAWAHA	LAKE YALE	NUTRIENTS	TOTAL PHOSPHORUS	10.0%	Adopted
OCKLAWAHA	LAKE YALE CANAL	NUTRIENTS	TOTAL PHOSPHORUS	10.0%	Adopted
OCKLAWAHA	NEWNANS LAKE	NUTRIENTS	TOTAL NITROGEN	74.0%	Adopted
OCKLAWAHA	NEWNANS LAKE	NUTRIENTS	TOTAL PHOSPHORUS	59.0%	Adopted
OCKLAWAHA	ORANGE LAKE	NUTRIENTS	TOTAL PHOSPHORUS	45.0%	Adopted
OCKLAWAHA	PALATLAKAHA RIVER	DISSOLVED OXYGEN	BOD	12.8%	Adopted
OCKLAWAHA	PALATLAKAHA RIVER	DISSOLVED OXYGEN	TOTAL NITROGEN	5.2%	Adopted
OCKLAWAHA	PALATLAKAHA RIVER	DISSOLVED OXYGEN	TOTAL PHOSPHORUS	7.2%	Adopted
OCKLAWAHA	SWEETWATER BRANCH	COLIFORMS	FECAL COLIFORMS	70.0%	Adopted
OCKLAWAHA	TROUT LAKE	NUTRIENTS	TOTAL NITROGEN	60.0%	Adopted
OCKLAWAHA	TUMBLING CREEK	COLIFORMS	FECAL COLIFORMS	74.0%	Adopted
OCKLAWAHA	TUMBLING CREEK	COLIFORMS	TOTAL COLIFORMS	91.0%	Adopted
OCKLAWAHA	LAKE CARLTON	NUTRIENTS	TOTAL PHOSPHORUS	59.0%	Adopted
OCKLAWAHA	OCKLAWAHA RIVER ABOVE DAISY	COLIFORMS	TOTAL COLIFORMS	43.6%	Adopted
OCKLAWAHA	HOGTOWN CREEK	COLIFORMS	FECAL COLIFORMS	51.0%	Adopted
OCKLAWAHA	LAKE APOPKA	DISSOLVED OXYGEN	TOTAL PHOSPHORUS	15.9 METRIC TONS/YR	Adopted
OCKLAWAHA	LAKE APOPKA	NUTRIENTS	TOTAL PHOSPHORUS	15.9 METRIC TONS/YR	Adopted
OCKLAWAHA	LAKE BEAUCLAIR	NUTRIENTS	TOTAL PHOSPHORUS	85.0%	Adopted
OCKLAWAHA	LAKE DORA	NUTRIENTS	TOTAL PHOSPHORUS	67.0%	Adopted
OCKLAWAHA	LAKE EUSTIS	NUTRIENTS	TOTAL PHOSPHORUS	43.0%	Adopted

