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The Interrelationship Between Federal and State Wetlands and Riparian Protection Programs

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Consistent with Arizona Executive Orders No. 89-16 ("Streams and Riparian Resources") and No. 91-6 ("Protection of Riparian Areas"), this project was initiated to determine whether ADEQ's role in wetlands and riparian areas protection could be strengthened and improved, specifically through the Clean Water Act, Section 401 certification and Section 404 permitting programs. A three-phase project was designed. The first phase is this nationwide inventory and analysis of state wetlands and riparian programs. ADEQ, Water Assessment Section, contracted with Arizona State University (ASU) Department of Planning to conduct this inventory and analysis. In many cases, these programs are a response to federal laws, especially clean water legislation. The second phase is a summary of existing federal clean water programs in Arizona and recommended improvements for the 401 and 404 programs. The final phase is development of a guidebook to better explain these programs in Arizona.

Rich and Associates has been a partner with ASU for the second and third phases of the project. We appreciate the cooperation of Jacqueline Rich and ASU graduate student Virginia Coltman throughout the project. We also are grateful for the support, guidance, and critical reviews of Su Monroe, Carol Russell, Jack Bale, and Edwin Swanson of ADEQ; Mary Butterwick of the San Francisco regional EPA office; and J. Glenn Eugster and Lori Williams of the EPA Wetlands Strategies Team. We also appreciate the helpful review of a draft version of this report by Kim Shetter and Jana Fry. We thank Jacki Landis for typing the final version of this report.

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We are indebted greatly to the many individuals who responded to our requests for information, completed the questionnaire, and discussed wetlands protection with us during interviews. We have tried to report the information provided by the respondents accurately and as thoroughly as space permits.

THE INTERRELATIONSHIP BETWEEN FEDERAL AND STATE WETLANDS AND RIPARIAN PROTECTION PROGRAMS

Abstract

The protection of wetlands and riparian areas has emerged as an important environmental issue. In the United States, several federal and state laws have been enacted to protect wetlands and riparian areas. Specifically, the federal Clean Water Act includes protection requirements in Sections 301 and 303 for state water quality standards, Section 401 for state certification of federal actions (projects, permits, and licenses), and Section 404 for dredge and fill permits. The Section 401 water quality state certification element has been called the "sleeping giant" of wetlands protection because it empowers state officials to veto or condition federally permitted or licensed activities that do not comply with state water quality standards (Ransel and Meyers 1988). State officials have used this power infrequently.

The purpose of this research was to analyze the interrelationships between federal and state wetlands and riparian areas programs as well as to gauge the effectiveness of state wetland and riparian programs. Contacts were established with officials in each state and in the national and regional offices of key federal agencies. Based on interviews and on a review of federal and state laws, state wetlands and riparian areas regulatory and non-regulatory protection programs are described in this report. The descriptions focus on the relationship with federal law and on enforcement, education, acquisition, monitoring, evaluation, and funding provisions. To illustrate how state programs work, the states of Illinois and Washington were selected for more detailed analysis. An overall analysis of state program effectiveness follows these two case studies. This report concludes with several problems and opportunities facing wetland protection efforts.

1.0 Introduction

1.1 Background

1.1.1 Changing public perceptions of wetlands and riparian areas

Throughout human history, people have located their settlements near rivers and lakes for water supply and waste disposal. As a result, most cities and towns are near, or have replaced, wetlands and riparian areas. Prior to 1970, wetlands and riparian corridors were generally viewed as waste areas which had minimal value for urban uses such as housing and commerce. Because of flooding dangers, areas adjacent to rivers and streams can be dangerous places to locate homes and businesses. As a result, wetland and riparian areas often became sites for unwanted or undesirable uses such as heavy industry and landfills.

The past 20 years have brought about a change in the public perception of wetlands and riparian areas. Increasingly, these areas have become recognized for their positive values for flood protection, water quality and supply, recreation, and wildlife and fish habitat. As a result, a few states, then the federal government, and finally several more states enacted laws that have encouraged the protection of wetlands and riparian areas. Beginning in the late 1960s and throughout the 1970s, there was a host of such laws addressing clean water, flood plains, wild and scenic rivers, the coastal zone, endangered species, and mining reclamation. Beginning in 1985, the preservation of wetlands on farms was required as a prerequisite for federal agricultural subsidies. These federal laws and associated state laws are dynamic and continue to evolve.

1.1.2 Definitions

Wetlands are generally perceived to be swamps, marshes, estuaries, and similar areas. Some forested areas can also technically be termed wetlands. Riparian areas are those ecosystems within or adjacent to drainageways and/or their flood plains and are characterized by species and/or lifeforms different from the immediately surrounding upland (Lowe 1964). Riparian areas are variously considered by scientists to be a type of wetland (Brown et al. 1978) or to be physiographically distinct from wetlands (Odum 1978). From the data collected for this report, wetlands and riparian areas seem to be considered as two physiographically (but not functionally) distinct ecosystems for federal and state regulatory purposes. More detailed discussions of the various definitions are included in later sections of this report (3.1, 4.1.2, and 4.2.2).

1.1.3 Functions, values, and benefits

The changing public perception of the importance of wetlands has to do with their many positive ecological functions and the values that people place on these functions. According to Williams, "it is difficult to say

where a function becomes a value and there is much imprecision about these terms; ...the word benefit [can] be used where we cannot clearly separate a function from a value" (1990, p. 13).

The functions, values, and benefits of wetlands and riparian areas are perceived to be similar: groundwater recharge and discharge, sediment stabilization, flood flow attenuation, water quality maintenance, fish and wildlife habitat, climate moderation, shoreline protection, food production, and recreation (Cooper et al. 1990, Meeks and Runyon 1990). Sixty-six percent of commercially harvested fish depend on wetlands for food or reproduction (Blumm and Zaleha 1989). Riparian areas support 75 percent of the nation's breeding birds, 50 percent of the mammals, and over 100 endangered species (McCormick 1978).

Several approaches have been developed to classify functions, values, and benefits. Tiner (1984) suggests three categories: fish and wildlife values, environmental quality values, and socio-economic values. Williams (1990) employs four broad groups: physical/hydrological, chemical, biological, and socio-economic. Williams notes that "none of these categories is exclusive and each can have a profound effect on the other" (1990, p. 13). Williams (1990) classifies flood mitigation, coastal protection, aquifer recharge, and sediment trapping as the major physical/hydrological functions. The chemical functions of wetlands include: pollution trapping, removal of toxic residues, and waste processing (Williams 1990). Williams considers productivity and habitats to be the biological functions. The major socio-economic qualities are consumptive values for farming, fishing, hunting, fuel, and fiber plus non-consumptive benefits for views, recreation, education, science, and history (Williams 1990).

1.1.4 Losses and trends

Wetland losses in the coterminous United States are estimated to be 53 percent from the 1780s to the 1980s. In the 1980s, wetlands constituted an estimated five percent of the land surface of the lower 48 states (Dahl 1990). Alaska and Hawaii have also experienced losses in wetlands. Wetlands continue to decline nationwide but estimates of decline vary (Leslie and Clark 1990). It is estimated that some 80 percent of the remaining wetlands are privately owned (Environmental Reporter 1990). The sources of wetland conversions from the mid-1950s to mid-1970s were as follows:

Agriculture	87%	
Urban Development	8%	
Other Development	5%	(U.S.Department of Interior 1988)

The major causes of wetland loss and degradation are from both human and natural impacts. Human causes include: drainage, dredging and stream channelization, deposition of fill material, diking and damming, tilling for crop production, grazing by domesticated animals, discharge of pollutants, mining, and alteration of hydrology (U.S. Environmental Protection Agency 1988). Natural threats include erosion, subsidence,

sea level rise, droughts, hurricanes and other storms, and overgrazing by wildlife (U.S. Environmental Protection Agency 1988).

There has been no comprehensive national or regional analysis of the loss or alteration of riparian areas. It has been estimated that 70-90 percent of riparian ecosystems have been altered and natural riparian communities now comprise less than 2 percent of the land area in the United States (Brinson et al. 1981, Ohmart and Anderson 1986). Riparian areas in the West are estimated to constitute 0.5 percent of the landscape (Ohmart and Anderson 1986). Estimated losses for states in the Intermountain West (parts of Nebraska, Kansas, South and North Dakota, Washington, Oregon, California, Arizona, New Mexico, Texas, and Oklahoma) can be found in Cooper et al. (1990).

The implications of the trend toward wetland and riparian area losses are significant. Flooding cycles have been altered, resulting in flood damage and associated costs for repair or prevention (Gosselink and Maltby 1990). Human safety and property are put at risk by floods. The long-term food supply, genetic diversity, and wildlife reserves can also be negatively impacted (Gosselink and Maltby 1990). Gosselink and Maltby observe: "Wetlands are important elements in the global cycles of nitrogen and sulphur ... Inevitably the continuing loss of wetlands ... must have significant impacts on these cycles, impacts whose repercussions we do not at present clearly understand" (1990, p. 32). They also note negative consequences for the carbon cycle.

1.2 Purpose and Method

The purpose of this report is to provide the ADEQ with information to assist it in implementing activities mandated by Executive Order 91-6, Protection of Riparian Areas. Under this order, ADEQ is to coordinate the drafting of riparian protection legislation (to be regulatory in focus), and to consider protection of riparian areas in their Clean Water Act (CWA), 401 certification program. Also, ADEQ's five-year strategic plan indicates that it will assume, that is take primacy for, all possible federal environmental programs. ADEQ may, therefore, in the future look at assumption of the CWA, Section 404 program.

This report represents a nationwide compilation of information about various wetland and riparian protection programs and strategies. Some states have taken advantage of many of these protection strategies, while others have not. These strategies are:

- Assumption of the CWA, Section 404 permitting program;
- Involvement in implementation of a federal CWA, Section 404 permitting program;
- Implementation of a CWA, Section 401 certification program;

- Promulgation of narrative or numeric standards and/or use of antidegradation standards to protect wetlands/riparian areas;
- Other natural resource protection programs which protect riparian areas;
- Establishment of voluntary or mandatory watercourse alteration or streamside forestry best management practices;
- Establishment of protection mandates through executive orders;
- Creation of opportunities for protection through tax incentives, easements, recognition programs, technical assistance, and education;
- Protection by acquisition; and
- Inclusion of riparian areas and wetlands in definitions of "waters of the state" for regulatory purposes.

The emphasis of this report and data collection is on the implementation of the CWA, Section 404 permitting and 401 certification programs. The main source of information for this document was a questionnaire (Appendix A) sent to all 50 states. This questionnaire was usually sent to one agency in each state, usually the water pollution control agency. For a list of those who received questionnaires, refer to Appendix B. Selected representatives of the Environmental Protection Agency, Corps of Engineers (the Corps), and public interest organizations were also sent questionnaires.

The intent of the questionnaire was:

- To inventory wetland and riparian protection programs;
- To collect pertinent documents;
- To understand how states are implementing state programs; and
- To gauge how well the state and federal programs are working and to ascertain if they are effective.

The state responses to the questionnaire are summarized in Tables 1-8. These tables are:

Table 1. Compilation of Definitions and Inventory Status

Table 2. Compilation of Wetlands and Natural Resource Regulatory Programs including Clean Water Act Section 404 Permitting and 401 Certification and State Wetlands Programs

Table 3. Elaboration of the Clean Water Act 404 Permitting Activities within Each State

Table 4. Clean Water Act 401 Certification Activities

Table 5. Measurement of Implementation of 404, 401, and State Wetland Program by Staff Numbers and Budget

Table 6. Compilation of Non-regulatory Programs

Table 7. Education and Support

Table 8. Changing Conditions

States responded to the questionnaire and many sent documentation (Appendix C). Responses also were received from the U.S. Fish and Wildlife Service (USFWS), EPA, the Corps, the U.S. Soil Conservation Service (SCS), the World Wildlife Fund and The Conservation Foundation, the Association of Wetlands Managers, and the Council of State Governments. The Council of State Governments provided an exhaustive computer printout of state wetland programs. Summaries of the state responses are included in Tables 9 and 10. State and federal officials were also sent a draft of this report and invited to comment. Many officials provided detailed remarks which were incorporated into this report.

1.3 Report Organization

The rest of this report is organized as follows. First, federal laws, national policy, and general state responses to federal programs are summarized. Second, state wetland and riparian protection programs are described in detail. This description is based on the nationwide survey of state agencies. Included in this description is discussion about definitions, inventories, delineations, and value ranking; state regulatory programs; state involvement in 404 and 401; implementation efforts; state non-regulatory programs; and education and support activities. Two state programs, Illinois and Washington, are then discussed more thoroughly. The discussion is followed by an analysis of state program effectiveness. The report concludes with some observations about the problems and opportunities facing state programs. Because of the complexity of terminology and the large number of agencies involved, a list of acronyms and a glossary are included to assist the reader.

2.0 Summary of Federal Laws, National Policy, and General State Responses to Federal Programs

2.1 Introduction

As observed by William Want, "Most wetlands regulation has been done at the federal level and the federal program of regulation has become very complex" (1990, p. 1-1). Historically, federal and state governments were concerned about waterways for their navigational values, principally for defense and commerce. Water was relatively plentiful and abundant in the eastern United States. With increased knowledge about sanitation and disease in the 19th century, coupled with the growth of industrial cities, there began to be concern about water quality. As the people of the nation moved West, wetlands were viewed as a nuisance to be converted to productive use as water irrigation systems were developed for agricultural and urban uses. In the late 1960s, the status quo began to change as federal agencies began to protect wetlands for their ecological values (Want 1990). In 1972, with the passage of the Federal Water Pollution Control Act Amendments (the Clean Water Act), a new era of water quality protection began that included valuing wetlands differently.

2.2 Clean Water Act

2.2.1 Introduction

The CWA is the principal law authorizing wetlands regulation (33 USC 1251-1376). A major regulatory program is the National Pollution Discharge Elimination System (NPDES), which is administered by the EPA. Want notes, "Section 301 of the Act prohibits the discharge of any pollutant without a permit. Section 402 of the [Act] authorizes EPA [or an approved state] to issue such permits. Section 404 of the Act carves out from the general EPA permit authority a special authority for the [U.S. Army Corps of Engineers] to issue permits for the discharge of two types of pollutants: dredged material and fill material" (1990, pp. 2-7). As a result, the EPA and Corps jointly administer the 404 program. EPA has veto authority over the issuance by the Corps of the 404 permits. However, EPA has seldom used this power. According to EPA administrator William K. Reilly, the "Corps issues over 10,000 permits every year, and in the 18-year history of the program, EPA has vetoed only 11 projects" (1991, p. 193).

The main purpose of the CWA "is to restore and maintain the chemical, physical, and biological integrity of the Nation's water." In the 1987 amendments to the act, Congress established the policy "to recognize, preserve, and protect the primary responsibilities and rights of states to prevent, reduce, and eliminate pollution, to plan the development and use (including restoration, preservation, and enhancement) of land and water resources..." The 1987 amendments also established the policy of state implementation of Sections 402 and 404 permit programs.

Section 401 of the CWA allows the states "to veto federally permitted or licensed activities that do not comply with state water quality standards" (Ransel and Meyers 1988, p. 340). The states have the responsibility for setting these standards, subject to EPA approval. Section 303 of the CWA gives states "great latitude in formulating their water quality standards" (Ransel and Meyers 1988, p. 344). According to the law, states may establish designated water uses and water quality standards criteria sufficient to "protect the public health or welfare, enhance the quality of the water and serve the purposes of the Act" (33 USC 1313 (c)(2)(A)).

According to Ransel and Meyers, quoting partially from the CWA, " 'any applicant for a Federal license or permit for conducting any activity... which may result in any discharge to the navigable waters' [is required] to secure from the state in which the discharge originates a certification that the discharge will comply with several provisions of the CWA related to effluent discharge limitations and water quality standards" (1988, p. 342). Thus, a denial of section 401 certification "operates as an absolute veto" and "the state's decision is not reviewable by the federal permitting agency or the federal courts" (Ransel and Meyers 1988, p. 342). As a result, Ransel and Meyers observe,

> the states' most important role in the section 401 certification process is to determine whether an applicant for a federal license or permit has demonstrated compliance with state water quality standards and, if not, to deny or "condition" certification so that the activity will comply with those standards (1988, p. 343).

2.2.2 Clean Water Act, Section 404

The chief federal wetlands regulatory program is the CWA, Section 404 permitting program. Section 404 permitting regulates the discharge of dredged or fill materials into waters of the United States, which includes wetlands. The program is administered jointly by the Corps and the EPA through a complex series of agreements and statutes (Rich and Coltman 1991).

In addition, under the Fish and Wildlife Coordination Act (16 USC 662), the Corps is required to consult with the USFWS and the National Marine Fisheries Service during the 404 issuance process. Comments from these agencies are advisory, but they may be used as "the basis for modifying, conditioning, or denying a permit" (U.S. General Accounting Office 1988, p. 10). The Corps also consults with state fish and wildlife agencies.

