Issues Pertaining to OPPAGA's Study on Wetlands Mitigation Options

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INTRODUCTION

BACKGROUND ON WETLANDS

Surrounded on three sides by water and blessed with a moist climate, Florida boasts an abundance of wetlands unparalleled by any other state in the country. Florida contains more wetlands than any of the other 47 states that make up the continental United States.[1] Not only are Florida's wetlands expansive, they are interestingly diverse including types rarely found in other states, such as mangrove swamps, hydric hammocks, and the world's largest subtropical wetland, the Everglades. While Florida still contains extensive wetlands, the state has lost approximately 10 million acres of wetlands since predevelopment times.[2]

Wetlands are valuable environmental resources. They perform many functions including storing excessive stormwater, reducing downstream flood damage, and filtering out pollutants from surface waters, a benefit to both wildlife and recreational users. Wetlands also provide habitat for rare species, such as the white-top pitcherplant and the snail kite, as well as provide nurseries for economically valuable species such as shrimp, blue crab, oyster, and red drum.

In the last couple of decades, policy makers as well as the public have come to realize the tremendous environmental and economic value of the state's wetlands. To protect and preserve the state's wetlands, Florida has become a leader in the use of wetlands mitigation, especially mitigation banking, as a policy tool. The term "mitigation" refers to activities that offset the loss of wetland functions associated with development. Florida law recognizes a wide range of wetland mitigation options, including onsite mitigation, offsite mitigation, offsite regional mitigation, and mitigation banking. However, the subject of wetlands mitigation remains controversial, largely due to persistent questions about effectiveness and high cost.

STUDY BY OPPAGA ON WETLANDS MITIGATION OPTIONS

During the 1999 Session, Representative Constantine and Senator Forman encouraged efforts by the water management districts, private mitigation banking interests, environmental groups and others to develop consensus legislation addressing mitigation banking issues. Although a bill never materialized, the Legislature passed a provision in

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[1] Darst, Melanie R., et al., 1993, *Florida: Wetland Resources*, U.S. Geological Survey Water-Supply Paper 2425, p. 153.

[2] Id.

CS/3RD ENG/HB 591 (Ch. 99-385, L.O.F.) directing the Office of Program Policy Analysis and Government Accountability (OPPAGA) to study mitigation options.

Pursuant to Section 26 of HB 591, OPPAGA is required to study the wetlands mitigation options implemented from 1994 to present, and issue a report by January 31, 2000. The study shall:

- Consider the effectiveness and costs of the current mitigation options in offsetting adverse effects to wetlands and wetland functions, including the application of cumulative impact considerations, and

- Identify, as appropriate, recommendations for statutory or rule changes to increase the effectiveness of mitigation strategies.

The purpose of this issue paper is to provide background information and identify some of the issues likely to surface in the OPPAGA study.

WETLANDS REGULATION

STATE WETLANDS REGULATION

For projects that may adversely impact an area defined as a wetland,[3] state law requires that the person proposing the project obtain an Environmental Resource Permit (ERP). Section 373.414(1), F.S. This permit also regulates the construction, alteration, maintenance, or operation of stormwater management systems. Sections 373.413 and 373.416, F.S. As a result, the ERP program regulates virtually all construction and development activities in the state.

However, certain activities have been grandfathered from ERP regulation. These development projects -- some of which are undergoing modification today -- are permitted under the authority of two older programs, the Management and Storage of Surface Waters program and the Dredge and Fill program.[4] Under section 373.414(12), F.S., the following activities are grandfathered from ERP rules:

[3]Generally, wetlands are delineated by certain plant species and soils indicative of an area that is inundated by water for a considerable period of time.

[4]In the Florida Environmental Reorganization Act of 1993, the Legislature merged the Management and Storage of Surface Waters program found in Chapter 373, Part IV, F.S., and the Dredge and Fill program found in Chapter 403, Part IX, F.S., and created the ERP program.

- Any activity approved in a permit under the Management and Storage of Surface Waters and the Dredge and Fill program prior to implementation of the ERP rules; and

- Any activity proposed within the boundaries of a valid jurisdictional declaratory statement completed before the implementation of the ERP rules.