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GROUP NAME	BASIN	LISTED IMPAIRMENT	CAUSATIVE POLLUTANT	% REDUCTION OR WATER QUALITY TARGET	STATUS
OCKLAWAHA	LAKE GRIFFIN	NUTRIENTS	TOTAL PHOSPHORUS	66.0%	Adopted
OCKLAWAHA	HELENA RUN	NUTRIENTS	TOTAL PHOSPHORUS	32.0%	Adopted
OCKLAWAHA	LAKE HARRIS	NUTRIENTS	TOTAL PHOSPHORUS	32.0%	Adopted
OCKLAWAHA	LITTLE LAKE HARRIS	NUTRIENTS	TOTAL PHOSPHORUS	32.0%	Adopted
OCKLAWAHA	LAKE WAUBERG	NUTRIENTS	TOTAL NITROGEN	2062 LBS/YR	Adopted
OCKLAWAHA	LAKE WAUBERG	NUTRIENTS	TOTAL PHOSPHORUS	374 LBS/YR	Adopted
TAMPA BAY TRIBUTARIES	SPARKMAN BRANCH	COLIFORMS	FECAL COLIFORMS	59.3%	Adopted
TAMPA BAY TRIBUTARIES	SPARKMAN BRANCH	COLIFORMS	TOTAL COLIFORMS	86.1%	Adopted
TAMPA BAY TRIBUTARIES	HILLSBOROUGH RIVER	COLIFORMS	TOTAL COLIFORMS	62.3% (WET)	Adopted
TAMPA BAY TRIBUTARIES	HILLSBOROUGH RIVER	COLIFORMS	TOTAL COLIFORMS	26.5% (DRY)	Adopted
TAMPA BAY TRIBUTARIES	HILLSBOROUGH RIVER	COLIFORMS	FECAL COLIFORMS	51.2%	Adopted
TAMPA BAY TRIBUTARIES	HILLSBOROUGH RIVER	COLIFORMS	TOTAL COLIFORMS	52.9%	Adopted
TAMPA BAY TRIBUTARIES	LAKE HUNTER	NUTRIENTS	TOTAL NITROGEN	80.0%	Adopted
TAMPA BAY TRIBUTARIES	LAKE HUNTER	NUTRIENTS	TOTAL PHOSPHORUS	80.0%	Adopted
TAMPA BAY TRIBUTARIES	BAKER CREEK	COLIFORMS	FECAL COLIFORMS	44.4%	Adopted
TAMPA BAY TRIBUTARIES	BAKER CREEK	COLIFORMS	TOTAL COLIFORMS	41.5%	Adopted
TAMPA BAY TRIBUTARIES	FLINT CREEK	COLIFORMS	FECAL COLIFORMS	51.2%	Adopted
TAMPA BAY TRIBUTARIES	FLINT CREEK	COLIFORMS	TOTAL COLIFORMS	41.5%	Adopted
TAMPA BAY TRIBUTARIES	BLACKWATER CREEK	COLIFORMS	FECAL COLIFORMS	71.6% (WET)	Adopted
TAMPA BAY TRIBUTARIES	BLACKWATER CREEK	COLIFORMS	FECAL COLIFORMS	58.1% (DRY)	Adopted
TAMPA BAY TRIBUTARIES	BLACKWATER CREEK	COLIFORMS	TOTAL COLIFORMS	62.6% (WET)	Adopted
TAMPA BAY TRIBUTARIES	BLACKWATER CREEK	COLIFORMS	TOTAL COLIFORMS	48% (DRY)	Adopted
TAMPA BAY TRIBUTARIES	CYPRESS CREEK	COLIFORMS	TOTAL COLIFORMS	57.0%	Adopted
TAMPA BAY TRIBUTARIES	NEW RIVER	COLIFORMS	FECAL COLIFORMS	35.3%	Adopted
TAMPA BAY TRIBUTARIES	NEW RIVER	COLIFORMS	TOTAL COLIFORMS	43.6%	Adopted
OCKLAWAHA	ALACHUA SINK	NUTRIENTS	TOTAL NITROGEN	NO TMDL SET	NEW DRAFT 1/05
OCKLAWAHA	OCKLAWAHA RIVER AB LAKE OCK.	DISSOLVED OXYGEN	TOTAL PHOSPHORUS	NO TMDL SET	NEW DRAFT 1/05
OCKLAWAHA	OCKLAWAHA RIVER AB LAKE OCK.	NUTRIENTS	TOTAL PHOSPHORUS	NO TMDL SET	NEW DRAFT 1/05

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TMDLs: Adopted and Proposed as of December 2004