Besides having certain 404 permitting oversight and enforcement responsibilities, EPA is responsible for promulgation of environmental criteria for use by the Corps in evaluation of permits. These criteria are mandatory, although they are called the 404 (b)(1) Guidelines (40 CFR Part 230). Under 404(b)(1) Guidelines, discharges are prohibited under the following conditions (40 CFR §230.10):

- There is a practicable alternative to the proposed discharge with less adverse impact on the aquatic ecosystem and that does not have other significant adverse environmental consequences. Practical alternatives are assumed for non-water dependent projects.
- It causes or contributes to violations of any applicable state water quality standard.
- It violates an applicable toxic effluent standard or prohibition under Section 307 of the CWA.
- It jeopardizes the continued existence of a species listed as endangered or threatened under the Endangered Species Act of 1973 or results in the destruction of critical habitat as defined by the 1973 act.
- It causes or contributes to (either individually or cumulatively) significant degradation of the waters of the United States, including adverse effects on public health and welfare; life stages of aquatic life and other wildlife dependent on aquatic ecosystem diversity, productivity, and stability; recreational, aesthetic, and economic values; and special aquatic sites.
- Until appropriate and practicable steps have been taken which will minimize potential adverse impacts of the discharge on the ecosystem (Rich and Coltman 1991).

Federal wetlands regulation has always been controversial and remains so. "There is perhaps no more contentious issue today than that of wetlands protection," according to EPA's Reilly (1991, p. 192). Since its enactment in 1972, Section 404 has attracted both harsh criticism and vigorous defense. To its critics, the 404 permit program represents an unprecedented federal presence in land-use regulation. To its defenders, Section 404 remains the most effective means of preserving the nation's diminishing wetland resources (Blumm and Zaleha 1989).

As previously indicated, the CWA requires a permit for the discharge of dredge or fill materials to waters of the United States, including wetlands (including "adjacent" wetlands), as well as other waters (including intermittent streams) to the ordinary high water (OHW) mark in freshwater areas or mean highwater mark (MHW) in tidal areas. The Corps and EPA must delineate these areas in order to determine jurisdiction of 404 permitting authorities (i.e., jurisdictional delineation). The Corps, EPA, USFWS, and SCS all use the same manual for delineating wetlands. The federal manual has three criteria for making a wetlands determination: wetlands hydrology, hydrophytic vegetation, and hydric soils. The manual has been a source of intense discussion and is currently being revised.

Under the Corps and EPA regulations, much more stringent criteria are invoked in the permit process if the area is a wetland or special aquatic area rather than another area of jurisdictional coverage. If it is a wetland or special aquatic area, there is a presumption against granting the permit for a non-water-dependent fill, whereas if it is one of the other areas, there is no such presumption (Want 1990).

Mitigation includes avoiding, lessening of the adverse environmental impacts of development, and replacement of ecological resources lost as a result of development. There have been differences between EPA and the Corps in the interpretation of mitigation requirements under 404 permitting. As a result of this difference, the Corps and EPA entered into a memorandum of agreement (MOA) on mitigation on February 7, 1990. The MOA adopts the mitigation sequencing approach which EPA has used for a number of years. Generally mitigation is not considered as a factor in favor of issuing a permit but rather requires it after the permit proposal is determined to meet permit criteria independently of mitigation. The mitigation sequencing is to be taken in order: avoidance, minimization, and compensation. "Compensatory mitigation may not be used as a method to reduce environmental impacts in the evaluation of the least environmentally damaging practicable alternatives for the purpose of requirements under Section 230.10(a)" (Want 1990, pp. 6-29).

The MOA also sets up a "no overall net loss" policy. The overall standard under the MOA as to the amount of mitigation required is that functions and values of wetlands must be replaced consistent with the policy of no net loss (Want 1990). Specifically, the MOA provides "for wetlands, such mitigation should provide, at a minimum, one for one functional replacement (i.e., no net loss of values), with an adequate margin of safety to reflect the accepted degree of success associated with the mitigation plan" (Want 1990, pp. 6-29).

According to Want:

> In accomplishing the goal of no net loss, the Memorandum [MOA] establishes a preference for in-kind compensatory mitigation over out-of-kind. Preference is also given to wetlands restoration over wetlands creation because of the latter's lesser certainty of success. Finally, the Memorandum states a preference for on-site mitigation, which by definition must be adjacent or contiguous to the discharge site. ...[The] view of uncertainty with respect to mitigation led to the implementation of two other concepts: mitigation banking and mitigation monitoring as a permit condition. Mitigation banking creates or restores the wetlands in advance of their serving as credit for development. The Memorandum accepts the mitigation banking concept and states that the agencies will provide additional guidance on mitigation banking in the future.
>
> The Memorandum contemplates that monitoring of mitigation be imposed as a permit condition, particularly where there are high levels of scientific uncertainty. The agencies are to use the monitoring requirement as a means of enforcing the mitigation conditions. In the past these were often forgotten once the permit was issued (1990, pp. 6-30).

Only limited information exists about the effectiveness nationally of the Section 404 program. For instance, no definitive data are available to measure program impacts in terms of wetlands saved or lost. Further, permit documents do not always include the information necessary to begin compiling such data. Nevertheless, some studies have concluded that the Section 404 program has reduced wetlands losses, although the level of reduction is uncertain (The Conservation Foundation 1988). One study has indicated,

however, that in two states studied, there was a net loss in numbers and area of wetlands during the 404 program (Kentula et al. No date).

Some groups, primarily resources agencies and environmental interests, believe that the Corps has not been rigorous enough in protecting wetlands. As summarized in one report, resource agencies such as the USFWS believe that the Corps is: (1) not delineating wetland boundaries broadly enough; (2) not considering cumulative impacts of permit decisions; and (3) not requiring permit applicants to consider practicable alternatives to development activities in wetlands (U.S. General Accounting Office 1988).

According to Leslie et al.:

> The problem of cumulative impacts is particularly difficult to address under the current regulatory system which uses a permit by permit approach. In addition, many small losses are allowed without any permitting, and many other losses occur outside of the § 404 regulatory process. Even where permits are required, the impact of several conversions in an area may be much more significant when they are considered as a whole, rather than as the individual losses considered separately.
>
> But concern about the program is not limited only to people who wish to preserve wetlands. The complex § 404 permit program, as well as a number of recently developed aggressive state programs, have been the source of major frustration among developers, private landholders, and local government officials.
>
> One complaint is inconsistency. The institutional complexity of the § 404 permit program has led to inconsistent policies and practices which contribute both to frustration within the regulated community and to uneven protection of wetlands. Areas noted for inconsistency include: wetland delineation procedures; EPA and Corps regulatory guidance; regulatory implementation among the various Corps districts (some district offices tend to be more restrictive in granting permits or requiring mitigation than others); and the uneven degree of involvement of various federal and state agencies in different regions and in different cases within the same region.
>
> Some members of the regulated community believe that too much time is required to process § 404 permit applications, and that delays are unreasonably burdensome. Permit processing periods can be particularly long when state and local agencies are involved in approving the permit, or when the proposed alteration is particularly controversial (1990, p. 154).

States may assume or take over the 404 permitting process from the Corps, with EPA approval and oversight. State assumption of the 404 program is governed for the most part by 40 CFR Section 233. The state program must be at least as stringent as the federal program. The Corps retains 404 permitting authorities over Section 10 waters, i.e., waters regulated under Section 10 of 1899 Rivers and Harbors Act (RHA).

2.2.3 Clean Water Act, Section 401 Certification

Section 401 of the CWA (also, 33 CFR 320.4(d)) requires that any applicant for a federal permit or license for an activity which may discharge to waters must obtain a certification from the state so that the discharge

will comply with water quality requirements and effluent standards. Federal permits and licenses requiring 401 certification include permits for point source discharges under Section 402 and discharge of dredged and fill material under Section 404 of the CWA; permits for activities in navigable waters which may affect navigation under Sections 9 and 10 of the RHA; and licenses required for hydroelectric projects issued under the Federal Power Act. There are likely other federal permits and licenses, such as permits for activities on public lands and Nuclear Regulatory Commission licenses, which may result in a discharge and thus require 401 certification (U.S. Environmental Protection Agency 1989).

Section 401 provides that the state certification requirement is waived if the state fails to act within a reasonable time (which shall not exceed one year) of receipt of the request for certification. The Corps regulations define that reasonable time to be 60 days, but allow time to be extended up to one year (33 CFR 325.2(b)(1)(ii)). Neither the Corps nor federal courts can review the state's certification decision; judicial review is in the state courts (Want 1990). If the state denies certification, the federal permitting or licensing agency is prohibited from issuing a permit or license (U.S. Environmental Protection Agency 1989).

In CWA, Section 401(d), Congress has given the states the authority to place any conditions on a water quality certification that are necessary to assure that the applicant will comply with: effluent limitations, water quality standards, standards of performance or pretreatment standards, any state law provisions or regulations more stringent than those sections, and "any other appropriate requirement of state law." Legislative history indicates that Congress meant for the states to impose whatever conditions on the certification that are necessary to ensure that an applicant complies with all state water quality requirements. Also, because the states' certification of a construction permit or license also operates as certification for an operating permit, it is imperative for a state review to consider all potential water quality impacts of the project, both direct and indirect, over the life of the project (U.S. Environmental Protection Agency 1989).

2.2.4 Clean Water Act, Section 303 Water Quality Standards

States are directed to establish water quality standards under Section 303 of the CWA. This requirement is further defined in 40 CFR Section 131: Water Quality Standards. When setting standards, the states must take into consideration the waters' use and value for "public water supplies, propagation of fish and wildlife, recreational purposes, and agricultural, industrial and other purposes" (33 USC 1313(c)(2)(A)). EPA has the authority to review and approve or disapprove of the state's standards, and the states are required to review and, as appropriate, revise their standards every three years (known as the triennial review). If EPA believes that a state's water quality standards are inconsistent with the CWA or if the state does not make changes requested by EPA, the agency must promulgate standards for the state. EPA's water quality standards regulations require states to adopt water quality standards which have three basic components: use designations, criteria to protect those uses, and an antidegradation policy.

EPA directs that, where attainable, designated uses must include, at a minimum, uses necessary to protect the goals of the CWA including: the propagation of fish, shellfish, and wildlife and provide for recreation in and on the waters. This baseline is commonly referred to as the "fishable/swimmable" designation. Criteria must be used to protect the designated and existing uses. In addition, EPA also requires that all states adopt an antidegradation policy. At a minimum, a state's antidegradation policy must be consistent with the following provisions:

1) Existing uses and the level of water quality necessary to protect existing uses in all segments of a water body must be maintained;

2) if the quality of the water is higher than that necessary to support propagation of fish, shellfish, and wildlife, and recreation in and on the water, that quality shall be maintained and protected, unless the State finds that lowering the water quality is justified by overriding economic or social needs determined after full public involvement. In no event, however, may water quality fall below that necessary to protect the existing beneficial uses;

3) if the waters have been designated as outstanding resource waters (ORWs) no degradation (except temporary) of water quality is allowed (U.S. Environmental Protection Agency 1989, p. 13).

States can use narrative and numeric standards as well as the antidegradation standards to protect wetlands. Also, the first step in applying water quality standards to wetlands and riparian areas is to ensure they are legally included in the regulatory definition of "state waters." The CWA does not preclude states from including riparian areas, flood plains, vegetated buffer areas, or any other area identified as being critical to the goals of the CWA, from being included in waters of the state (U.S. Environmental Protection Agency 1990).

EPA has issued national guidance on water quality standards for wetlands. States are to develop water quality standards for wetlands by 1993. By the end of fiscal year (FY) 1993, the minimum requirements for states are to include wetlands in the definition of "state waters," establish beneficial uses for wetlands, adopt existing narrative and numeric criteria for wetlands, adopt narrative biological criteria for wetlands, and apply antidegradation policies to wetlands (U.S. Environmental Protection Agency 1990).

2.3 National Policies

In addition to legislative initiatives taken by Congress to protect water quality, two presidents have been leaders in policy formulation. President Jimmy Carter issued executive orders 11988 and 11990 (Flood Plain Management and Wetland Protection) in 1977 which made wetlands protection a national policy matter. President George Bush has been clear, "My position on wetlands is straightforward: All existing wetlands no matter how small, should be preserved" (U.S. Department of Interior 1990, p. 3). President Bush on "numerous occasions" has continued to state his "no net loss" policy across the nation (U.S.

Department of Interior 1990, p. 3). President Bush selected an environmentalist, William K. Reilly, to direct EPA. Before his EPA appointment, Mr. Reilly was president of the World Wildlife Fund/The Conservation Foundation, a group active in wetlands protection. Since Mr. Reilly's appointment, EPA has generally taken an increasingly active role in wetlands policy (Reilly 1991). The actions by the Bush administration have been influenced by recommendations from various groups, including the National Wetlands Policy Forum.

2.4 National Policy Recommendations for Wetlands and Riparian Areas

2.4.1 National Policy Forum

The National Wetlands Policy Forum (the Forum) was a twenty-member panel consisting of governors, other state and local officials, representatives of environmental groups, and members of the farming, forestry, and ranching communities. This group was convened in the summer of 1987 by The Conservation Foundation at the request of EPA. Chaired by New Jersey Governor Thomas H. Kean, the Forum recommended adoption of a goal of "no net loss" of the nation's wetlands in 1988 (The Conservation Foundation 1988). To achieve this goal, the Forum emphasized a number of non-regulatory mechanisms such as increased government incentives to private wetland owners to preserve wetlands, more funding for government purchase of wetlands, and greater scrutiny of government programs that may encourage wetland destruction. Regulatory changes advocated by the Forum report included increased delegation of program responsibilities to the states, adoption of a single wetlands definition for regulatory purposes, and expansion of the program to include activities such as excavation and drainage. The report also recommended revised mitigation policies, including establishing mitigation banks and favoring avoidance and minimization of adverse effects rather than than creation of substitute wetlands (The Conservation Foundation 1988, 1989). To some extent, the no net loss recommendation has been institutionalized by President Bush and his EPA administration.

The Conservation Foundation report for the Forum has been both praised and criticized. Two critics state:

> The Forum report suffers from...deficiencies. For example, it combines advocacy of greater wetlands protection with a simultaneous goal of reducing costs, delays, and frustrations for the regulated sectors. We contend that while both goals are commendable, this vision of painless wetlands protection is unrealistic; the history of 404 regulation indicates that the "expedited permit processing" goal often undermines the wetlands protection goal, especially in the case of general permits. Moreover, the Forum's "no net loss" goal, while laudable, seems to be the product of an uniformed reliance on wetland creation and restoration. Wetland creation and restoration remain unproven technologies --- some fifty percent of such projects fail --- and at best can replace only certain wetland functions (e.g., flood storage) but not others (e.g., groundwater recharge and wildlife habitat). Further, if "no net loss" is not restricted to an individual project level, it assumes that wetlands are fungible when in fact they differ in type, value, and regional importance. Further the Forum report endorses both regional general permits and the exemptions for "minor" activities contained in Section 404(f), both of which have proved to be major vehicles for wetlands destruction (Blumm and Zaleha 1989, pp. 763-764).

2.4.2 National Riparian Program

As early as 1978, scientists were calling for a national riparian program (McCormick 1978). Various individual federal and state agencies have responded with protection policies, but there is no federal law requiring riparian area protection. EPA has recognized the link between riparian areas and the CWA goal of restoration and maintenance of physical, chemical and biological integrity of the nation's waters (U. S. Environmental Protection Agency 1990a, 1991b). "EPA recognizes that riparian areas serve many important functions and possess numerous values, including a major role in maintenance of the quality of the Nation's Waters" (U.S. Environmental Protection Agency 1991b).

2.5 Other Federal Wetland and Riparian Area Laws

Although the CWA is the major federal law regulating the use of wetlands and riparian areas, there are several others including the RHA of 1899, the National Flood Insurance Act of 1968 and the related Flood Disaster Protection Act of 1973, the Wild and Scenic Rivers Act of 1968, the Coastal Zone Management Act of 1972 (CZMA), the Endangered Species Act of 1973 and the related Fish and Wildlife Act of 1974, the Surface Mining and Reclamation Act of 1977, and the Food Security Act of 1985 (FSA). The RHA is the oldest federal law affecting wetlands protection. Under the 1899 act, the Corps "is responsible only for navigable waters ... reaching laterally to the mean high water mark in tidal areas ... and the ordinary high water mark in freshwater areas" (Rapoport 1986, p. 113). Section 10 of the act is the original source for the permit-granting authority of the Corps. In the 1960s, the Corps started to use this authority to protect wetlands (Want 1990). As a result of this permit-granting experience, the Corps has derived its subsequent regulatory authority for Section 404 permits plus nationwide general permits (Rapoport 1986, Harrison No date, Burke et al. 1988, and Want 1990). In their 1988 regulations, the Corps identified 26 of these nationwide general permits that are applicable on a nationwide basis for regulation. Recently, the Corps has proposed to increase the number of nationwide permits to 40. Permit number 26, known as Nationwide 26, is the most common of these permits. It applies to activities under one acre that lie above the headwaters, and at the Corps' discretion, may apply to activities of up to ten acres in areas located above headwaters. The determination of headwaters is made by each Corps district engineer. Headwaters refer to the point on a non-tidal stream above which the average annual flow is less than five cubic feet per second, or for streams that are dry for long periods of the year, the headwaters may be established as that point on the stream where a flow of five cubic feet per second is equalled or exceeded 50 percent of the time (Rich and Coltman 1991).