In addition, the ERP program exempts some activities from regulation. By statute, certain agricultural and silvicultural activities are exempt from the ERP program, provided such activities are consistent with industry practice and not for the sole or predominant purpose of impounding surface waters. Section 373.406(2), F.S. Another exemption exists for the construction or operation of any agricultural closed system. Section 373.406(3), F.S. By rule, the Department of Environmental Protection (DEP) or the Water Management District (WMD) may exempt other development activities determined to have only minimal individual or cumulative impacts on water resources.

For those projects not exempt, the ERP program addresses three primary environmental concerns:

- water quality (ensuring that stormwater runoff and activities in wetlands do not violate state water quality standards);

- water quantity (providing for the management of stormwater volume); and

- impacts to wetlands and other surface waters (including activities on adjacent uplands that affect water quality or wildlife habitat).[5]

Depending on the particular development activity, a permit must be obtained from either the DEP or from the WMD. The DEP and WMDs have signed memoranda of understanding dividing the responsibility for issuing and reviewing ERP permits between the agencies. Basically, the DEP handles permits for certain regional projects (e.g., marinas) and single-family dwellings, while the WMDs handle most other types of projects.[6]

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[5]Unlike the dredge and fill program authorized under the 1984 Warren S. Henderson Wetlands Protection Act, the ERP program does regulate development activities in isolated wetlands.

[6]However, under Section 373.4145, F.S. the Northwest Florida WMD is excluded from the ERP program. Within this region, the DEP administers the wetlands permitting program under the authority of the 1984 Warren S. Henderson Wetlands Protection Act. As a result, wetlands permitting in Northwest Florida does not address the development of isolated wetlands, how the development of uplands affects the water quality and wildlife of adjacent wetlands, nor the effect of stormwater flooding. The Northwest Florida WMD does regulate certain agricultural and silvicultural activities as well as the construction and operation

To receive an ERP permit, the applicant must provide reasonable assurance that the proposed activity will not cause harm to water resources and, for activity in wetlands, will not be contrary to the public interest[7]. Section 373.414(1), F.S. In making this determination, the agencies must consider the adverse effect of the proposed project on public health and safety, wildlife, and recreation. The agencies must also consider the cumulative impacts the project will have upon surface waters and wetlands within the same drainage basin. Section 373.414(8), F.S.

To understand cumulative impacts analysis, it is important to understand the three categories of impacts: direct, secondary, and cumulative impacts. Direct impacts are those that result from the footprint of the project (e.g., filling of wetlands for a housing development). Secondary impacts are those that occur outside the footprint of the proposed activity, but are causally related to the activity. For example, a secondary impact would be the adverse effect on manatees due to increased boat traffic brought about by the construction of a marina. Similarly, the development of a subdivision could lead to secondary impacts such as the installation of power lines or cable lines.

Cumulative impacts are less obvious. They have been described as **residual** direct and secondary impacts not fully offset by mitigation or resulting from all the past, present, and reasonably expected future development activities. Although, in theory, wetlands permitting is designed to ensure zero or *de minimis* impact to water resources, in practice, the statutes and rules exempt certain activities and presume minimal individual and cumulative impacts for other activities.[8] The ERP program recognizes that the total effect of many fully permitted projects, both present and future, may result in a significant cumulative impact to the drainage basin.

When harm to water resources will result, agencies typically offer the applicant the opportunity to redesign the project to either avoid or minimize the adverse impacts. For instance, an agency may suggest that the applicant relocate a proposed road to either avoid wetlands impacts or minimize the damage. When wetland impacts are unavoidable or cannot be minimized, agencies and applicants turn to mitigation to permit a project that will harm the region's water resources. As discussed earlier, mitigation is used to offset the harm caused by loss of wetland functions such as wildlife habitat, water purification,

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of certain dams.

[7]However, where the activity will significantly degrade an Outstanding Florida Water, the activity must be clearly in the public interest.

[8]See pages 2-3 for a description of those activities exempt from wetlands permitting.

and stormwater control. Under Section 373.414(1)(b), F.S., the DEP or WMD must consider mitigation where the applicant is unable to otherwise meet permitting criteria. It is the responsibility of the applicant to choose the form of mitigation.

When mitigation is considered, the key question becomes what form of mitigation is necessary to offset the lost wetland functions. There are various forms of mitigation: creation, restoration, enhancement, and preservation. Creation or restoration of wetlands entails the necessary earthwork, planting of appropriate vegetation, or removal of exotic species to either create a fully functioning wetland or restore a badly damaged one. Enhancement refers to mitigation activities (e.g., light removal of exotic species) that improve the ecological performance of an existing wetland. Finally, preservation involves acquisition of existing wetlands through a fee-simple purchase or conservation easement.