GROUP NAME	BASIN	LISTED IMPAIRMENT	CAUSATIVE POLLUTANT	% REDUCTION OR WATER QUALITY TARGET	STATUS
OCKLAWAHA	OCKLAWAHA RIVER ABOVE DAISY	BOD	BOD	NO TMDL SET	NEW DRAFT 1/05
OCKLAWAHA	OCKLAWAHA RIVER ABOVE DAISY	DISSOLVED OXYGEN	TOTAL PHOSPHORUS	NO TMDL SET	NEW DRAFT 1/05
OCKLAWAHA	OCKLAWAHA RIVER ABOVE DAISY	NUTRIENTS	TOTAL PHOSPHORUS	NO TMDL SET	NEW DRAFT 1/05
OCKLAWAHA	OCKLAWAHA RIVER/SUNNYHILL	BOD	BOD	NO TMDL SET	NEW DRAFT 1/05
OCKLAWAHA	OCKLAWAHA RIVER/SUNNYHILL	DISSOLVED OXYGEN	TOTAL PHOSPHORUS	NO TMDL SET	NEW DRAFT 1/05
OCKLAWAHA	OCKLAWAHA RIVER/SUNNYHILL	NUTRIENTS	TOTAL PHOSPHORUS	NO TMDL SET	NEW DRAFT 1/05
LAKE OKEECHOBEE	CHANDLER HAMMOCK SLOUGH	DISSOLVED OXYGEN	TOTAL PHOSPHORUS	0.159MG/L	PROPOSED
LAKE OKEECHOBEE	CHANDLER HAMMOCK SLOUGH	NUTRIENTS	TOTAL PHOSPHORUS	0.159MG/L	PROPOSED
OCKLAWAHA	CROSS CREEK	BOD	TOTAL NITROGEN	SEE LOCHLOOSA	PROPOSED
OCKLAWAHA	CROSS CREEK	DISSOLVED OXYGEN	TOTAL NITROGEN	SEE LOCHLOOSA	PROPOSED
OCKLAWAHA	CROSS CREEK	NUTRIENTS	TOTAL NITROGEN	SEE LOCHLOOSA	PROPOSED
OCKLAWAHA	CROSS CREEK	BOD	TOTAL PHOSPHORUS	SEE LOCHLOOSA	PROPOSED
OCKLAWAHA	CROSS CREEK	DISSOLVED OXYGEN	TOTAL PHOSPHORUS	SEE LOCHLOOSA	PROPOSED
OCKLAWAHA	CROSS CREEK	NUTRIENTS	TOTAL PHOSPHORUS	SEE LOCHLOOSA	PROPOSED
TAMPA BAY	DELANEY CREEK	COLIFORMS	TOTAL COLIFORMS	56.6%	PROPOSED
TAMPA BAY	DELANEY CREEK	COLIFORMS	FECAL COLIFORMS	60.8%	PROPOSED
TAMPA BAY	DELANEY CREEK	DISSOLVED OXYGEN	BOD	72.0%	PROPOSED
TAMPA BAY	DELANEY CREEK	DISSOLVED OXYGEN	TOTAL NITROGEN	72.0%	PROPOSED
TAMPA BAY TRIBUTARIES	GAMBLE CREEK	COLIFORMS	FECAL COLIFORMS	31.2%	PROPOSED
TAMPA BAY TRIBUTARIES	GAMBLE CREEK	COLIFORMS	TOTAL COLIFORMS	29.0%	PROPOSED
TAMPA BAY TRIBUTARIES	GAP CREEK	COLIFORMS	FECAL COLIFORMS	43.3%	PROPOSED
LAKE OKEECHOBEE	HENRY CREEK	DISSOLVED OXYGEN	TOTAL PHOSPHORUS	0.159MG/L	PROPOSED
LAKE OKEECHOBEE	HENRY CREEK	NUTRIENTS	TOTAL PHOSPHORUS	0.159MG/L	PROPOSED
APALACHICOLA - CHIPOLA	HUCKLEBERRY CREEK	COLIFORMS	FECAL COLIFORMS	68.3%	PROPOSED
TAMPA BAY TRIBUTARIES	LAKE THONOTOSASSA	UN-IONIZED AMMONIA	TOTAL NITROGEN	65,596 KG/YEAR	PROPOSED
LAKE OKEECHOBEE	LETTUCE CREEK	DISSOLVED OXYGEN	TOTAL PHOSPHORUS	0.159MG/L	PROPOSED
LAKE OKEECHOBEE	LETTUCE CREEK	NUTRIENTS	TOTAL PHOSPHORUS	0.159MG/L	PROPOSED
OCKLAWAHA	LOCHLOOSA LAKE OUTLET	NUTRIENTS	TOTAL NITROGEN	38.8%	PROPOSED
OCKLAWAHA	LOCHLOOSA LAKE OUTLET	NUTRIENTS	TOTAL PHOSPHORUS	60.0%	PROPOSED