The 1968 flood insurance law established a federally subsidized flood insurance program that is available to residents of communities which participate in the program (42 USC 4001-4128). The program is administered by the U.S. Department of Housing and Urban Development. The 1973 act prohibits federal

assistance for land acquisition and construction in flood hazard areas unless a community participates in the flood insurance program. In addition, federally insured loans are prohibited to communities not participating in the program. To participate, communities must adopt land-use regulations for flood plains consistent with federal criteria (Moss 1977).

The Wild and Scenic Rivers Act states "certain rivers which, with their immediate environments, possess outstanding remarkable scenic, recreational, geologic, fish and wildlife, historic, cultural, or other similar values shall be preserved in free-flowing condition, and that they and their immediate environments shall be protected for the benefit and enjoyment of present and future generations" (16 USC 1271). The act established the Wild and Scenic Rivers System and affords different levels of protection in the system (Moss 1977). Section 11 of the act enables the U.S. National Park Service to provide river conservation planning assistance to state and local governments and private groups. During the 1980s, this provision contributed to the growing national interest in the development of greenways adjacent to rivers and streams (Little 1990).

Although the CZMA does not affect inland states like Arizona, it has significant national implications for wetlands and riparian areas (16 USC 1451 et seq.). The CZMA "created a voluntary program for states to establish and implement coastal management programs that must meet certain minimum standards for federal approval" (Want 1990, p. 13-3). The act also requires that "federal activities affecting the coastal zone be 'consistent' with approved state plans" (Want 1990, p. 13-3). As amended, the act provides that a timely objection by a state with a federally approved management program to an applicant for a 404 permit precludes the Corps from issuing the permit (U.S. General Accounting Office 1988). Some states have wetlands and riparian area provisions as part of their coastal programs. For instance, in Washington State, its shorelines law address wetlands and riparian areas both in coastal areas and along inland waterways. (See section 4.2 of this report.)

The Endangered Species Act addresses wetlands through the protection of critical habitat (16 USC 1531 et seq.). Beginning in 1973 and with strengthening amendments in 1978 and 1982, the endangered species legislation requires protection of critical habitats for rare, threatened, or endangered species. Fish and wildlife legislation began in the 1930s, but was especially strengthened in 1974 and 1980. The purpose of this program is to manage federal, state, and local plans for hunting, fishing, and habitat conservation. The 1980 amendments introduced protection of non-game species. The principal agency responsible for the protection of endangered species and for fish and wildlife programs is the USFWS (Westman 1985).

The goal of the Endangered Species Act is to "provide a means whereby the ecosystems upon which endangered species and threatened species depend may be conserved, to provide a program for the

conservation of such endangered species and threatened species, and to take such steps as may be appropriate to achieve the purposes of the treaties and conventions set forth..." The act may address wetlands in a very slight fashion through the protection of critical habitat. However, the listing of critical habitat under this act has been quite limited on a nationwide basis. The act does not have a category for rare species. It mandates federal agencies to use their authorities, i.e. project or permit review, to "seek to conserve endangered species."

Surface mining operations can result in disturbances to the environment that can adversely affect commerce and the public welfare by contributing to floods, polluting the water, and destroying fish and wildlife habitats. The Surface Mining and Reclamation Act attempts to ameliorate these negative impacts. The act encourages state efforts and the reclamation of rural lands. Section 406 provides for the control and prevention of erosion and sediment damages from mined areas and promotes water resource conservation. The U.S. Department of Agriculture (USDA) can enter into agreements with landowners and owners of water rights to encourage conservation.

The swampbuster provisions were adopted by Congress as part of the Conservation Title of FSA of 1985. These provisions withhold federal agricultural benefits from landowners who convert wetlands without an approved conservation plan. The federal programs affected include price and income support payments, storage facility loans, crop insurance, disaster payments, and Farmers Home Administration loans. Since most farmers make use of some of these benefits, the swampbuster provisions are potentially quite significant. The responsibility for the preparation and adoption of conservation plans is jointly shared by the landowner, the local conservation district, and SCS. This provision was strengthened in the Food, Agriculture, Conservation and Trade Act (FACTA) of 1990. The Wetlands Reserve Program established under Section 1438 of FACTA provides incentives to protect and restore up to one million acres of wetlands in return for long-term conservation easements (Cohen et al. 1991).

2.6 General State Responses

States have responded to this complex array of federal laws in a variety of ways. For instance, as a result of the CWA, states "may assume responsibility for issuing [404] permits in certain waters under their jurisdiction in accordance with criteria developed by EPA" (U.S. General Accounting Office 1988, p. 10). Thus far, only Michigan has assumed primacy for issuing 404 permits, although several other states have considered or are considering the possibility. Most states have obtained primacy from EPA for the Section 402 NPDES permit program.

According to Salvesen, "The resulting programs [of the states], no two of which are identical, vary from those that regulate a wide range of activities such as dredging and draining, to programs that provide tax

incentives to protect wetlands permanently" (1990, p. 43). Salvesen notes that, in general, states regulate wetlands in two ways:

> indirectly, as part of broad regulatory programs such as the coastal zone management program or the water quality certification provisions under Section 401 of the Clean Water Act, and directly, by enacting laws specifically to regulate activities in wetlands (1990, p. 43).

Although California, Oregon, and Washington have noteworthy coastal programs, western states have been slow in developing overall protection policies. In 1985 Kusler noted that, "no state west of the Mississippi has adopted a comprehensive wetland or riparian habitat protection program for public or private lands, unlike the coastal states which have all adopted some protection for their coastal wetlands and 11 eastern states which have adopted freshwater protection statutes" (1985, p. 6). Western states face a special opportunity and challenge because of the large blocks of public lands. Kusler notes that six western states have adopted flood plain regulatory laws, but "these are narrowly aimed at reducing flood losses and have no provision for vegetation" (1985, p. 6). Conversely, Oregon has adopted statewide planning guidelines for riverside lands and a state tax credit program, while Washington includes inland shorelines as part of its coastal zone program.

According to Griffin, "nearly half of the 50 states regulate wetlands uses to varying degrees; however, many of these states protect only coastal wetlands, with inland wetlands being largely unprotected except by federal regulations" (1989, p. 25). These inland areas are significant because they represent the majority of the wetlands remaining in the lower 48 states. Much of this inland wetland is closely associated, physically and biologically, with riparian areas. Griffin (1989) has identified only 13 states nationwide with comprehensive inland wetlands protection laws.

The situation is changing both for inland wetlands and in the western states. For example, the Wyoming legislature passed the Wyoming Wetlands Act in February 1991 (WS 35-11-308 through 35-11-311). In that act, the legislature declared that "all water, including collections of still water and waters associated with wetlands within the borders of this state are property of the state. The legislature further declares that water is one of Wyoming's most important natural resources, and the protection, development and management of Wyoming's water resources is essential for the long-term public health, safety, general welfare and economic security of Wyoming and its citizens."

Action by Wyoming and other states is important because federal agencies have not been successful in preventing the loss of wetlands. The U.S. General Accounting Office (GAO) (1988) has been critical of the Corps for not systemically seeking out 404 permit violators or for conducting follow-up investigations of suspected violations. GAO researchers have found that the Corps "rarely uses available civil or criminal

remedies and suspends or revokes few permits, preferring instead to seek voluntary correction of the violations observed" (1988, p. 3). The GAO has also observed "limited involvement" by EPA in wetlands program enforcement.

3.0 Description of State Wetland and Riparian Protection Programs

3.1 Definitions, Inventories, Delineation, and Value Ranking

3.1.1 Definitions

Wetlands and riparian "areas are transitional features that vary in composition and function, both spatially and temporally" (Willard et al. 1990, p. 111). The differing needs of regulatory and scientific purposes create different definitions and precise definitions of wetlands and riparian areas are inherently inaccurate. "This natural variability and complexity exacerbates the proliferation of definitions, terms, and interpretations" (Willard et al. 1990, p. 111).

"Definitions reflect the needs of the definers," Willard et al. have observed (1990, p. 112). For example, the USFWS adopted a comprehensive definition of wetlands that maximized opportunities to carry out its responsibility to inventory the nation's wetlands (Clean Water Act, Section 208(i)) and attempted to consider natural transitions. Under this definition either wetland soils, hydrology, or vegetation may indicate the presence of a wetland. Thus, it is a relatively broad and inclusive definition requiring that only one parameter be met (Willard et al. 1990).

> Wetlands are lands transitional between terrestrial and aquatic systems where the water table is usually at or near the surface or the land is covered by shallow water... Wetlands must have one or more of the following attributes: (1) at least periodically, the land supports predominantly hydrophytes; (2) the substrate is predominantly undrained hydric soil; and (3) the substrate is non-soil and is saturated with water or covered by shallow water at some time during the growing season of each year (Cowardin et al. 1979).

Regulations developed to implement the "swampbuster" provisions of the 1985 FSA use a definition which has both differences and similarities to that used by the USFWS (Willard et al. 1990). However, the Corps and the EPA use a more restricted definition of wetlands in their regulations for permits under Section 404 of the Clean Water Act, which basically require that three criteria be met (soils, hydrology, and vegetation):

> The term "wetlands" means those areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs and similar areas (33 CFR 323.2 and 40 CFR 230.3).

More than 50 different definitions of "wetlands" are in use in the United States (see Table 1 for summaries of some state definitions and Willard et al. in Bingham et al. 1990). Although many of these definitions are basically similar and their interpretation in the field has been converging in recent years, they do reflect a wide range of institutional perspectives and professional orientations.

Several approaches are taken by states in defining wetlands. Some states define wetlands in terms of tidal levels, inundation by surface or flood waters, or distance from high water mark (Kusler 1983). In general, current definitions are based upon factors in three natural elements: soil, water, and vegetation. According to Willard et al., "some definitions, especially those developed for regulatory purposes, may include other factors such as location or a minimum size criterion" (1990, p. 112). None of the identified definitions "are based on functional or performance criteria, such as flood control capability, provision of habitat for fish and wildlife, or capacity to improve water quality" (Willard et al. 1990, p. 112). Many states now tie state wetland definitions into the federal jurisdictional wetlands definition (Table 1).

Thirty-four states have definitions for wetlands and riparian areas (Table 1). In some states these are official definitions, in others they are working definitions, and in still others they are fulfilling both roles. In 18 states, a distinction is made between wetlands and riparian areas. In several states riparian areas are considered to be wetlands. In Alaska, wetlands are treated as "waters" rather than land, while riparian areas are considered to be "land." In Oklahoma, wetlands are protected as "waters of the state" but riparian areas are not. Several states are in the process of making the distinction, such as Idaho where the Agricultural Water Pollution Abatement Plan is being updated and will contain definitions which make a distinction between wetlands and riparian areas.

Definitions of riparian areas are found less frequently than definitions of wetlands because when they are regulated, they are generally regulated as a part of a shoreline, watercourse, and/or forestry program as a "buffer strip." Some states seem to consider riparian areas to be physiographically but not functionally distinct from wetlands. In Alaska, riparian areas are regulated as a part of the State Forestry Practices Act and are defined in terms of a 100-foot strip along a watercourse. In Connecticut, riparian areas are regulated as they relate to watercourses and flood plains (regulation is by local discretion, with state standards). Kansas addresses the definition of riparian areas through its statewide water plan as vegetation and associated wildlife areas. Arizona defines riparian areas, within which wetlands are included, through executive order in terms of the aquatic and terrestrial ecosystems dependent upon surface and groundwater (Table 1).

3.1.2 Inventories

Mapping features, scale, and accuracy are also major issues in wetland and riparian area programs. Boundaries often follow natural features and cross property lines. Detailed mapping may give rise to the erroneous belief that wetland and riparian boundaries can be located within mathematical precision. In fact, boundaries must be somewhat flexible since they reflect a natural transition (Kusler 1983).

Not all states and communities with wetland protection programs map their wetlands. Instead, some rely upon written definitions such as vegetation criteria and tidal elevation. Such an approach is less expensive than mapping, but it creates uncertainty as to the location of wetland boundaries.

To date, most wetland mapping efforts have relied extensively on existing air photos or other existing data sources. Principal data sources differ from state to state. (Some examples are listed in Table 1 and Kusler 1983.) Several states, including Connecticut and Michigan, undertake extensive inventories of wetlands. In Wisconsin the statewide wetland inventory is supposed to be updated every ten years. However, current funding only allows this update to occur on a 20-year schedule.

States often adopt existing wetland maps prepared by federal agencies. This is true in Alaska, Idaho, Kansas, Maryland, Minnesota, Mississippi, North Dakota, and Pennsylvania, where the USFWS has undertaken mapping efforts. Several USFWS inventories are incomplete, such as in Wyoming and Texas, where only coastal areas have been defined. As states rely on federal agencies, local governments depend largely on federal/state wetland inventories. As a result, detailed information at the local level is often lacking.

It appears that very little riparian area mapping has been done nationwide. In Arizona, as a pilot project, the USFWS is modifying existing wetland maps to add riparian vegetation.

3.1.3 Delineation

The value of a definition as well as an inventory method lies in delineating boundaries on the ground. According to Willard et al., "controversy is likely to arise when defining the boundary or locating the edges of a wetland" (1990, p. 114). The CWA requires a permit for the discharge of dredge or fill materials to waters of the United States, which include wetlands (and intermittent streams) to the OHW in freshwater areas or MHW in tidal areas. MHW is "established by [ground] survey with reference to the available tidal datum, preferably averaged over a period of 18.6 years." The OHW is the "line on the shore established by fluctuations of water and indicated by physical characteristics such as a clear, natural line impressed on the bank" (33 CFR Part 329.11).

Wetland delineation for federal purposes is determined by the Federal Jurisdictional Wetlands Manual. Some states such as New Hampshire are incorporating this methodology for purposes of state wetlands regulation as well (see Table 1). Use of the current federal manual has set off a storm of protest over its delineation of regulated areas. With current proposed changes to the federal manual (Environmental Reporter 1991), changes to state programs may result and add to the confusion and frustration with wetlands delineation.

To adequately protect wetlands, associated riparian areas need to be delineated to act as buffers. According to Willard et al.:

> Even given equivalent definitions and methods for applying them, certain kinds of wetlands are difficult to delineate definitively. Many definitions recognize that wetlands are transitional natural features [see USFWS definition in section 3.1.1 of this report] ...Because wetlands protection essentially attempts to protect the functions of those wetlands, many suggest that the boundaries should include buffer areas to protect that area which is necessary to protect the function of the wetland. Although maintenance of buffers is a significant policy question, defining the location of such a buffer presents similar boundary problems. Including the area upon which the wetland is functionally dependent may extend the boundary far beyond the limits demarcated by water, soil, or vegetation (1990, p. 115).

Wetlands and associated riparian buffers vary in size regionally and even within bioregions. Maine regulates freshwater and coastal wetlands and upland areas adjacent to these wetlands where the upland activity would wash soil into the wetlands (Want 1990). Maryland regulates a 25-foot to 100-foot buffer around freshwater wetlands. In the Pacific Northwest, 15-meter buffer corridors have been suggested (Budd et al. 1987). Obviously, such buffer areas are likely to include much of the riparian zone. (For an excellent discussion of the ecological values of buffer strips see a new Harvard University study, Binford and Buchenau forthcoming.)

Willard et al. note

> The problem of defining the boundary is complicated by the fact that the physical and biological characteristics of wetlands are dynamic. Plant boundaries can change in a season, water levels in hours, and soils over years. Wetlands are naturally in a state of change, and these metamorphosis frustrate and confuse regulators and landowners subject to regulation. Boundary delineations must, therefore, reflect the time period for which the boundary applies. Boundaries can be drawn to apply for a year, a decade, or a century. Under its regulations for instance, the Corps does not consider an area to be a wetland if it has not displayed all the characteristics required by the Corps/EPA definition within the previous five years (1990, p. 115).