To determine the appropriate mitigation to offset the loss of an impacted site, the agencies have developed mitigation ratios. These ratios range from 4:1 to 20:1 for enhancement, 1.5:1 to 5:1 for creation/restoration, and 10:1 to 60:1 for preservation.[9] For example, where an applicant proposes to build a shopping center impacting 100 acres and offers enhancement as mitigation, under the 4:1 ratio, the applicant would have to enhance 400 acres to offset the 100 acres impacted. [10] Because the agencies pursue a policy of no "net" loss of wetlands, they set high ratios for enhancement and preservation. Unlike creation or restoration, which develop wetland functions where they did not exist before, enhancement or preservation simply improve or protect the functions of existing wetlands, more likely resulting in a "net" loss.

FEDERAL WETLANDS REGULATION

In addition to the state ERP program, the federal government regulates the placement of dredged or fill material in wetlands within the waters of the United States.[11] Under the authority of the Rivers and Harbors Act of 1899 and the Clean Water Act of 1972, the U.S. Army Corps of Engineers (Corps) administers the federal program with oversight by the U.S. Environmental Protection Agency (EPA).[12] Under s. 404 of the Clean Water Act, the EPA can exercise veto authority over the issuance of permits by the Corps. Other federal agencies, like the U.S. Fish and Wildlife Service, also review wetland permits, although they lack veto authority.

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[9]These ratios are read to compare the acreage of mitigation needed to offset the loss of one acre of wetlands.

[10]From a 1997 report by the House Committee on Water and Resource Management

[11]Based on court rulings, the term "waters of the United States" has been construed to include virtually all wetlands.

[12]*Clean Water Act s. 404: Overview*, U.S. Environmental Protection Agency, Wetlands Fact Sheet #7 (March 1993).

Similar to the state program, the federal process begins with a determination of whether the area in question constitutes a "jurisdictional wetland" as defined by the presence of wetland hydrology, hydric soil, and wetland vegetation. Under s. 404 of the Clean Water Act, the Corps cannot permit the discharge of dredged or fill material when a practicable alternative - less damaging to the aquatic environment - exists or when the discharge would significantly degrade the nation's waters.[13] In accordance with this standard, the Corps requires applicants to avoid impacts to wetlands to the extent practicable, then minimize any remaining impacts, and finally, mitigate for any unavoidable impacts.[14]

The federal agencies participate in a collaborative review process for mitigation banks. Organized as the Mitigation Bank Review Team (MBRT), this group meets to review federal permit applications for mitigation banks. According to many mitigation bankers, this process is inordinately slow (as the various federal agencies only meet a few times a year) and the delay considerably increases the cost of permitting a mitigation bank. State agencies such as the DEP and WMDs participate in the MBRT only by invitation.

ONSITE vs. OFFSITE MITIGATION

Originally, wetlands permitting policies did not allow the use of mitigation to offset unavoidable impacts. But by the 1980's, agencies began recognizing mitigation as an option to offset adverse water quality and quantity impacts. The Florida Legislature first required agencies to evaluate mitigation in 1984 under the Warren S. Henderson Wetlands Protection Act. In those early years, the predominate form of mitigation was the creation of onsite wetlands. To build onsite wetlands, applicants convert a portion of their property into a wetland by moving earth to achieve the necessary hydrology and planting the proper vegetation.

However, problems plagued the early onsite mitigation efforts. At the time, the science of wetlands creation was in its infancy, leading to poor design and construction of wetlands. Also, early onsite wetlands suffered from lack of proper monitoring and maintenance necessary to ensure ecological survival and success. Studies showed many onsite wetlands failed to meet permit conditions and that permit enforcement was weak. Due to these factors, agencies began to consider offsite mitigation.

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[13] Id. Certain activities such as normal farming and ranching practices, emergency reconstruction of recently-damaged dikes, dams, and levees, and the construction or maintenance of farm or stock ponds or irrigation ditches are exempt from permitting.

[14] Id.