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GROUP NAME	BASIN	LISTED IMPAIRMENT	CAUSATIVE POLLUTANT	% REDUCTION OR WATER QUALITY TARGET	STATUS
TAMPA BAY	LONG BRANCH	COLIFORMS	FECAL COLIFORMS	56.5%	PROPOSED
TAMPA BAY	LONG BRANCH	COLIFORMS	TOTAL COLIFORMS	44.2%	PROPOSED
TAMPA BAY	LONG BRANCH	DISSOLVED OXYGEN	BOD	70.0%	PROPOSED
TAMPA BAY	LONG BRANCH	DISSOLVED OXYGEN	TOTAL NITROGEN	70.0%	PROPOSED
TAMPA BAY TRIBUTARIES	LOWER SWEETWATER CREEK	COLIFORMS	FECAL COLIFORMS	62.3%	PROPOSED
TAMPA BAY TRIBUTARIES	LOWER SWEETWATER CREEK	COLIFORMS	TOTAL COLIFORMS	62.4%	PROPOSED
TAMPA BAY TRIBUTARIES	LOWER SWEETWATER CREEK	NUTRIENTS	TOTAL NITROGEN	20.0%	PROPOSED
TAMPA BAY TRIBUTARIES	LOWER SWEETWATER CREEK	DISSOLVED OXYGEN	TOTAL NITROGEN	20.0%	PROPOSED
TAMPA BAY	MCKAY BAY	DISSOLVED OXYGEN	TOTAL NITROGEN	5.7%	PROPOSED
TAMPA BAY	MCKAY BAY	NUTRIENTS	TOTAL NITROGEN	5.7%	PROPOSED
LAKE OKEECHOBEE	MOSQUITO CREEK	DISSOLVED OXYGEN	TOTAL PHOSPHORUS	0.159MG/L	PROPOSED
LAKE OKEECHOBEE	MOSQUITO CREEK	NUTRIENTS	TOTAL PHOSPHORUS	0.159MG/L	PROPOSED
LAKE OKEECHOBEE	MYRTLE SLOUGH	DISSOLVED OXYGEN	TOTAL PHOSPHORUS	0.159MG/L	PROPOSED
LAKE OKEECHOBEE	MYRTLE SLOUGH	NUTRIENTS	TOTAL PHOSPHORUS	0.159MG/L	PROPOSED
LAKE OKEECHOBEE	NUBBIN SLOUGH	DISSOLVED OXYGEN	TOTAL PHOSPHORUS	0.159MG/L	PROPOSED
LAKE OKEECHOBEE	NUBBIN SLOUGH	NUTRIENTS	TOTAL PHOSPHORUS	0.159MG/L	PROPOSED
LAKE OKEECHOBEE	OTTER CREEK	DISSOLVED OXYGEN	TOTAL PHOSPHORUS	0.159MG/L	PROPOSED
LAKE OKEECHOBEE	OTTER CREEK	NUTRIENTS	TOTAL PHOSPHORUS	0.159MG/L	PROPOSED
TAMPA BAY	ROOSEVELT DRAIN	COLIFORMS	FECAL COLIFORMS	66.7%	PROPOSED
LAKE OKEECHOBEE	S-135	DISSOLVED OXYGEN	TOTAL PHOSPHORUS	0.159MG/L	PROPOSED
LAKE OKEECHOBEE	S-135	NUTRIENTS	TOTAL PHOSPHORUS	0.159MG/L	PROPOSED
LAKE OKEECHOBEE	TAYLOR CREEK	DISSOLVED OXYGEN	TOTAL PHOSPHORUS	0.159MG/L	PROPOSED
LAKE OKEECHOBEE	TAYLOR CREEK	NUTRIENTS	TOTAL PHOSPHORUS	0.159MG/L	PROPOSED
TAMPA BAY TRIBUTARIES	THIRTYMILE CREEK	DISSOLVED OXYGEN	TOTAL NITROGEN	3.0 MG/L	PROPOSED
TAMPA BAY TRIBUTARIES	THIRTYMILE CREEK	NUTRIENTS	TOTAL NITROGEN	3.0 MG/L	PROPOSED
TAMPA BAY TRIBUTARIES	WARES CREEK	COLIFORMS	FECAL COLIFORMS	72.3%	PROPOSED
TAMPA BAY TRIBUTARIES	WARES CREEK	COLIFORMS	TOTAL COLIFORMS	20.0%	PROPOSED
TAMPA BAY TRIBUTARIES	WILLIAMS CREEK	COLIFORMS	FECAL COLIFORMS	56.8%	PROPOSED
TAMPA BAY TRIBUTARIES	WILLIAMS CREEK	COLIFORMS	TOTAL COLIFORMS	35.0%	PROPOSED