3.1.4 Value ranking

"Based on inventories and descriptions or characterizations, wetlands can be categorized in several different ways," according to Haygood and Reed (1990, p. 51). They continued that wetlands

> might simply be classified by type, or they might be classified by the degree of stress on the wetland (in other words, the likelihood that it would be a target of development or subject to degradation). Wetlands might also be categorized by their condition. For example, wetlands might be divided into three categories: undisturbed natural wetlands, wetlands which are degraded but restorable, and irreversibly damaged wetlands. Such systems of categories can be the basis on which planners prescribe qualitatively different management strategies or set priorities for the timing of actions.
>
> Some planning processes take the further step of grouping wetlands based on their relative value or importance. This step, which is referred to as "ranking," has generated controversy both in concept and in practice because of its presumed implication that some wetlands may be sacrosanct and

> some expendable. The concept of wetland ranking involves placing inventoried wetlands into three to five broad categories based on the combined importance of their ecological services and intrinsic values. While systems such as [the USFWS habitat evaluation procedure] HEP and [the Corps wetland evaluation technique] WET exist to identify or predict the functions of a particular wetland (and provide a basis for comparison to functions performed by other wetlands), ranking inherently requires judgments about the value to society of the functions performed. Thus, ranking goes beyond science and into the realm of policy (1990, p. 51).

This situation is not unusual in environmental planning and management. For example, the SCS agricultural and evaluation and site assessment (LESA) system uses a combination of physical soil characteristics and site-specific social factors to evaluate farmland for protection (Steiner et al. 1987). Federal agencies are to use LESA as part of the environmental review process to determine impacts of projects on farmlands. States and local governments may adopt their own LESA systems, subject to USDA approval.

Wetlands ranking has been carried out in the context of planning processes and state regulatory programs. EPA and the Corps have used the advance identification (ADID) process to rank wetlands in several parts of the country (Haygood and Reed 1990). ADID is a process of collecting data and generating new data on the aquatic system and its value and function to surrounding and downstream ecosystems to determine what areas are generally suitable or unsuitable for use as discharge sites.

Massachusetts employs a ranking system in its state wetlands program, which in effect assigns wetlands to two broad classes. According to Haygood and Reed, the Massachusetts

> Inland Wetlands Restrictions Act and the Coastal Wetlands Restriction Act, wetlands are mapped on a town-by-town basis. Those wetlands identified as particularly valuable are designated for restriction. Following a public hearing, a Restriction Order is enacted which prohibits certain activities which would harm the wetlands. The Order is recorded on the deed of the property to give notice of the restriction to future purchasers of the property (1990, pp. 52-53).

New York also uses a classification system. The New York system has a hierarchy of classes. Haygood and Reed observe:

> Under its freshwater wetlands law, the New York Department of Environmental Conservation classifies freshwater wetlands regulated by the state (those above 12.4 acres in area) in four categories based on criteria for functional characteristics, including some social functions such as the wetland's role in protecting water supplies. After mapping and ranking, the state notifies landowners of wetlands on their property and provides information on the likelihood of obtaining a permit for activities in the wetland (1990, p. 53).

The classification and rating of wetlands is controversial. Haygood and Reed summarize the controversy as follows:

> A number of arguments have been raised for and against ranking and its various permutations. Many wetlands scientists and policy makers accept the premise that different wetlands perform

different functions and thus, for particular purposes, some wetlands are more valuable than others. Case by case permit decisions reflect these judgments. Ranking can be viewed as institutionalizing this premise, and setting priorities explicitly rather than implicitly, perhaps on a more consistent basis. To the regulated community, ranking of wetlands can provide greater certainty and predictability to the regulatory process, reduce delay, and help to avoid costly disputes over highly valued wetlands. Ranking can also help ensure that limited agency resources are not tied up on a few proposals, while in potentially more valuable wetlands, alterations go on unnoticed.

However, some observers question the policy basis for judgments about the relative value of wetlands, particularly for wetlands high in different values (for instance, wetlands important for wildlife habitat versus those important in moderating flood flows). The relative values of wetlands may also change over time, as might knowledge and appreciation of them. If criteria are not well specified, the rankings may be inconsistent. The process of identifying and ranking wetlands can also be very resource-intensive. If the rankings are only advisory and are not tied to a specific regulatory authority, some critics charge that little is gained through a costly process (1990, p. 53).

3.1.5 Functions and values evaluation

The mitigation MOA between EPA and the Corps references a goal of no overall net loss of wetlands functions and values. Value ranking systems assume the capability of assessing value of wetlands based on functional evaluation. Wetland replacement assumes evaluations and comparability of functions and values. However, there seems to be a problem with the availability of an acceptable methodology to evaluate wetlands functions and values. The Corps has its wetlands evaluation technique (WET) (Adamus et al. 1987). Wisconsin has published a wetland evaluation methodology (1983). Cooper et al. (1990) are working on an Intermountain West riparian evaluation methodology. Most of these systems are based on numerical rankings. Preliminary experience with attempts to rank wetlands according to numerical ranking systems suggests that such systems are useful but have several important drawbacks:

- Any attempt to systematically rank and compare wetlands by taking into account a large number of characteristics may require large amounts of natural resource data and, to a lesser extent, cultural data. Data pertaining to site-specific soils, geology, and wildlife, including rare and endangered species, can be generated only through field surveys at considerable expense (Kusler 1983).

- Any effort to rank wetlands according to a numerical scale must deal with situations where a single value is of primary importance (e.g., a bald eagle's nest) (Kusler 1983).

- Any effort to rank according to numerical scale must distinguish between complementary and conflicting values. For example, value scores should not be added where a wetland is habitat for rare species and also a potential groundwater extraction site if these two uses are incompatible and mutually exclusive (Kusler 1983).

- Any effort to rank wetlands should be flexible enough to take into account all important functions and values (Kusler 1983).

- Most of such systems assume that federal and state agencies have the capability to fully and accurately gather necessary data and evaluate it for all functions and values.

Williams has identified several other generic problems related to the assessment of wetlands values, including:

- The sheer diversity of wetland types and their functions and products makes the weighting of their functions and values difficult.
- Wetland values increase as wetland areas decrease, particularly as wetlands are often interspersed between and interrelated with other wetland areas.
- Cost-benefit analysis is not applicable to non-consumptive wetland functions.
- Commercial values are finite but wetlands may provide benefits that will last forever.
- Benefits from natural functions and characteristics do not necessarily accrue to wetland owners, but to the public.
- Information on functions and processes, and even on the precise nature of impacts, is limited despite a massive research effort during the last few decades.
- Even where functions have been clearly identified there may be significant differences of opinion as to their value to humankind (adapted from Williams 1990, p. 39).

3.1.6 State waters definition

For purposes of implementing water quality standards and other state programs, states adopt definitions for "waters of the state" or "state waters." Wetlands are included in the definition of "waters of the state" in 32 states (Table 1). In Alaska, Arkansas, Connecticut, and South Carolina, the use of "marshes" in the definition of "waters of the state" is implicitly interpreted to include all wetlands. States may choose to include riparian or flood plain ecosystems as a whole in the definition of waters of the state (U.S. Environmental Protection Agency 1990c). Maryland includes as waters of the state: "the floodplain of free flowing waters determined by the Department ...on the basis of the 100 year flood frequency." Michigan provides that its high quality waters: "shall not be lowered in quality...unless it is determined that...such lowering will not...[b]ecome injurious to the value of utility of riparian lands." Therefore, an important step in being able to apply water quality standards to wetlands and riparian areas is to include them in the definition of state water (U.S. Environmental Protection Agency 1990c).

3.2 Regulatory Programs

3.2.1 Introduction

Some regulatory programs focus on controlling alterations of the wetland resource itself (Table 2). Examples include the Section 404 program of the CWA at the federal level, various wetlands protection laws adopted by some state governments, and some environmentally sensitive lands ordinances and zoning provisions at the local level. Other regulatory programs focus not on the wetland resource, but on the activity that may cause the alteration (Table 2). According to Leslie et al.,

> protecting wetlands may be only a small part of these regulatory programs. Examples include permitting requirements for dams and water diversions, controls over wastewater discharges, and regulations controlling the disposal of hazardous wastes. ...Questions about legislative language and intent as well as such basic issues as how a wetland should be defined often make the precise scope of regulatory programs difficult to define. Questions continually arise about the reach of regulatory programs and the processes used to implement them (1990, pp. 141-142).

The first regulatory programs began in coastal states. Salvesen has observed,

> most wetlands protection efforts on both state and federal levels started along the coasts and slowly worked their way inland. Coastal wetlands have always received more attention and therefore more protection than their inland cousins, even though freshwater wetlands comprise the bulk of all wetlands.
>
> Nonetheless, until 1972 only a few states had law as to protect their coastal wetlands. California and Oregon had broad coastal zone management programs in place by then, while Massachusetts and Connecticut enacted laws specifically to protect coastal wetlands. But in 1972, the...CZMA provided the impetus for the rest of the coastal states to follow their lead. Now, all but a handful of coastal states administer federally approved coastal zone management programs (1990, p. 44).

A few states have enacted programs that protect unique natural resources, including wetlands, in defined geographical areas or on a regional basis. California, Florida, Maine, Maryland, Massachusetts, New Jersey, New York, and Washington all have such programs. For example, in 1979, New Jersey enacted the Pinelands Protection Act to regulate development and protect natural resources, including wetlands, in an approximately one million-acre, pine barren area in the south-central part of the state (Salvesen 1990). The Lake Tahoe Basin of California and Nevada also receives special regional protection. In both the Pinelands and the Lake Tahoe basin, state and local efforts were coupled with federal initiatives. (For more information about the Pinelands and Lake Tahoe, see Glasoe et al. 1989.) Florida's critical area program applies to "areas of critical state concern," which may include an area containing natural, historical, or archaeological resources of regional or statewide significance. Maryland's critical area program was established in 1984 to protect the Chesapeake Bay (Salvesen 1990). Other states have joined Maryland and the federal government in a regional effort to restore the Chesapeake. Local governments in Washington can establish environmentally sensitive areas (Jennings et al. 1988).

Such regional approaches are receiving growing attention. For example, EPA has launched a watershed protection initiative (U.S. Environmental Protection Agency 1991d). Watersheds are distinct regional units. The goal of the watershed initiative is to reduce ecological and human health risks in critical watersheds. This will be accomplished by

- The identification of watersheds, by EPA regions and states, based on problems with available solutions;
- The aggressive implementation of controls;

- The development of scientifically valid, practical indicators to identify and assess improvements made and/or ecological risks that threaten water; and
- The development of ecological criteria that states can use in adopting standards for ecologically based pollution prevention and control programs (U.S. Environmental Protection Agency 1991d).

Section 404 of the federal CWA remains the "most extensive and controversial federal wetlands regulatory program, ...that directly and specifically regulates the alteration of wetland resources" (Leslie et al. 1990, p. 142). Section 404 requires a permit to be obtained from the Corps before dredged or fill material can be discharged into any waters of the United States. Its protection of wetlands is limited to those physical alterations (and associated chemical and biological impacts) associated with the disposal of such dredged or fill materials in a wetland area (Leslie et al. 1990). States can assume the 404 program under certain provisions (40 CFR 233 et seq.). Only Michigan has done so to date, although several states have evaluated the possibility of assumption. State assumption is discussed further in section 3.3.1 of this report.

3.2.2 Planning efforts

As a part of identification of regulatory and non-regulatory strategies for wetland protection, there currently is major emphasis being placed on the preparation of state wetland conservation plans (SWCPs). The concept of SWCP was emphasized by the National Wetlands Policy Forum (The Conservation Foundation 1988). The Forum proposed that SWCPs be the basis for state wetland protection and management activities. EPA proposes to fund three model SWCPs in FY91 and to assist all 50 states, on a voluntary basis, in the development of SWCPs by the year 2000 (U.S. Environmental Protection Agency 1991e).

New York Department of Environmental Conservation (DEC) is preparing a SWCP. DEC is seeking to improve consistency with federal programs and foster cooperation with local programs. As envisioned by DEC, the SWCP for New York will identify the wetlands resources of the state, based on existing inventories, and establish a no net loss/net gain goal in the plan. It will then identify the scope of federal, state, and local programs in New York that affect wetlands protection, both in a positive and negative sense. It will identify continuing needs to establish additional programs, eliminate programs or establish consistency, and approaches to meet these needs (U.S. Environmental Protection Agency 1991f). In addition, DEC anticipates developing non-regulatory opportunities for protecting and managing the state's wetlands through cooperative agreements with landowners, including the agricultural community.

The World Wildlife Fund/The Conservation Foundation is preparing a guidebook on how to develop and implement a comprehensive statewide wetlands strategy. This project pursues one of the National Wetlands

Policy Forum's major recommendations for achieving no net loss: the development of comprehensive statewide wetlands strategies. Comprehensive state wetlands strategies (CSWS) are envisioned to be a flexible tool to achieve no net loss in a manner suited to the unique circumstances of each state. A CSWS demonstrates how a state will achieve the no net loss goal by cataloging the state's wetlands resources and outlining policies to be implemented to ensure the goal is met. It also coordinates the disparate government authorities that affect wetlands, and draws upon regulatory as well as non-regulatory programs to meet the CSWS's goal (World Wildlife Fund/The Conservation Foundation, No date).

In Oregon, locally developed wetland conservation plans (WCPs) were authorized by the 1989 state legislative assembly under Senate Bill 3, which established state policy concerning wetlands. WCPs are optional and are designed to provide better management of Oregon's wetlands while resolving conflicts between local comprehensive plans and state and federal wetland regulation. Comprehensive plans are mandatory for local governments in Oregon. These plans must achieve specific statewide goals, several of which are related to wetlands and riparian areas.

As outlined in state statute and administrative rule, WCPs must contain specific components in order to be approved in Oregon. These components include: a site description and maps; a detailed wetland inventory; an assessment of wetland functions and values; identification of public uses and conflicting planned uses; designation of wetlands for protection; conservation or development; specification of sites for fill or removal and conditions and procedures under which the activity will occur; a mitigation plan for replacement of wetland functions and values lost under the plan; monitoring provisions for both plan compliance and mitigation; specification of buffer areas and uses allowed on lands adjacent to wetlands; and policies and implementing measures. These components are compatible with the required elements for comprehensive plans in Oregon.

3.2.3 State regulatory programs

The degree of wetlands regulation by states varies widely (Table 2), with coastal wetlands receiving greater protection than inland wetlands. According to Leslie et al. (1990), all coastal states (including those bordering the Great Lakes) except Georgia, Illinois, Indiana, Minnesota, Ohio, and Texas have coastal zone management programs that regulate wetlands as part of the federal CZMA. Georgia and Minnesota have state coastal regulatory programs that affect wetlands, but they are independent of the federal program (Leslie et al. 1990).

Leslie et al. (1990) also observe that more attention has been given to coastal wetlands. The following states administer specific wetlands protection laws that include freshwater wetlands: Connecticut, Florida, Maine, Massachusetts, Michigan, Minnesota, New Hampshire, New Jersey, New York, Oregon,

Pennsylvania, Rhode Island, Vermont, and Wisconsin. Several states also use other programs, such as flood-plain management and shoreline protection, to restrict some activities affecting inland wetlands (Leslie et al. 1990).

Some states, including Connecticut and Washington, also accomplish riparian area protection through "shoreline" protection legislation. (See also Washington case study in section 4.2 of this report.) Connecticut's Inland Wetlands and Watercourse Act regulates filling, dredging, building, obstructing, or polluting a wetland or watercourse.

The administration of state programs differs from state to state. In New England, where there is a strong tradition of home rule, states typically allow their wetlands program to be delegated to local governments, some with state oversight. But even in New England, the states are assuming a greater role. In Connecticut, municipalities once were only encouraged to regulate wetlands; now, following amendments to Connecticut's Inland Wetland Law in 1987, they are required to do so. In Maine, the state may delegate administration to municipalities, while Massachusetts's program is administered by over 300 conservation commissions but overseen by the state.

Local governments have substantial regulatory authority over wetlands through general or comprehensive plans, zoning ordinances, subdivision regulations, and other land-use and development controls. Counties, cities, and towns can implement wetlands zoning regulations as part of a comprehensive zoning program or adopt them through a separate wetlands ordinance (Leslie et al. 1990). Local officials may also tighten control over wetlands uses through implementation of local flood-plain regulations, subdivision regulations which may require maintenance of open space in wet areas, performance standards, building codes, and other techniques. According to Leslie et al. "these types of regulations can apply to activities and methods of alterations, as well as to the wetlands resource itself" (1990, p. 166, see also Burke et al. 1988).

Tucson, Arizona adopted a Watercourse Amenities, Safety and Habitat (WASH) Ordinance in 1991. Washes are important hydrological elements in the deserts of the Southwest. These wetland and riparian areas provide benefits such as groundwater recharge, wildlife habitat, and recreational areas. Washes can also pose a threat to human safety because of flash flooding. As a result, development in or near desert washes presents a planning challenge. In Tucson, if the city engineer determines that a safety hazard exists, then developers must have a mitigation plan to alter a wash. The mitigation plan consists of two parts: a plan for the treatment of the wash and a vegetation/revegetation plan.