There are certain advantages to offsite mitigation. First, consolidating mitigation in a single offsite location can result in larger, more viable wetlands systems. Moreover, agencies tend to expend less effort reviewing countless mitigation plans and monitoring the performance of smaller individual mitigation activities. Finally, offsite mitigation enables persons developing wetlands to more fully realize the economic value of their land as they are not required to sacrifice onsite acreage to wetlands mitigation.

While offsite mitigation offers certain advantages, most scientists maintain that onsite provides better ecological value by keeping the mitigation near the point of impact (although it is recognized that onsite mitigation is not always feasible). Onsite mitigation also has the potential to better protect small but ecologically valuable wetlands systems. In addition, agencies contend that onsite mitigation has improved since the early days. One report cites the belief of regulators that currently permitted onsite mitigation meets a higher standard of performance, receives closer monitoring, and will more likely achieve long-term ecological sustainability than the earlier attempts.[15] In any event, both onsite and offsite mitigation are accepted and used by the agencies and the applicants. Section 373.414(1)(b), F.S., specifically recognizes both forms of mitigation, as well as offsite regional mitigation and mitigation banks.

MITIGATION BANKING

BACKGROUND ON MITIGATION BANKING

A number of factors led to the development of mitigation banks. The questionable performance of early onsite mitigation compelled agencies to look at offsite options. Also, agencies were encouraged to find lower cost alternatives to onsite mitigation or to allow greater development on impacted properties in return for fully offsetting impacts elsewhere. During the 1990's, interest grew in mitigation banks as they appeared to offer the potential for creating larger, more viable wetlands and encouraging market competition that would drive down costs.

Four distinct types of mitigation banks have developed.[16] **Single user banks** are typically started by large entities, like utility companies, to offset their own development activities. In **for-profit banks,** private investors provide the necessary capital to preserve and restore wetlands (e.g., plug old drainage ditches and remove exotic species) and if

[15]Sorensen, Philip., *An Economic Analysis of Florida's Wetlands Mitigation Banking Program*, Report prepared for the Florida Department of Environmental Protection (April 1997), p. 40.

[16]Id. at 12-13.

done properly, the WMD awards credits to the bank investors, who then sell the credits to developers who must mitigate for unavoidable wetland impacts. **Public banks** also generate credits for sale, however, they are operated by the government on public lands. Finally, **in-lieu or fee-based banks** are a widely-used form of public mitigation bank funded by impact fees collected by a permitting agency for the purpose of acquiring or restoring large-scale wetlands.[17]

In 1993, the Legislature enacted section 373.4135, F.S., formally recognizing that mitigation banks and offsite regional mitigation could be used to offset wetland impacts. The statute directs the DEP and WMDs to participate in and encourage the establishment of private and public banks and offsite regional mitigation. In 1996, the Legislature enacted section 373.4136, F.S. further addressing mitigation bank requirements including permit requirements for the establishment, operation, and management of mitigation banks. Section 373.4136, F.S, contains the following key elements:

- **mitigation permit criteria:** Subsection 1 of 373.4136, F.S., requires a banker to provide reasonable assurance that a proposed bank will improve ecological conditions of the regional watershed;

- **mitigation credit and credit release schedule:** Subsections 4 and 5 of 373.4136, F.S., base the award of credits on the projected degree of ecological improvements resulting from the bank and require that the bank permit reflect a release schedule based on the performance and success criteria for the bank;

- **mitigation service area:** Subsection 6 of 373.4136, F.S., directs the DEP or WMDs to establish geographic areas within which a mitigation bank can reasonably be expected to offset adverse wetland impacts;

- **local government authority:** Subsection 8 of 373.4136, F.S., prohibits local governments from regulating the operation of mitigation banks.[18] In addition, subsection 2 of 373.4135, F.S., prohibits local governments from denying the use of a mitigation bank

[17]These banks are also known as offsite regional mitigation areas or ROMA's. Because the operation and regulation of fee-based banks differs in many respects from the other three types of mitigation banks, they are discussed in greater detail on pages 11-12.

[18]Nevertheless, local governments still retain the authority to regulate construction activities in wetlands within their jurisdiction.

because it is located outside the local government's jurisdiction (i.e., denial must be based on environmental, not geographic, reasons).