Attachment 2 TMDL Funding

Program Operational Funding: As noted in the report, the legislature has appropriated the following amounts to DEP to operate the TMDL program:

Fiscal Year	Amount	Funding Source
2002-03	\$2,200,000	Permit Fee Trust Fund
2003-04	\$2,200,000	Land Acquisition Trust Fund
2004-05	\$6,600,000	Land Acquisition
2005-06	Pending	Pending

For FYs 2002-03 and 2003-04, funds were used to conduct monitoring; develop scientific water quality computer models and databases; assess impaired waters; develop and adopt TMDLs, by rule; begin basin management planning; and provide legal assistance. The bulk of the funds (64%) went to outside private contractors; 17% went for legal assistance and 19% for monitoring equipment. **DEP received no FTEs to implement the program and funds no FTEs from the appropriations. Program FTEs have been diverted from other DEP programs.**

In the current fiscal year (2004-05), the activities outlined above continue. The additional \$4.4 million appropriated for the current year is being used to fund one-time (contracted) research and development projects to evaluate Florida's existing water quality standards for bacteria, dissolved oxygen, and nutrients.

Historically, TMDL program operations have been funded from trust funds with available cash. In order to promote long-term water quality clean-up efforts, consideration should be given to annual appropriations of \$2.5 - \$4.0 million. Funding source options include:

- Continued use of appropriate trust fund moneys, when available.
- General Revenue.
- Generate revenues through limited water quality protection fees on materials that lead to pollution and the increased use of which is driven by growth, such as fertilizers, cement, asphalt, and pesticides. The table below (1990 data) provides an idea of what such fees could generate:

Material	Annual Production (lbs)	Revenue Generated at Fee per Pound	
		\$0.01 per pound	\$0.10 per pound
Fertilizer	412,783,360	\$ 4,127,833	\$ 41,278,336
Cement	7,910,000,000	79,100,000	791,000,000
Asphalt	2,336,400,000	23,364,000	233,640,000
Pesticides	34,662,012	346,620	3,466,201
TOTALS	10,693,845,372	\$106,938,453	\$1,069,384,537

Depending on the level of fees, revenues could be generated not only for program operations but also to subsidize the kinds of local government projects that will be needed to restore water quality and protect it into the future.

Project Funding: The legislature authorized DEP and the Department of Agriculture and Consumer Services each year to split 0.5% of remaining Documentary Stamp revenues (after multiple large distributions to other purposes) to conduct research and demonstration projects for urban and agricultural best management practices and to implement best management practices or urban stormwater projects through cost-sharing with project sponsors. DEP also has used EPA grants to fund supplemental water quality monitoring. Since 2000, DEP has expended nearly \$17,500,000 on these efforts. DEP also has directed \$26 million in other federal 319 grant funding to TMDL-related stormwater treatment projects over the last five years, including:

- Wetland treatment processes in the Lake Okeechobee basin.
- Evaluating the health effects of stormwater reuse.
- Implementation of “green roof” design and installation projects.
- Evaluating turf grass nutrient requirements.
- Stormwater infrastructure (retrofit) projects for Sanford (River Walk), Maitland, Lake Worth, Seminole County, Lee County, Titusville, Ocoee, Lake County, Bayou Chico, and Choctawhatchee Bay.

The total cost of the 319-funded projects, considering local contributions, is more than \$65 million.

It also should be noted that DEP’s Clean Water State Revolving Fund (SRF) loan program provides financial assistance every year (in the form of low-interest loans) to local governments and some private entities to build water quality protection projects—wastewater and stormwater treatment facilities, reclaimed water projects, and structural agricultural best management practices. While funding for projects is not limited to impaired waters, the program prioritizes projects that are implemented to address TMDLs and restore impaired waters. The SRF program provides \$120-\$150 million for projects annually and, since its inception in 1988, has awarded more than \$1.7 billion for water quality protection projects.