Alaska has no comprehensive statewide program, but Juneau and Anchorage have developed wetland plans that identify and catalog wetlands for their resource values. Information is used in zoning and planning to protect areas of high wetland value from development.

The Vermont Wetlands Act outlines certain responsibilities for regional and local planning commissions (U.S. Environmental Protection Agency 1991f). Wetlands protection is linked to growth management. In 1988, the Vermont Legislature passed Act 200, a growth management act, to foster greater cooperation among state agencies, regional planning commissions, and municipal governments in planning for local resources. Under its local planning and protection program, a pilot project will be established to demonstrate the potential for such efforts and to serve as a guide for other municipalities interested in pursuing local protection efforts. In addition to the specific products for each pilot town, a planning document will be generated to provide guidance to other Vermont towns interested in conducting more detailed inventories and adopting local zoning ordinances. The wetlands protection guidance document is intended for statewide distribution and will be published as a supplement to an existing local planning manual (U.S. Environmental Protection Agency 1991f).

Wetland and riparian area protection can be accomplished by adopting appropriate water quality standards. Under the goal of the CWA, standards may address biological and physical as well as chemical integrity of waters of the United States. Standards are implemented through permits, 401 certification, and/or through enforcement processes. Various water quality standards can be used to achieve wetland protection goals, including the:

- inclusion of wetlands/riparian areas in the definition of waters of the state in order to assure application of water quality standards to those areas;
- designation of uses (i.e. functions, values, and benefits) for wetlands and riparian areas to meet the same minimum requirements of 40 CFR 131.10 that are applied to other waters;
- application of antidegradation standards to wetland and riparian areas. As a part of the antidegradation standard, states can designate outstanding natural resource waters (ONRW) for wetlands which allows for special protection (U.S. Environmental Protection Agency 1985); and
- application of existing or new biological, physical and chemical integrity narrative and/or numeric standards.

Many states currently do not have wetland specific water quality standards (Table 2), but all states are directed to have wetland standards by 1993 (U.S. Environmental Protection Agency 1990). Wisconsin is currently proposing water quality standards for wetlands. These are based on a series of narrative criteria intended to protect the functional values and uses of wetlands. The narrative criteria allow the state to make an assessment of the nature of a proposed project and its potential impacts on wetlands, the alternatives to

the proposed project that might lessen the impacts on wetlands, and the significance of the expected impacts on wetlands for the purposes of state review and 401 certification of projects (U.S. Environmental Protection Agency 1991c).

The EPA (1991e) reports that the North Carolina Department of Environment, Health and Natural Resources is developing narrative standards, biological criteria, use classifications, and Tier III (unique and exceptional value wetlands) protection for wetlands. The main products of this work will be a biological criteria manual and a state wetland map book.

The South Carolina Department of Health and Environmental Control (DHEC) is in the process of designing protective standards for wetlands to include a classification system with criteria for the state's freshwater and saltwater wetlands. The development of this system will augment the existing water classifications and standards systems to ensure greater protection of South Carolina's wetlands values and functions through the CWA programs. The wetlands classification system will be developed for application to the 401 water quality certification, NPDES permitting programs, and non-point source management programs. An additional objective will be to investigate the designation of outstanding and valuable wetlands for protection under Tier III of the antidegradation rules of the current South Carolina water quality standards (U.S. Environmental Protection Agency 1991f).

According to Salvesen, "some states have modeled their programs after the federal 404 program and incorporated the same definitions, exemptions, and permit requirements as those employed by the Corps and EPA; other states have adopted programs that extend far beyond the regulatory reach of the federal program and regulate more than just the deposit of dredge or fill" (1990, p. 47). States have concocted a variety of measures to delineate where the wetland ends and the upland begins (Salvesen 1990), but some have adopted the federal jurisdictional manual to reduce regulatory overlap and confusion. A few state wetlands regulations cover activities not only in a wetland itself, but also in a buffer strip around the wetland. Some states, such as Maryland, regulate buffer areas beyond the wetland boundary.

States can assume significant regulatory authority under Section 401 (Leslie et al. 1990, Ransel and Meyers 1988). As a result of this provision, states have the authority to review any federal permit or license which may result in a discharge to waters of the United States, including Section 404 permit applications, to ensure that actions are consistent with the state's water quality standards and requirements. Although several states exercise this authority, some state program managers believe that the Section 401 certification provision is not an effective wetlands protection tool because most states have not developed specific water quality criteria for wetlands.

Twenty-nine states apply antidegradation water quality standards to wetlands (Table 2). For instance, in Nebraska the antidegradation policy is used with the 401 program. If fill eliminates or impairs a beneficial use of a surface water body, including wetlands, then the antidegradation clause of Nebraska Surface Water Quality Standards is violated and 401 certification is denied. However, many other states essentially waive exercise of their authority under Section 401, or rarely if ever deny certification (Leslie et al. 1990). CWA Section 401 certification is discussed in more detail in section 3.4 of this report.

In 25 states, BMPs are used to protect wetlands (Table 2). BMPs are recommended to prevent or minimize environmental damage from land uses or activities. For example, in Maine, BMPs are used as performance standards. The Maine Department of Environmental Protection has determined that some activities that take place in or adjacent to wetlands and water bodies will not significantly affect the environment if carried out in accordance with prescribed standards (Maine Department of Environmental Protection 1989). For these activities, there are general permits for certain watercourse alterations if specific performance standards are achieved. All projects must meet standards for erosion control, habitat protection, and water quality. In addition, various permitted activities in or adjacent to wetlands and water bodies have specific standards that must be achieved in Maine.

3.2.4 Water rights

Leslie et al. have observed "one area which is substantially ignored by most existing regulatory programs, and where the states clearly have the lead, is in regulating the water suppliers that wetlands need for their survival" (1990, p. 165). They continue,

> many wetlands alterations are caused by upstream water withdrawals or other hydrological changes. Many states, particularly in the West, have adopted extensive regulatory programs to control such withdrawals. Often, however, nourishing wetlands is not considered to be a beneficial water use under state water laws. In these cases, the state water allocation system apparently cannot be used to ensure that wetlands receive water (Leslie et al. 1990, p. 165).

Hobbs and Raley have observed

> that federal agencies exceed their statutory authority if and when they attempt to utilize water quality regulation for the purpose of allocating or reallocating appropriative water rights from their intended beneficial use to instream or other values. In view of [CWA] section 101(g), the Corps and EPA must perform the tasks delegated to them under the Act in a manner that respects water rights in concert with national water quality and wetlands protection regulation. The 1977 Clean Water Act sets forth a framework of federalism by which to reconcile these sometimes conflicting but vitally important public purposes. Attempts to use water quality and wetlands regulation to promote the "new riparianism" are misplaced (1989, p. 845).

Furthermore,

> advocates of the new riparianism, rallying to the banner of the "public trust," "public interest review," "wetlands preservation," and "antidegradation," suggest that the Clean Water Act should be utilized to allocate and reallocate water to a broad range of instream environmental, socioeconomic, cultural, and aesthetic values. For example, one commentator argues that the public trust doctrine and water quality regulation should be employed to restrict "the quantity of water extracted by appropriators" because "almost all extractions of water contribute to water quality degradation by . . . reducing the quantity of water in the stream and, thus, its assimilative capacity." This effort appears to be part of a larger to impress the "natural flow" doctrine of riparian law upon the prior appropriation states (Hobbs and Raley 1989, p. 855).

3.3 404 Permit Program

3.3.1 State assumption

Thus far, Michigan is the only state with both a sufficiently strict program and the inclination to assume administration of the federal Section 404 permit program within its borders. Michigan assumed administration of the Section 404 wetlands program in August 1984. But the Corps has retained jurisdiction over Section 10 of the RHA of 1899 and "Section 404 activities in and adjacent to the Great Lakes, their connecting waterways, wetlands adjacent to navigable rivers, and the mouths of major tributaries of navigable rivers" (Brown 1988, p. 9). Michigan's wetlands program is broader than the 404 program.

Since Michigan is essentially running its own 404 program, permit applications must go through a type of public interest review similar to that which the Corps performs and must meet tests similar to those which EPA has established, such as the water dependency and practicable alternatives test. In other words, in Michigan, a permit to develop in wetlands will be issued only if the activity is in the public interest, is "primarily dependent on being located in the wetland," or if no "feasible and prudent" alternative exists. Michigan goes a step further and also considers the amount of wetlands remaining in an area and the cumulative impacts of the proposed projects on wetlands in a particular watershed before it will issue a permit (Salvesen 1990).

Several states indicate that they have considered assuming primacy and creating a state 404 program, including Alabama, Alaska, Arkansas, Colorado, Connecticut, Idaho, Kentucky, Maryland, Minnesota, Missouri, Montana, Nebraska, New Hampshire, Oklahoma, Oregon, Pennsylvania, Rhode Island, South Carolina, Tennessee, Washington, Wisconsin, and Wyoming (Table 3). According to the state officials who responded to the survey, the major reason for not pursuing primacy has been inadequate state-level funding and staffing. In Maryland, the state is working toward primacy by sharing responsibilities for a 404 under a proposed new permit program.

According to Salvesen, there are few reasons for states to assume the 404 program. He notes, "the 404 permit program's regulations are cumbersome, its requirements are stringent, and the incentives to assume its administration are few" (Salvesen 1990, p. 44). Leslie et al. have identified the following major impediments to the delegation of 404 to the states:

- The CWA does not provide sufficient funds for the federal government to assist the states.
- The CWA does not allow the state to assume permitting responsibility for certain waters.
- Aside from that restriction, the CWA does not provide for partial delegation.
- Because EPA is responsible for delegation, that agency also oversees the delegated programs and some state officials are concerned EPA may be "too tight in its oversight."
- Even if all 404 authorities could be delegated, the Corps would still retain RHA permitting responsibilities, meaning an applicant may still need two permits (adapted from Salvesen 1990, pp. 161-162).

3.3.2 Advance planning

EPA has initiated a cooperative effort among state, federal, and local agencies to inventory, characterize, and map wetland resources. As a result of the CWA, EPA with the responsible 404 permitting agency, that is, the Corps or the Michigan Department of Natural Resources (MDNR) in that state, have joint authority "to identify wetlands that are suitable or unsuitable for discharge permits" (Haygood and Reed 1990, p. 36). This authority has led to EPA's ADID program. The maps that result from ADID efforts are intended to identify suitable/unsuitable designations "to guide regulatory decisions and private actions and lend predictability to the Section 404 permitting program" (Haygood and Reed 1990, p. 36).

According to Salvesen, "Between 30 and 40 advance identification processes have been proposed, completed, or are underway in such places as the Hackensack Meadowlands, New Jersey; Chincoteaque Island, Virginia; York County, Maine; Pearl River Basin, Louisiana; East Everglades, Florida; Riverwater Basin, Nebraska; San Francisco Bay; along the Jordan River in Utah, and in the dunes region of Indiana (1990, p. 38). Recently, an ADID process has been initiated in the Verde Valley of Arizona. ADID is one attempt to improve the 404 process and involve state agencies with the Corps and EPA.

3.3.3 Federal process

In most states, the Corps is responsible for the 404 permitting process. The Corps determines jurisdictional delineation for wetlands. The Corps generally relies on the federal manual for delineation. Several states augment the Corps' delineation with additional definitions of wetlands and riparian areas (Table 3). In Maryland, the Corps determines delineation, but state nontidal wetlands go beyond this

jurisdictional line to regulate a 25- or 100-foot buffer zone. The MDNR determines delineation in Michigan.

Concerning public notification and pre-application information, the various states and different divisions of the Corps have taken several approaches (Table 3). The state activities associated with public notification range from elaborate (for example, Maryland, Michigan, and South Carolina) to little or none (for example, Nebraska and South Dakota). In the states without notification procedures, the Corps usually assumes the major responsibility. Several states have published information booklets to assist developers and agencies with the 404 process. In such states, joint or dual application processes are common between the Corps and the state. In other states, like Colorado and Illinois with several Corps divisions, multiple public notice procedures are used.

In addition to the 404 monitoring and enforcement done by the Corps, some states are involved through their state wetlands programs. There is great variation in state monitoring activities related to 404 permits. Many survey respondents and other observers contend that the monitoring activities of the Corps and EPA are minimal and inefficient.

Generally, the civil and/or criminal penalties for 404 violations are imposed according to national standards by the Corps. However, there appears to be much variation around the country in the level of rigor used by the Corps (division or district) offices in imposing penalties. A few states reported that EPA has also penalized violators (Table 3).

The district offices of the Corps are generally responsible for managing information related to 404. Projects with 404 permits are tracked by the individual Corps district project officers. Some state agencies retain copies of 404 applications and permits (Table 3). This tracking frequently occurs through the 401 process. In Florida, state statutes mandate a permit data management system. State officials are required to make an annual report to the Florida legislature to identify losses and gains of wetlands. Some states including Ohio, Tennessee, and soon Kentucky, use computer systems to monitor 401/404 projects. California has recently begun tracking 401 permits.

Mitigation measures associated with 404 vary from state to state and within the different regional/district offices of the Corps and EPA (Table 3). The USFWS defines mitigation as the following steps: 1) avoid the impact, 2) reduce the impact, 3) ameliorate the impact over time, and 4) compensate for unavoidable impacts. Mitigation can involve the creation or restoration of wetlands and/or riparian areas. In general, mitigation proposals include some of the following elements:

- A clear statement of the objectives of the mitigation;
- An assessment of the wetlands values and functions that will be lost and that will be replaced;
- A statement of the location, elevation, hydrology, soils, and vegetation of the new site;
- A description of what will be planted where and when;
- A monitoring and maintenance plan;
- A contingency plan;
- A schedule of completion; and
- A guarantee of work as planned and approved (adapted from Salvesen 1990).

In cases where mitigation involves some compensation for lost wetland values, the issue of compensation ratio is usually raised. In other words, if one acre of wetland would be lost as a consequence of some permitted action, how does one calculate the number of acres that should be enhanced or created to achieve full compensation of the lost wetland functions and values? It is important to reiterate that many members of the scientific community caution that the ultimate success of many types of compensatory actions, particularly wetland creation, is uncertain. Federal agencies are evaluating the use of more sophisticated wetland function and value evaluation techniques for estimating the appropriate compensation ratio for individual permit applications. These techniques attempt to measure the value of the functions provided by both the alteration of the wetlands and the compensatory measures, and the base compensation requirements on the comparison of these functional values.

According to Salvesen,

> Only a few states have established formal compensation policies. Florida usually does not allow off-site mitigation, but it does allow "preconstruction mitigation," that is, mitigation banking. In addition, every mitigation project in Florida above one-tenth of an acre must be put into a perpetual conservation easement to ensure that the mitigated site itself will not be the site of future development. A few state wetlands laws specify the type of plants and the amount of plant cover required at mitigation sites. For instance, in Massachusetts, at least 75 percent of the surface area of the replacement area must be established with native plants (1990, p. 50).

Several state mitigation policies require a certain minimum ratio of wetlands created to wetlands lost (Salvesen 1990) (Table 3). For example, in New Jersey, the ratio is 2:1, although the state allows mitigation at less than 2:1 (but not less than 1:1) under certain circumstances (Salvesen 1990). In California, the ratio is at least 1:1 and can be considerably higher. In South Carolina, the ratio can be as high as 3:1 (Salvesen 1990). Florida uses a sliding scale of ratios for mitigation (Table 3). The ratios vary with each project depending on the likelihood of success, geographical location, and whether wetlands will

be created, enhanced, or preserved (Salvesen 1990). For creation, ratios range from 1:1 to 6:1, for enhancement 4:1 to 20:1, and for preservation 10:1 to 100:1 in Florida. According to Salvesen, "Connecticut's coastal wetlands law is so strict that it does not need a mitigation policy; since 1969, only about five acres of coastal wetlands have been filled" (1990, p. 50).

In 1986, New Jersey's Division of Coastal Resources adopted a mitigation policy intended to "assure no-net-loss of aquatic habitat productivity, including flora and fauna." New Jersey's Freshwater Wetlands Protection Act, enacted in July 1987, allows for mitigation and establishes a preference for on-site creation or restoration of wetlands whose ecological value equals that of the wetlands to be disturbed. If on-site mitigation is not feasible, off-site mitigation and deed restriction of private property or an equivalent monetary donation to the wetlands mitigation bank created by the statute is permitted. Land donations to the wetlands mitigation bank are allowed only as a last alternative.

California's mitigation requirements are case-specific. According to Leslie,

> California's mitigation policies focus on avoidance of losses, but the state will also consider a range of options for protecting and enhancing wetland values. The California Coastal Conservancy, established by the state legislature in 1976, was empowered to implement restoration and enhancement programs within the coastal zone. This agency has worked to develop innovative mitigation approaches, including pilot mitigation bank programs in San Francisco Bay and Humboldt Bay, as options for permit applicants (1990, p. 178).