Because section 373.4136(1)(c), F.S., requires reasonable assurance that a mitigation bank will be effectively managed in perpetuity, mitigation bankers are required to provide evidence of financial responsibility, usually in the form of performance bonds and trust funds, for construction, operation, long-term management of the banks. These financial responsibility requirements along with the above criteria form a mitigation banking permit.[19]

After obtaining the necessary permits, mitigation banks are awarded credits. Because the credits are awarded to a bank based on the **increased** functional value of the bank's wetlands, the degree of improvement determines the number of credits. For example, where a mitigation bank owns a 100 acre wetland functioning at only 50% of its expected capacity, due to altered drainage and invasive plants, the banker can earn 50 credits by returning the wetland to 100% functional capacity.[20] The credits are then sold to individuals or entities developing wetlands as an alternative to onsite mitigation at the project site.

COST OF MITIGATION

According to a 1997 report by the House Committee on Water and Resource Management, the median per-acre costs for mitigation were approximately $29,000 for wetlands creation, $27,000 for wetlands preservation, and $42,000 for wetlands enhancement. Recent numbers suggest that private mitigation banks typically sell credits for $25,000 to $40,000 per credit.[21] On the public sector side, the WMDs generally charge from $6,142 to $9,650 per acre for mitigation.[22] Although not directly comparable, because the exact acreage required depends upon the type of mitigation (i.e., creation, preservation, restoration, or enhancement) and the degree of ecological improvement achieved, it is estimated that purchasing four acres of mitigation from a WMD is the equivalent of purchasing one credit from a private bank.[23]

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[19]In addition to a mitigation banking permit, mitigation banks usually must obtain ERP permits.

[20]This example was taken from a memorandum (dated August 1, 1999) by Terrie Bates, Director, Regulation Department, South Florida Water Management District to members of the Governing Board.

[21] Conversation with George Platt and Ann Redmond (representing Florida Wetlandsbank), Tallahassee, Florida, August 12, 1999.

[22]Phone conversations with Terrie Bates and Anita Bain (both representing the South Florida Water Management District), October 19, 1999.

[23]Id.

FUNCTIONAL ASSESSMENTS

The agencies that permit mitigation banks rely on functional assessments to determine the ecological value of any wetland functions lost by the dredging and filling of a particular wetland. The agencies also use functional assessments to determine the rate of success of mitigation and, hence, the number of credits to award a particular mitigation bank. Under a functional assessment, scores are assigned to certain wetland characteristics such as wildlife usage, type and extent of vegetation, water quality, and the presence of exotic plants. These scores are used to calculate the estimated wetland value for a particular location.[24]

At this time, no uniform statewide functional assessment methodology exists. The view has been expressed that the same functional assessment methodology should apply to both the determination of the degree of impact caused by construction activities and the awarding of credits for mitigation. According to some bankers, although a functional assessment is used to determine the credits awarded to a bank, the bank's ecological value is discounted by applying mitigation ratios to determine the number of credits deducted from the bank for a specific mitigation project.[25] Stated another way, impacts are measured by mitigation ratios and the offset is measured by a functional assessment. Agencies, on the other hand, contend that wetlands permitting should be flexible and have expressed concern about the workload/resource burdens associated with performing a functional assessment for every impact and mitigation site. Although some agencies contend that most applicants appear to be satisfied with mitigation ratios, they also see the logic of using a universal method to measure the functional value of both the impacted wetland and the mitigation site.

MITIGATION SERVICE AREAS

Section 373.4136(6), F.S, requires the DEP or WMDs to establish a mitigation service area (MSA) for each mitigation bank based on the geographic area in which the bank could reasonably be expected to offset adverse impacts. A bank may sell credits to developers who propose projects impacting wetlands within that bank's MSA. The statute provides that an MSA may be larger or smaller than a regional watershed, depending on the ecological value of the bank or the local ecological and hydrological conditions.

Because a larger MSA represents a larger market for the sale of credits and greater potential for economic return for a private mitigation bank, the size of service areas has become a controversial issue for permitting agencies and private mitigation bankers. Bankers contend that the current service areas are too small for generating reasonable

[24]The WMDs commonly use a functional assessment methodology known as wetland rapid assessment procedure (WRAP) or a modified wetland rapid assessment procedure (MWRAP).

[25]Letter from Mr. Eric Olsen (representing various mitigation banks) to Mr. Dan Roach (Chair of the Governing Board, St. Johns River Water Management District) , dated May 6, 1999.

returns on their investments. Regulators worry that excessively large service areas will lead to the destruction of small but valuable wetlands.