The effectiveness of current Section 404 program mitigation policies is uncertain (U.S. General Accounting Office 1988, Rich and Coltman 1991). The Corps' current policy is that district engineers carry out inspection and surveillance with all means that are at the district engineer's disposal. But in reality, the lack of resources results in weaknesses in the following areas: verifying that Section 404 permit conditions are met, monitoring the success of mitigation efforts, and taking effective enforcement action when permit conditions are broken.

The lack of adequate monitoring of permit conditions, particularly in the area of verifying the success of restoration and creation projects, has been frequently cited as a serious problem. One of the reasons that so little is known about the feasibility of wetlands restoration and creation is that past efforts have not been vigorously inspected or monitored. A more effective enforcement program would, therefore, not only make the nation's overall wetlands management efforts more effective, but could provide information that might enhance scientific understanding of the viability of compensation projects.

3.3.4 Native American lands

Native American communities are another jurisdictional participant in the 404 process. Most Native American lands are in the western states. In fact, these lands comprise significant portions of Alaska and

Arizona. But many eastern states also have Native American lands, including Alabama, Connecticut, Florida, Louisiana, Michigan, Mississippi, North Carolina, and South Carolina. Indian tribes may establish their own water quality control organization. Native American groups exercising this option would then assume 401 certification responsibilities as part of the 404 process. Thus far, several Indian tribes have established water quality organizations or cooperative agreements with federal and state agencies for CWA programs. In Montana, the Corps administers the 404 programs and the EPA provides 401 certification on Indian reservations. Some states such as Michigan and Oklahoma have cooperative agreements with tribes for the permit process. Currently in Montana, the Confederated Salish and Kootenai Tribe is looking into assuming the 404 process. However, in most states with tribal lands, no agreements exist between state or federal agencies and the Indian tribes for handling Section 401/404 programs.

3.4 401 Certification

3.4.1 Introduction

States may grant or deny certification for a federally permitted or licensed activity that may result in a discharge to the waters of the United States, if it is the state where the discharge will originate (U.S. Environmental Protection Agency 1989). The decision to grant or deny certification is based on a state's determination, from data submitted by an applicant and any other information available to the state, whether the proposed activity will comply with the requirements of certain sections of the CWA contained in Section 401 (a)(1). These requirements address effluent limitations for conventional and nonconventional pollutants, water quality standards, new source performance standards, and toxic pollutants (Sections 301, 302, 303, 306, and 307). Requirements of state law or regulation more stringent than those sections or their federal implementing regulations are included too. Thus, according to EPA, the states' "water quality standards are a critical concern of the 401 certification process" (1989, p. 8).

If a state grants water quality certification to an applicant for a federal license or permit, it is in effect saying that the proposed activity will comply with state water quality standards. A state may deny certification because the applicant has not demonstrated that the project will comply with those requirements. If a state denies certification, the federal permitting or licensing agency is prohibited from issuing a permit or license. According to EPA, the state may also "place whatever limitations or conditions on the certification it determines are necessary to assure compliance with those provisions, and with any other 'appropriate' requirements of State law" (1989, p. 8).

In states without a wetlands regulatory program, the water quality certification process may be the only way in which a state can exert any direct control over projects in or affecting wetlands. It is thus critical for these states to develop a program that fully includes wetlands in their water quality certification process (U.S. Environmental Protection Agency 1989). Even in states which have their own wetlands regulatory

programs, the water quality certification process can be an extremely valuable tool to protect wetlands. First, most state wetland regulatory laws are more limited in the areas that are subject to regulation than is the CWA. The CWA covers all interstate wetlands, wetlands adjacent to other regulated waters, and all other wetlands, including those whose use, degradation, or destruction could affect interstate or foreign commerce. This definition is extremely broad and it would be hard to find a wetland for which it could be shown that its use or destruction clearly would not affect interstate commerce. Federal jurisdiction extends beyond that of states which regulate only coastal and/or shoreline wetlands, for instance. In states that regulate inland wetlands, often size limitations prevent them from regulating wetlands that are subject to federal jurisdiction (U.S. Environmental Protection Agency 1989).

Section 401 certification has limitations. The major limitation is that if 401 certification is the only tool a state has to protect wetlands, it cannot place limits on activities which do not require a federal license or permit. Some activities such as drainage or groundwater pumping can have severe impacts on the viability of wetlands, but may not require a permit or license. Ideally, 401 certification should be combined with other programs in the state offering wetlands protection opportunities (such as coastal management, flood plain management, environmental impact assessment review, and local land-use planning and zoning).

States can certify activities defined in their water quality laws and take other actions to improve 401 certification. EPA (1989) has provided states with a summary of the activities needed to make 401 certification a more effective tool to protect wetlands. They are:

- All states can include wetlands in their definitions of state waters.
- States can develop or modify their existing 401 certification and water quality standard regulations and guidelines to accommodate special wetland considerations.
- States can make more effective use of their existing narrative water quality standards (including antidegradation policy) to protect the integrity of wetlands.
- States can designate uses for these wetlands based on wetland functions associated with each wetland type. Such estimated uses could be verified when needed for individual applications with an assessment tool such as WET, HEP, or region-specific evaluation methods.
- States can tap into the potential of the outstanding resource waters designation of the antidegradation policy for their wetlands.
- States can incorporate 401 certification for wetlands into their water quality management planning process. This process can integrate wetland resource information with different water management programs affecting wetlands (including coastal zone management, non-point source, and wastewater programs) (adapted from U.S. Environmental Protection Agency 1989, p. 38).

Rhode Island has pursued several of these activities. The 401 water quality certification process in Rhode Island involves antidegradation, wetlands protection, and non-point source management. Rhode Island

includes waters of the state to include wetlands. It has adopted regulations to prevent further degradation of state waters that do not meet stipulated criteria. There are also regulations supporting current uses of a water body (drinking, swimming, fishing, and wildlife habitat), defining ONRWs, and preventing further degradation of ONRWs (Adamowicz 1991).

3.4.2 Activities

The Corps is required to wait for state 401 certification before issuing a 404 permit. In Arkansas, an MOA exists between a state agency and the district Corps office regarding 401 certification of 404 permits. Most states certify any activities which require a 404 permit by 401 (Table 4).

The Corps can and often does issue Section 10 and Nationwide 26 permits without state certification. In Maryland, however, the Corps determines if nationwide permits are acceptable based on whether the applicant has obtained 401 certification. In Alabama and South Carolina, 401 certification is linked to Section 10. But in Kentucky, the Corps has refused to recognize 401 certification is required for Section 10.

Twenty-seven states report 401 certification regulations (Table 4). In Kansas, 401 regulations are contained within the state's water quality standards. In Massachusetts, the rules contain an application for dredging only. A second application for wetlands filling is in use, but are not formal 401 certification rules in Massachusetts. Other states, including Connecticut and Montana, are in the process of developing 401 rules.

An activity that has generated considerable controversy is the licensing of hydropower projects by the Federal Energy Regulatory Commission (FERC) (Evans 1991, Scherman 1991). The Federal Power Act of 1935 requires that the projects FERC "licenses are 'best adapted to a comprehensive plan' for the waterway" (Evans 1991, p. 3). States, especially in the Northeast, have applied their 401 certification to hydropower activities and the FERC has objected. The main concern raised by FERC is that the states' Section 401 "authority does not permit them to inquire into non-water quality matters" (Evans 1991, p. 4). FERC has taken the issue to the state courts and found support for its arguments in the courts of Maine, New York, Oregon, and Pennsylvania (Evans 1991).

Others view the FERC controversy as a states' rights issue (Willard 1991). They note that Section 401 indeed authorizes "the states to deny - in effect, to veto - any proposed federally permitted or licensed activity that would violate state water quality programs" (Willard 1991, p. 6). Proponents of this perspective argue wetlands protection is an appropriate requirement of state law to ensure water quality standards. They observe Congress has delegated this authority to the states because states "are usually better

qualified and equipped to develop and implement standards to protect specific rivers and streams and to describe their use classifications and values" (Willard 1991, p. 6).

3.4.3 401 certification criteria

There is great variety among the states concerning 401 certification criteria (Table 4). In several states, there are no written criteria. Each project in Alabama, for example, is reviewed individually and criteria are established on the basis of best professional judgment and precedent to ensure that the state water quality standards will not be violated. In some states, certification criteria are linked to coastal zone and/or water quality standards. In Idaho, water quality standards, wastewater treatment requirements, and special resource water requirements are considered in determining water quality certification. Idaho is in the process of developing 401 certification regulations. All construction in Idaho shall be conducted during low-flow periods and all areas disturbed by construction shall be stabilized with physical and/or vegetation methods to ensure erosion protection. Kentucky includes wetland mitigation and stream restoration as 401 certification conditions. In Montana, typical conditions include erosion control, the use of alternative materials, and construction monitoring.

Maryland has one of the more sophisticated systems for 401 certification. Projects are reviewed for impacts to water quality using antidegradation standards. Maryland has provisions for general certification which consists of BMPs. Wetland mitigation sequencing and the analysis of options to the action are required as conditions for certification. There is also a required public participation process in Maryland.

3.4.4 Monitoring and enforcement

Monitoring and enforcement of activities with 401 certification also varies from state to state (Table 4). In most states, the Corps is responsible. But, in several states, state agencies cooperate with the Corps and other federal agencies, such as EPA and the U.S. Forest Service in monitoring and enforcement. State officials in Alabama note that monitoring and enforcement are hampered because of the lack of staff. Officials in other states note that monitoring and enforcement are inadequate because of the budget of the Corps. A state official in South Carolina notes that it has no formal monitoring and enforcement procedures because of the belief that once the 401 certification process becomes part of the federal permit, it must be enforced by the federal permitting agency.

Maryland Department of the Environment (MDE) has required mitigation under 401 in nationwide permit reviews, but is unable to determine whether 401 certification holders are complying with the mitigation requirements. MDE will review files to determine site-specific mitigation requirements, conduct site visits to assess mitigation success in terms of viability and function, initiate compliance schedules in those cases where mitigation was required, and initiate legal action where compliance has not been achieved.

3.4.5 Penalties

At least eight states can impose a variety of civil and/or criminal penalties for 401 violations (Table 4). Arkansas officials note that the actual imposition of such penalties are "very rare" there. Illinois officials report "no substantial" penalties to date. Several other state officials report no penalties at all. Massachusetts, in contrast, has imposed "a few administrative penalties." In Ohio, the maximum penalty varies depending on prior infractions and type of penalties. Minimum fines of $2,500 per day violation are imposed in Ohio or imprisonment for not more than one year or both the fine plus imprisonment.

3.5 Implementation

For an analysis of the implementation process, state officials were asked to comment on 401 certification and 404 permitting activity since 1986, 401 and state wetland staffing and funding, and success in meeting state wetland goals (Table 5). Although the data are incomplete, some idea about the status of implementation can be derived from the responses. The following states report a general increase of 401 certification since 1986: Arkansas, Connecticut, Idaho, Illinois, Indiana, Maryland, Massachusetts, Mississippi, Nebraska, North Dakota, and Oklahoma. Some of these increases have been relatively few: 45 in 1986 to 65 in 1990 in North Dakota. Other state increases have been more dramatic, such as the jump in Maryland from 262 in 1986 to 774 in 1990. Texas reported a decline in 401 certification since 1986. The following states reported about the same number of 401 certification in the late 1980s and 1990: Missouri, Montana, North Carolina, South Carolina, Tennessee, and West Virginia.

The number of 404 permit applications made, issued, issued conditionally, and denied exhibit similar variation (Table 5). However, there is less detailed information available at the state level concerning 404 permits than 401 certifications. From the incomplete data provided by the state officials, there seems to be an increase in 404 permit applications, but no conclusion can be made concerning the fate of these applications. Michigan provided the best data, perhaps because of the 401/404 linkage there. In 1986, there were 2,985 401/404 permit applications in Michigan and 3,074 in 1989. Michigan reported by far the most permit applications of any state, although there appear to be many 404 permits in New York as well (about 2400 in 1990).

State officials were asked about the number of clerical, administrative, and field staff devoted to 401 certification and wetlands programs (Table 5). Of the states reporting, Connecticut, Florida, Maryland, Michigan, New Hampshire, Oregon, Pennsylvania, Rhode Island, Tennessee, and Wisconsin reported over 10 staff devoted to either or both 401 certification and state wetland programs. For its wetlands program, Florida has 30 clerical and administrative personnel and another 108 field staff.

Funding for 401 certification and state wetlands programs vary accordingly. Alaska reports the most funding for 401 (about $400,000). Since 1986, Maryland has increased its 401 funding from $60,000 to $180,000 in 1991 and its tidal wetlands from $483,426 to $611,883 in 1991. From data provided by state officials, the best funded state wetlands programs include Connecticut ($500,000), Hawaii ($4,230,444), Maryland ($611,883 for tidal wetlands and $1,580,238 for nontidal wetlands), Michigan ($2,800,000), and New Hampshire ($500,000). In Tennessee, the combined 401 and wetland budget is $450,000.

State officials were asked four questions about goal achievement, including:

1. Are state wetland and riparian programs meeting the stated goal?
2. Are state non-regulatory programs meeting the stated goal?
3. Is the federal 404 permitting program meeting the stated goal?
4. Is the state 401 certification program meeting the stated goal?

Of the state officials who responded to these questions, most believe state wetland and riparian programs are meeting the stated goal (13 - Yes to 7 - No) (Table 5). Conversely, they observe that state non-regulatory programs have not been successful in meeting goals (6 - Yes to 9 - No). State officials are more positive about the goal achievement of the 404 program (10 - Yes to 7 - No). Their positive observations concerning both state non-regulatory and 404 program goal achievement are by a small margin with a small number of respondents (15 and 16). More state officials responded and were generally positive about Section 401's success (20 - Yes to 11 - No).

3.6 Non-Regulatory Programs

3.6.1 Executive orders

The governors of Arizona, Minnesota, New York, Ohio, Tennessee, and Washington have issued executive orders to protect wetlands and/or riparian areas. In Wyoming, an executive order was drafted in 1991, but was replaced by the Wyoming Wetlands Act which essentially accomplishes the same purposes. In Missouri, the governor has stated a "no net loss" of wetlands policy, but has not issued an executive order.

3.6.2 Tax incentives

According to the survey, ten states have some form of tax incentives to protect wetlands (Table 6). Goldsmith and Clark (1990) report that more than half of the states have tax programs that encourage the protection of open space. Incentives include both tax exemptions and credits. Property tax incentives may be provided by counties for protecting natural areas, including wetlands. In Alaska, local communities offer property tax incentives to protect wetlands. In Washington, six counties use the state's Open Space Act, which provides property tax reductions, to protect wetlands.

According to Gordon Meeks and L. Cheryl Runyon of the National Conference of State Legislatures:

> Preferential tax treatment for special purposes always has been a favored method for accomplishing politically expensive objectives. Farmland preservation has been a particularly active subject for state differential taxation. [All states have some form of preferential tax programs for agricultural lands.] Recently, some states have extended special tax treatment to farmland owners who provide hunting access. Wisconsin provides a property tax cut for land owners who open their land to free hunting. Wetlands are a prime habitat for many game animals, so these programs afford some protection for such lands (1990, p. 15).

In New York, landowners receive a reduction in property taxes if they have been denied permits to alter their wetlands. Meeks and Runyon cite Iowa, Minnesota, and New Hampshire as states where property taxes are reduced or eliminated if landowners protect their wetland resources. They note:

> Minnesota, for example, excludes from property taxes wetlands or "land which is mostly under water, produces little if any income, and has no use except for wildlife or water conservation purposes, provided it is preserved in its natural condition and drainage of it would be legal, feasible, and economically practical for the production of livestock, dairy animals, poultry, fruit, vegetables, forage and grains, except wild rice." Unlike Wisconsin's tax abatement for hunting access, Minnesota's statute states "exemption of wetlands from taxation...shall not grant the public any additional or greater right of access to the wetlands or diminish any right of ownership to the wetlands" (Meeks and Runyon 1990, p. 15).

3.6.3 Recognition programs

Recognition programs are another non-regulatory approach. Recognition programs exists in eight states (Table 6). Colorado and Florida have an outstanding waters program. The Kentucky River Assessment was initiated in 1989 to develop a comprehensive identification and evaluation of the most significant rivers in the state. The statewide rivers assessment is a cooperative effort between the Kentucky Division of Water and the U.S. National Park Service. Kentucky rivers are assessed based on a variety of ecological, economic, cultural, recreational, and aesthetic resources. The National Park Service, Rivers and Trails Division has cooperated with several states on similar assessments in order to gain recognition for rivers. For example, although Kentucky's neighbor Tennessee does not yet have a wetlands recognition program, state officials report that one is being developed.