The size of service areas also calls into question the analysis of cumulative impacts. As discussed earlier, the DEP or WMDs must consider cumulative impacts **within a drainage basin** when evaluating whether an applicant has provided reasonable assurance of no harm to water resources. Because the drainage basins have different boundaries than and often overlap with the MSA, it is possible for the impact site and the mitigation bank to be located within the same MSA, yet in different drainage basins. So although the credits are being sold within the same MSA (as required by section 373.4136(6)), WMD staff - after considering the cumulative impacts (as required by section 373.414(8)) - may require the mitigation to take place within the same drainage basin, resulting in a loss of sale for the private banker. Private bankers contend they cannot successfully market credits within the bank's service area because they cannot predict with certainty whether a cumulative impact will be found.[26] Bankers suggest changing the scope of the cumulative impacts analysis from drainage basins to larger regional watersheds. Although mitigation banks may adequately offset impacts on a regional basis, the countervailing view is that continuing to analyze cumulative impacts based on drainage basins will afford better protection for small but valuable wetland systems, especially in sensitive water resource areas.

IN-LIEU/FEE-BASED MITIGATION

As described earlier, in-lieu or fee-based mitigation occurs when a permitting agency such as a WMD collects impact fees from developers. It is suggested that this option simplifies, lowers the cost of mitigation, and targets money to publicly-owned areas with high resource values. However, concerns have been raised that fee-based options do not undergo the rigorous permit review, face the stringent financial responsibility requirements, or provide the same level of assurances that impacts are being offset as do the private mitigation banks.

The concern appears to center around offsite regional mitigation areas or ROMAs. In ROMAs, the agency collects impact fees from developers in-lieu of actual mitigation to fund the implementation of a plan to purchase or restore targeted wetlands. Typically, the agency holds the impact fees until sufficient funds accumulate to make a cost-effective purchase of land. Although section 373.414(1)(b)1, F.S. requires ROMAs to obtain ERPs before accepting cash contributions, agencies establishing ROMAs cannot receive an ERP for lands not yet owned. As a result, the agencies appear to be earning mitigation credit for activities that, while achieving some environmental purpose, do not require an

[26] Id.

ERP.[27] These activities include acquisition, exotic species removal, and the replanting of environmentally sensitive lands. Given that ROMAs are not necessarily required to obtain an ERP permit before collecting impact fees from developers, questions have been raised of whether ROMAs are enjoying a competitive advantage, whether there is sufficient assurance the ROMA will actually provide ecological benefit, and whether the impact fees collected could be diverted to uses other than mitigation (or could, at the very least, be delayed before being used in a wetlands restoration project).

Moreover, conflict-of-interest issues have been raised because ROMAs are developed by the agencies (e.g., WMDs) that issue mitigation permits. There are concerns that the permittee, when considering mitigation options, may perceive some advantage to selecting a WMD-sponsored option.

Despite the negatives discussed, ROMAs can offer advantages. First, they target acquisition and restoration of lands already identified as having high resource values. Second, ROMAs tend to be a lower cost alternative. The lower costs of ROMA mitigation may be attributed to the absence of a need to realize a profit or to the absence of strict permitting and financial responsibility requirements.

CONCLUSION

Given that Florida contains more wetlands than any of the other 47 states that make up the continental United States and that in recent years policy makers as well as the public have come to realize the tremendous environmental and economic value of these wetlands, it is no surprise that protecting and preserving the state's wetlands has become a priority. Florida has been a leader in setting a goal of no net loss of wetlands and working toward achieving that goal with innovative policy tools, such as wetlands mitigation. However, questions remain concerning the cost and effectiveness of the current wetlands mitigation options. The OPPAGA Study on Wetlands Mitigation Options will squarely address these concerns by assessing the effectiveness of mitigation options in offsetting adverse effects to wetlands and wetland functions, assessing the cost of current mitigation options, examining mitigation banking issues, and recommending statutory or rule changes to increase the effectiveness of mitigation strategies. OPPAGA's final report, which will be issued on January 31, 2000, is expected to provide a comprehensive information base to assist Florida Legislators in formulating future wetlands mitigation policy.

[27] Memorandum (dated August 1, 1999) by Terrie Bates, Director, Regulation Department, South Florida Water Management District to members of the Governing Board, p. 2.