The California State Water Resources Control Board considers its water quality assessment database a recognition program. The water quality assessment database does include some wetlands. The California Department of Fish and Game has a natural diversity database of sensitive species and their habitats, including wetland-related species. Establishing such databases is an essential step to identify resources worthy of statewide recognition.

3.6.4 Subsidies and cooperative agreements

Subsidy programs for wetlands or riparian areas exist in 21 states (Table 6). In Maryland, there is a compensation fund that may be used to create, restore, or enhance wetlands. In South Carolina, a heritage trust fund has been established to provide for wetlands protection subsidies.

According to Meeks and Runyon (1990), several states are trying to augment wildlife conservation and management programs on public lands with cooperative programs to conserve wetlands and other environmentally sensitive areas under private ownership. States offer subsidies to stimulate such cooperation. Through its Public Access Stamp Program, Michigan has enrolled more than 132,000 acres whose owners are paid a set fee in return for access by hunters (Meeks and Runyon 1990). These Michigan landowners are protected from liability and the state manages the wildlife habitat in cooperation with the landowner. Meeks and Runyon (1990) identify the following states with hunting access/wildlife habitat management programs, including wetland and riparian areas, for private land: California, Connecticut, Maryland, Montana, Nebraska, New Mexico, North Carolina, North Dakota, Oklahoma, Oregon, Pennsylvania, and Wyoming.

Federal and state agencies give financial assistance to landowners completing habitat improvement projects through Wyoming's rangeland stewardship project (Goldsmith and Clark 1990). Plans for improvement are designed by a committee composed of federal and state biologists and local landowners (Goldsmith and Clark 1990).

States can also enter into cooperative agreements with or encourage the involvement of non-profit groups. Private conservation organizations, such as Ducks Unlimited, encourage wetland protection by making rental payments to landowners to set aside land for conservation purposes. Rental payments differ from acquisition and easement programs (see sections 3.6.6 and 3.6.7 below) because the landowner retains full title to the land and all associated rights and responsibilities (Goldsmith and Clark 1990).

3.6.5 Technical assistance

Advice and education can be provided in several ways, including through school systems. (See also section 3.7 for more discussion about education.) Technical assistance is a direct way to provide landowners advice and information about how to protect wetlands and riparian areas. Technical assistance for wetlands and riparian area planning and/or management is provided in 27 states (Table 6).

Goldsmith and Clark observe:

> More information (which may often require additional research) on wetlands hydrology and ecology, on wetlands management techniques, and on methods for successfully restoring and

> creating wetlands will help people adopt more effective land management techniques. Such education and technical assistance efforts are particularly important in promoting voluntary wetlands restoration and creation efforts. These can be complicated undertakings, often requiring hydrological modifications, and are likely to fail if not undertaken and managed properly (1990, p. 89).

Many private organizations are involved in technical assistance activities, including the Nature Conservancy, the National Wildlife Federation, the National Audubon Society, and the Environmental Defense Fund (Goldsmith and Clark 1990). These organizations are involved in education and research, wetlands inventories, property acquisition, and information dissemination.

3.6.6 Acquisition

Acquisition can be "fee-simple absolute" where the owner is entitled to the entire property with unconditional power of disposition. Either a public or non-profit entity can purchase property fee-simple from its private owner to protect wetlands or riparian areas. Acquisition can also involve purchasing an easement. (See section 3.6.7 which follows.) The fee-simple acquisition of wetlands is promoted in 21 states. Some acquisition programs are targeted for waterfowl or wildlife habitat, as in Hawaii, or otherwise limited. The purchase of property can be immediate or delayed, temporary or permanent (Goldsmith and Clark 1990). In the temporary approach, the land can be left in the original ownership through a lease-back agreement or a retained life estate. In such situations, Goldsmith and Clark note, "the new owner may impose stipulations on the use of the land while the original owner remains" (1990, p. 77).

Meeks and Runyon note:

> Acquisition of real property for parks and wildlife habitat is another significant role played by states in conserving wetlands. Because parkland is usually chosen for its wildlife and water resources, wetlands are typically part of park development. Wetlands and floodplains make excellent parkland because periodic flooding does not damage many structures or activities (1990, p. 14).

However, funding for land acquisition is a major limiting factor. Most state and local governments have declining resources and do not have the financial resources for land acquisition. Meeks and Runyon (1990) report several innovative state funding initiatives, such as North Carolina where a new law finances a natural heritage trust fund to protect wetlands and other environmentally sensitive lands from development. The fund is being financed by an increase in vanity license plate fees. Additional innovative funding techniques for acquisition reported by Meeks and Runyon (1990) are:

- Portions of sales taxes - Missouri
- Real estate transfer fees - Florida and Maryland
- Severance taxes - Florida and Michigan
- Cigarette taxes - Texas

- Gasoline taxes - California, Idaho, Minnesota, and Washington
- Lotteries - Colorado
- Fees and licenses - Indiana
- Bond issues - Florida, New Jersey, and Pennsylvania

3.6.7 Easements

Nineteen states have easement programs. These programs involve the purchase of partial rights to property either for a specific period or in perpetuity. Goldsmith and Clark describe such a less-than-fee ownership as when "the original owner retains the basic property ownership (and liability), but gives up the right to use or manage it in specified ways" (1990, p. 76). Common examples of easements are those held by public service utility companies. Goldsmith and Clark note that the "conditions and restrictions of less-than-fee acquisition can be tailored to the specific needs both of the acquiring organization and the landowners" (1990, p. 76). A major advantage of conservation easements is that landownership is retained by private individuals. According to Meeks and Runyon,

> The National Conference of Commissioners on Uniform State Laws developed a model conservation easement law which has been used by a number of states, most recently Arkansas. The rationale behind state conservation easement acts is to encourage private donations of easements to local land trusts or nature conservancies through tax benefits. These statutes also enable government entities to purchase, receive and administer lands under conservation easements. Conservation easements are not aimed exclusively at wetlands preservation, but are frequently used for this purpose (1990, p. 15).

3.7 Education and Support

Twenty-six states report some type of wetlands educational program (Table 7). Several officials indicate no educational efforts, such as in Arkansas, where non-regulatory programs are not promoted through brochures, seminars, or other means. Arkansas officials do indicate that the Corps "occasionally" promotes the 404 program. There are many approaches to education. Some states combine their education efforts with coastal zone management and soil conservation programs. Kentucky has a water-watch program, which is popular with the citizens of the state. Maine officials work with the Audubon Society and the Natural Resource Council in the promotion and enhancement of wetlands and riparian protection. EPA has cooperated with Ohio and Tennessee agencies in educational efforts.

State wetlands programs depend on the support of elected leaders and the public. Some state officials responsible for wetlands and riparian areas programs meet regularly with elected leaders, others meet rarely with politicians, and still others encounter elected leaders only when there are problems. As a result, political support varies among the states (Table 7). State officials in Connecticut, Maryland, New Hampshire, and Washington report strong support for wetlands protection. Conversely, there appears to be little support for wetland protection from key leaders in Kentucky and Tennessee. Minnesota officials

report a mixture of support and opposition, which is probably common in several other states too. California reports political support is "evolving." A new administration in California is developing policies on several environmental issues, including wetlands.

Many wetlands and riparian groups are involved in the permit process (Table 7). The degree of involvement varies. Some of the major national constituency groups include the Audubon Society, Nature Conservancy, Friends of the Earth, the Wildlife Federation, Sierra Club, the Issak Walton League, and Rivers Unlimited. Traditional environmental groups have alliances with hunting and fishing organizations like Ducks Unlimited and Trout Unlimited. Often these sporting groups include politically conservative members. Many state and local organizations are also active, including: the Fowl River Protection Association, the Connecticut Conservation Association, the Connecticut Fund for the Environment, the Idaho Conservation League, the Kentucky Resources Council, the Chesapeake Bay Foundation, the Clarke Fork Coalition, the Nebraska Preserve Our Water Resources Association, Concerned Citizens of Nebraska, the North Carolina Federation, Ohio Sportman's Association, South Carolina Environmental Law Project, and Gulf Coast Conservation Association. The 401/404 process is also monitored by business and industry organizations such as Farm Bureau and the Tennessee Forestry Association. There appears to be no shortage of groups interested and involved in wetlands and riparian issues. This interest and involvement is increasing.

State officials indicate an uneven public understanding of the permit process (Table 7). Arkansas officials indicated "major conflicts" between the 404 permit process and the agricultural community regarding the introduction of the federal delineation manual. Connecticut officials report that a very limited understanding of the 404 process results in "confusion and occasional violations." Mississippi reports a high level of knowledge about the 404 program due to the introduction of the "no net loss" policy by the George Bush administration and the new delineation methodology, but very low acceptance of the 404 process. New Hampshire officials, in contrast, indicate a high understanding and acceptance of 404. State officials in New York indicate that although the public does not understand 404, private consultants do. Likewise, in California, it is reported that development consultants generally understand programs, but environmental groups probably do not.

Knowledge about programs is but one measure of effectiveness. Through ongoing educational efforts, leaders and the public may better understand the values, functions, and benefits of wetlands and laws designed to protect them. This knowledge can translate into political support for wetlands protection and more effective programs as a result.

4.0 Case Studies

Two states were selected as case studies to demonstrate the different approaches to wetland protection currently being undertaken. Illinois and Washington state represent two distinct, yet relatively successful programs. Illinois is important because of the extensive network of artificially created lakes and streams, as well as their well-developed Section 401 certification program with associated standards and classifications. Washington was selected because it is one of a few western states with well-developed, comprehensive wetland programs. Although many of the state's programs were established in relation to coastal wetlands, a significant portion of Washington is semi-arid. The ecological diversity within the state provides a useful parallel with Arizona.

4.1 Illinois Wetlands Program

Surface water resources in Illinois are diverse and include a range of natural and human-created features. The state is bounded by three major rivers, the Mississippi to the southwest, the Ohio on the south, and the Wabash on the southeast. Lake Michigan forms the northeastern border of the state. Numerous high gradient streams exist throughout the state. The major rivers, Lake Michigan, and some streams are controlled by locks, dams, and maintained channels. Approximately 75% of the state's inland lakes are artificially constructed and include reservoirs, dammed streams, and excavated lakes (Illinois Environmental Protection Agency 1990). Most of the natural lakes that do exist are found in the northeastern counties.

4.1.1 Wetland protection goals

State goals for wetland protection are established in the Interagency Wetland Policy Act of 1989:

> that there be no net loss of the State's existing wetland areas or their functional value due to state supported activities. Further, State agencies shall preserve, enhance and create wetlands where necessary in order to increase the quality and quantity of the State's wetland resource base (Public Act 86-157; SHA Ch. 96 1/2, para. 9701-1 et seq.).

The goals are to be implemented through a state wetland mitigation policy and the development of agency action plans. The Illinois Department of Conservation (IDOC) is to implement these goals by establishing an Interagency Wetlands Committee, chaired by the director of the IDOC with representatives from the Capitol Development Board, Department of Agriculture, Department of Commerce and Community Affairs, Department of Energy and Natural Resources, Environmental Protection Agency (IEPA), Department of Mines and Minerals, Department of Transportation (IDOT), and the Historic Preservation Agency. The committee advises the director of IDOC on administration of the act, including development of rules and regulations, guidelines for agency action plans, and procedures for delineating and evaluating existing wetlands. The director is also advised by the committee concerning quantification of functional values of wetlands, evaluation of wetland restoration and creation projects, research programs, and educational

materials. Each agency represented on the committee is also to prepare an agency action plan, following specific guidelines, that outlines procedures and policies for implementation of the act.

4.1.2 Wetlands definitions and delineation

In Illinois, the federal wetlands definitions of the Corps for Section 404 applications (33 CFR 328.3) and the USFWS wetlands definition for inventory and mapping purposes (Cowardin et al. 1979) are used. Although it does not appear to be linked directly to state agency functions, the definition in the FSA swampbuster provision also applies.

An official definition was also incorporated into the Interagency Wetland Coordination Act of 1989. The definition used in this act is:

> "Wetland" means land that has a predominance of hydric soils (soils which are usually wet and where there is little or no free oxygen) and that is inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances does support, a prevalence of hydrophytic vegetation (plants typically found in wet habitats) typically adapted for life in saturated soil conditions. Areas which are restored or created as the result of mitigation or planned construction projects and which function as a wetland are included within this definition even when all three wetland parameters are not present (SHA Ch. 96 1/2, para. 9701-6 et seq.).

4.1.3 Wetlands regulation

Illinois wetlands protection laws are administered by federal, state, and local government agencies. As in other states, the primary federal regulations that are administered by the Corps are Section 404 of the CWA and Sections 9 and 10 of the RHA. CWA, Section 402 established the NPDES to regulate industrial and municipal source discharges of pollutants into the nation's waters. This program is administered by IEPA. Section 401 water quality certification is also administered by IEPA. No permit may be issued by a federal agency for work in Illinois waters unless IEPA certification has been obtained or waived.

Water quality standards in Illinois are categorized according to four use designations, each with specific standards. The largest category, General Use, protects aquatic life, primary and secondary contact recreation, agriculture, and industrial uses. Slightly stricter standards apply for Public and Food Processing Supplies and even stricter standards apply to Lake Michigan. A fourth set of standards applies to Secondary Contact and Indigenous Aquatic Life Waters. Only certain streams in the Chicago area have been designated for this category. In addition to these permit or certification processes, IEPA may determine that additional permits are required as described in the Illinois Pollution Control Board rules and regulations for activities such as construction of sanitary sewers, water mains, waste and water treatment plants, landfills and mining, waste handling, and disposal of dredged material and other activities.

The IDOT Division of Water Resources has regulatory authority over waterways activity to protect public interest from such events as flooding which can cause obstruction to navigation and unnecessary damage to waterways' natural conditions. The authority is provided in the Rivers, Lakes and Streams Act of 1911 (as amended Illinois Revised Statutes, Chapter 19, Section 52 et seq.). IDOC, although it does not issue permits, has an impact analysis section that coordinates a review of federal and state permit applications and assesses the severity of the potential impact on the state's resources. IDOC makes a recommendation indicating permit approval, denial, or suggested changes to the project. The IDOC Historic Sites Division conducts a similar review for impact on cultural resources. Other state or local government approvals may be necessary depending on the nature of the project.

4.1.4 Mitigation

Article III of the Interagency Wetland Policy Act of 1989 establishes a state wetland mitigation policy (SHA Ch. 96 1/2, para. 9703-1). The policy directs each state agency to preserve wetlands as a priority. However, when no feasible alternative exists, any adverse impacts are compensated through implementation of a wetlands compensation plan. Compensating wetlands, whether purchased, restored, or created, are to be located close to the impacted area and should be protected by easement or fee simple transfer to a public or private conservation organization. Each state agency is authorized to establish a wetlands compensation account to track debits and credits resulting from wetlands compensation plans. If an agency documents that no other feasible alternative exists to creating adverse impacts, the following steps in order of priority apply:

1. The avoidance of adverse wetland impacts.
2. Minimal alteration with compensation on the site of the proposed project.
3. Significant alteration with compensation on the site of the proposed project.
4. Wetland destruction with compensation on the site of the proposed project.
5. Wetland destruction with compensation off the site of the proposed project, but within the same drainage basin.
6. Wetland destruction with compensation of the site of the proposed project and out of the drainage basin (SHA Ch. 961/2 para. 9703-2).

Compensation ratios are to be at least 1:1 and comparable in function, type, and size. Ratios increase based on the level of adverse wetland impact. Another provision of a wetland compensation plan may provide for credits to be granted for wetlands research.

4.1.5 Non-regulatory efforts

IDOC, as the lead agency in the Interagency Wetlands Committee, is primarily responsible for conducting non-regulatory programs. The types of programs conducted include intergovernmental coordination, technical assistance, public education, and easement acquisition. House Bill 998, Flood Control Provisions - State Government Participation, authorized IDOC to make grants to local governments to acquire open space within the 100-year flood plain. No funding, however, is currently available under this program. House Bill 998 also directed IDOT to define the 100-year floodway and regulate construction within it in the area served by the Northeastern Illinois Metropolitan Planning Commission.

4.1.6 Summary

The importance of lakes, rivers, and streams to transportation, industrial, and urban development in Illinois is evident. The emphasis of wetland programs on water quality and flood protection is the result of many years of development near waterways. From this base, the state has broadened its wetland protection programs to include such elements as open space acquisition within 100-year flood plains. Greater public participation and more direct linkage to local planning are emerging as important program components.

4.2 Washington Wetlands Program

The state of Washington is useful as an example because of considerable physiographic and climatic diversity. This variety results in a range of wetland types. It is also one of the few western states with a strong wetlands program which is continuing to evolve. The state is separated by the Cascade Mountains into two distinct parts, with corresponding distinct types of wetlands. Western Washington has extensive coastal shorelines, estuaries, and numerous rivers and streams. Eastern Washington is semi-arid and, as a result, wetlands are more localized and include permanent and intermittent streams as well as vernal pools. In the Columbia Basin of eastern Washington, there are areas with high water tables resulting from human-induced water redistribution projects.

4.2.1 Wetland protection goals

The enactment of the 1971 Shoreline Management Act (SMA) began to focus wetland protection goals in the State of Washington. The establishment of the wetlands section of the Washington Department of Ecology (WDOE) in 1984 helped to solidify the state's commitment to wetlands protection. With the signing of Executive Order 88-03, WDOE was directed to undertake a study of Washington's wetlands and to address the following issues:

- To provide a definition of the term wetlands and assess how it applies to regulatory programs.
- To assess the major functions and values of the state's wetlands.

- To determine the need for wetlands mitigation policy.
- To determine the need for public information.
- To examine landowner incentive programs that promote wetlands preservation.
- To analyze existing programs at federal, state, and local levels.
- To make legislative recommendations to reduce adverse impacts on wetlands.

A result of this executive order was the Washington wetlands study (Washington Department of Ecology 1988a) which provided a foundation for Executive Order 89-10 on wetlands protection. Several goals and strategies for achievement were articulated in this executive order. An interim goal is to achieve no overall net loss in acreage and function. A long-term goal is to increase the quantity and quality of Washington's wetlands. WDOE is to provide guidance to other state agencies and prepare an action plan to preserve and enhance wetlands. All state agencies are to avoid activities that adversely affect wetlands or to adequately mitigate impacts. Agencies are also directed to seek opportunities for voluntary wetland restoration and creation, to encourage sensitive design and planning on a watershed basis, and to locate agency-mandated activities not dependent on wetlands on suitable upland sites. With Executive Order 90-04, WDOE was directed to provide voluntary technical assistance to local governments. As a result, a model wetlands protection ordinance was prepared for local governments (Washington Department of Ecology 1990). As indicated by successive executive orders in 1988, 1989, and 1990, Governor Booth Gardner, who was co-vice-chair of the National Wetlands Policy Forum, has played an active leadership role in wetlands and shorelines protection. (For more information about these executive orders, see Erickson 1991.)

4.2.2 Wetlands definitions and delineation

In Washington, four definitions are applied to implement state policies and regulations. The first is the Corps definition of wetlands for Section 404 permits, which is also used in several local wetland ordinances. The Section 404 definition is:

> The term wetlands means those areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas (33 CFR 328.3).

USFWS has adopted a definition to map and inventory wetlands through the national wetlands inventory. It is used as the basis for all local inventories in Washington, as well as in some state and local regulations:

> Wetlands are lands transitional between terrestrial and aquatic systems where the water table is usually at or near the surface or the land is covered by shallow water ... Wetlands must have one or more of the following attributes: (1) at least periodically, the land supports predominantly hydrophytes, (2) the substrate is predominantly undrained hydric soil, and (3) the substrate is nonsoil and is saturated with water or covered by shallow water at some time during the growing season of each year (Cowardin et al. 1979).

The SMA includes a definition that was adopted by the Washington legislature in 1971, but only includes a small portion of the state's wetlands:

> Wetlands or wetland areas means those lands extending landward for 200 feet in all directions as measured on a horizontal plane from the ordinary high water mark; floodways and contiguous floodplain areas landward 200 feet from such floodways; and all marshes, bogs, swamps, and river deltas associated with the streams, lakes, and tidal waters which are subject to the provisions of this chapter; the same to be designated as to location by the department of ecology; provided, that any county or city may determine that portion of a 100 year floodplain to be included in its master program as long as such portion includes, as a minimum, the floodway and the adjacent land extending landward 200 feet there from (Chapter 90.58 RCW).

The swampbuster provision of the 1985 FSA includes a definition that is used by USDA for determining ineligibility of subsidies and other benefits:

> Land that has a predominance of hydric soil and that is inundated or saturated by surface or groundwater at a frequency and duration sufficient to support and under normal circumstances does support, a prevalence of hydrophytic vegetation typically adapted for life in saturated soil conditions. Therefore, in order for an area to be a wetland, such area must, under normal circumstances, contain both a predominance of hydric soils and a prevalence of hydrophytic vegetation.

The state of Washington has not yet adopted an official definition but the topic has been discussed extensively. A recommendation was made in the Washington wetlands study to adopt the USFWS definition for the purpose of:

(a) Wetland inventories commissioned or funded by the State of Washington;
(b) Wetland acquisition and preservation programs undertaken or funded by the State of Washington;
(c) Regulatory use by state agencies and local governments, except in cases where local governments have already adopted the Clean Water Act definition for use in their local wetland management programs; and
(d) All other applications where a biological or physical definition is needed (Washington Department of Ecology 1988a).

Washington's surface waters are presently divided into five classes (AA, A, B, C, and Lake Class) with each class having a different set of protection criteria. The standards present characteristic uses for each class and establish specific water quality criteria to protect those uses for each class. WDOE is proposing a sixth class for wetlands. This proposal is being made as part of the state's triennial review of surface water quality standards. If adopted, this class would be added to the standards to strengthen wetlands protection (Lund 1991). In addition to the characteristic uses common to all surface waters, the proposed wetland standards for this new class include characteristic uses that represent vital functions served by wetlands in the ecosystem and the hydrological cycle: groundwater exchange, storm-water attenuation, and shoreline stabilization (Lund 1991).

4.2.3 Wetlands regulation

Wetlands and riparian areas are protected by a number of laws in Washington administered by several different agencies at federal, state, and local government levels. The existing matrix of laws is described in the Wetlands Regulation Guidebook (Washington Department of Ecology 1988b). Of the many existing state regulations, only the wetlands protection element of the Puget Sound Water Quality Management Plan focuses on the protection of wetlands as its primary purpose. The Puget Sound planning effort is a state/federal collaboration involving several agencies.

The principal federal wetland regulations are Sections 404 and 401. Section 404 covers dredge and fill activity and is administered by the Corps and EPA with the Washington Departments of Fisheries and Wildlife. Section 401 requires certification from WDOE that state water quality standards are met with any discharge into wetlands under a federal permit. Section 10 of the RHA requires a permit from the Corps for construction activities in navigable waters and includes wetlands within those waters. The National Environmental Policy Act, the CZMA, and the swampbuster provision of the FSA all have components that may apply to wetlands in specific situations.

Washington wetland laws include the SMA, the Hydraulic Project Approval Code, the State Environmental Policy Act (SEPA), the Forest Practices Act, and the Floodplain Management Program. The SMA requires a permit to ensure that any proposed activity complies with a local shoreline master plan. For the purposes of this act, this includes all land within 200 feet of ordinary high water mark of a state shoreline and may be extended to include an entire associated watershed. It is limited, however, to lakes at least 20 acres in size and streams with flows of at least 20 cubic feet per second. This program is administered by local jurisdictions and WDOE. The hydraulic project approval requires a permit for most activities below the ordinary high water mark of state waters. The intent is to protect fish and wildlife habitat. Consequently, the agencies that administer this program are the Departments of Fisheries and Wildlife. SEPA requires full disclosure of potential adverse environmental impacts of any proposed actions. SEPA does not specifically protect wetlands, however, an environmental review must be completed before issuance of shoreline development permits, hydraulic project approvals, and other state and local permits for all federal, state, and local actions. The Forest Practices Act was established to protect public resources while promoting and maintaining a sound forest products industry. It regulates all forest practices including road construction. It applies to wetlands considered type 2 waters (those that have one acre of open water at low water) and type 3 waters (those that have less than one acre of open water at low water and an outlet to a stream containing anadromous fish or if they have between 0.5 and 1 acre of open water at low water). The Floodplain Management Program regulates construction and other activities that might increase flood flow and covers wetlands incidentally. This program is administered at the local level and by WDOE.

Many local jurisdictions in Washington also have provisions in their ordinances that help to protect wetlands. The publication of the model protection ordinance is an effort to encourage the development of local programs. Several counties (Island, King, Pierce, and Thurston) and some cities (Bellvue, Kirkland, and Olympia) have their own wetland protection programs. Shoreline master programs (SMPs) have been developed under the SMA. City and county offices are responsible for administering SMPs, but wetland inventories are often incomplete so actual boundaries are not always accurately identified (Washington Department of Ecology 1988a). The Puget Sound Water Quality Management Plan covers the 12 counties in the Puget Sound area and is the most comprehensive local program in existence in Washington state. Other options to protect wetlands and riparian areas include comprehensive plans and zoning ordinances; environmentally sensitive area ordinances; clearing, grading and filling ordinances; and SEPA policies.

Environmentally sensitive area (ESA) protection is one SEPA policy option. According to SEPA rules, an ESA is an area designated and mapped by a county or city which includes but is not limited to places with unstable soils, steep slopes, unusual or unique plants or animals, wetlands, or areas which lie within flood plains. In Washington, local governments are free to administer ESAs as long as the locations and extent of all ESAs are clearly mapped, are adopted by reference as part of local government SEPA procedures, and are filed with WDOE (Jennings et al. 1988).

WDOE officials have identified three jurisdictional weaknesses. First, jurisdiction of isolated wetlands or those areas not associated with shorelines of the state or within the mean high water mark of streams, lakes, and other waters of the state are not covered. Second, regulation of many agricultural and forest practices is inadequate. Third, officials believe that activities other than filling are not covered effectively (Washington Department of Ecology 1988a).

In an effort to overcome these weaknesses, WDOE has both published the model local protection ordinance (Washington Department of Ecology 1990) and proposed stronger state-level water quality standards (Lund 1991). WDOE has proposed the adoption of narrative water quality criteria. According to WDOE:

> There is great natural variation of chemical and biological parameters found in wetland systems and it would be difficult, if not impossible, to establish *numeric* water quality criteria effective for all Washington's wetland types (Lund 1991, pp. 1-2).

The natural variation is especially complicated because of the physiographic and climatic diversity of the state. As a result, WDOE:

> is proposing *narrative* standards for wetlands that base protection levels on the natural conditions that would be expected to occur on a site. The proposed wetlands criteria will establish a measure for consistent decision-making regarding wetlands until more information can be gathered for specific numeric criteria.

> The water quality criteria established for wetlands include those used for other water classes such as pH, fecal coliform organisms, and toxic materials...The standards also include criteria designed to protect some of the unique and ecologically critical characteristics of wetlands. These criteria address settleable solids, nutrient accumulation, and maintenance and protection of the physical and biological characteristics of wetlands.
>
> By using narrative criteria, the standards will be applied on a site-specific basis, allowing permits to be written for the unique and variable characteristics of individual wetlands (Lund 1991, p. 2).

4.2.4 Mitigation

Mitigation is required in many of the federal and state laws relating to wetlands. The requirement to mitigate adverse impacts is almost universal. With various agencies, however, mitigation requirements differ greatly between agencies. The current wetland mitigation policy is based on the process endorsed by the Corps and EPA and calls for the following in order of preference:

1. Avoidance of impacts,
2. Minimizing impacts,
3. Rectifying (repair, rehabilitating, or restoring) impacts,
4. Reducing or eliminating impacts over time (preserving and maintenance operations), and
5. Compensation.

Compensation is considered only as a last resort. An evaluation of wetland acreage, values, and function losses must be completed. Mitigation requirements are then established to achieve replacement "on site and in kind" of lost acreage, values, and functions. Replacement ratios are 2.0:1.0 for forested wetlands, 1.5:1.0 for shrub wetlands and 1.25:1.0 for emergent wetlands. Detailed mitigation plans with goals and objectives, construction plans, hydrology plans, revegetation plans, contingency plans, bonding certification, and maintenance of buffers are required. WDOE does not currently have a mitigation banking policy.

WDOE is currently proposing a new mitigation process for disturbance activities. The new process is consistent with the one developed by the Corps and EPA. The proposed process includes, in preferential order: avoiding detrimental impacts, minimizing unavoidable impacts, and compensating for lost wetland resources. According to WDOE, the mitigation process will provide a consistent method for avoiding or offsetting wetland losses through existing permitting processes.

According to WDOE, the

> standards have been written to provide two levels of protection through the mitigation process. Water quality in exceptional wetlands would be maintained and protected, and degradation would not be allowed to occur. Detrimental impacts to characteristic uses of other wetlands would be mitigated using the process established in the standards.

> Having exceptional wetlands identified within the single wetland class provides a method to apply the water quality standards to different wetlands which recognizes that specific types of wetlands are irreplaceable. Exceptional wetlands are, for the most part, the same as those considered Category I in most rating systems (Lund 1991, p. 2).

If adopted, these mitigation measures would strengthen existing federal requirements. The measures would clarify state mitigation policy. Consistency with federal programs would be maintained.

4.2.5 Non-regulatory efforts

Several non-regulatory programs exist in Washington and are administered primarily by WDOE. Technical assistance, grant programs, public education, and landowner preservation or enhancement incentives all contribute to protection of wetlands in Washington state. Most of these non-regulatory initiatives have been implemented within the past 2-3 years. These measures are intended to be used in conjunction with regulations.

The wetlands section of WDOE provides technical assistance of several types. Site evaluations to determine wetland boundaries and potential impacts from proposed developments are conducted. They also conduct workshops to train others (usually local government personnel) in wetland identification, boundary delineation, plan review, impact assessment, and other regulation administration. The model wetlands protection ordinance was developed based on the best aspects of existing local ordinances and WDOE recommendations. Given the emphasis on local level initiatives (SMPs and other programs) resulting from various state laws, this model ordinance is very important to ensure uniformly adequate local wetland protection programs. WDOE will also provide assistance by providing expert testimony, review assistance or advice, and funding for the development of policies and ordinances.

Public education has taken on additional importance for the wetlands section of WDOE. Educational materials are produced in various media including videos, publications, public service announcements, curricula, displays, and posters. Topics range from understanding functions and values of wetlands to relatively technical overviews of wetland regulations. A monthly newsletter, Coastal Currents, provides current summaries of relevant news regarding wetland protection activities in Washington. WDOE, with the Department of Wildlife, also conducts workshops on wetlands for teachers and encourages them to integrate wetlands topics in school curricula. One particular group that has been targeted with educational material is wetland landowners. All of the educational materials are geared toward providing broader understanding of wetland functions and values and instilling an attitude of stewardship in the public.

Several types of landowner incentives are used in Washington to assist in wetland protection. These include both federal and state programs and fall into three general categories:

- Incentives that result from transfer of title,
- Direct incentives to private landowners, and
- Non-financial incentives.

Within each category several options exist to encourage wetland creation and preservation. Incentives that result in the transfer of title are land donation or sale for less than market value to a qualified public agency, land trust, or conservation organization. Tax deductions equal to the appraised value can result in the case of donation. If property is sold for less than its market value, then a tax deduction will be based on the difference between market value and sale price. Conservation easements and development rights can also be sold or donated and yield tax breaks if property values are reduced. With easements and development rights sales, the original ownership of the property is retained.

Direct incentives to private landowners fall into three categories: federal farm programs, state tax incentives, and private incentives. The USDA water bank program pays farmers to keep wetlands out of agricultural production and shares the cost of some conservation practices. The conservation reserve program of the FSA indirectly protects wetlands by reducing potential sediment and pesticide run-off by encouraging the setting aside of highly erodible lands for at least ten years. Certain lands may also be converted to wetlands since shallow water is an approved cover type. The farm debt restructure and conservation set-aside programs, also authorized by the FSA, allows wetlands to be set aside for 50 years as conservation easements, or turned over to a public agency in exchange for debt relief. Property tax incentives may be provided by the county for protecting natural areas, including wetlands, through the Washington Open Space Act. This option is currently used in only six counties in Washington. Private conservation organizations, such as Ducks Unlimited, are encouraging wetland protection by making rental payments to landowners to set aside land for conservation purposes. Individuals can purchase state waterfowl stamps which are distinct from the federal duck stamp. In Washington, participation in local land trusts, inclusion of land in the Washington Register of Natural Areas, purchase of the state waterfowl stamp by people who do not hunt waterfowl, and donation of time, materials or equipment to rehabilitate wetlands are important non-regulatory incentives.

4.2.6 Summary

Washington is a state known for its natural resources and its leadership in environmental protection. It is generally recognized as a highly desirable place to live and to do business. Partly because of its natural beauty and efforts to maintain environmental quality, the state is attracting new economic development. Rather than curtail environmental protection efforts, the state has strengthened its commitment, which is evident in its wetlands program.

In Washington state wetlands protection programs are continually changing to provide better information, more consistent application of regulations, and broader involvement of all levels of government. The comprehensive model wetlands protection ordinance exemplifies the commitment to strengthen local government efforts. The model ordinance documents the functions, values, and benefits of wetlands. It presents a clear goal statement, called a purpose by WDOE, that can be adopted by local government officials. Definitions are included so that consistent terminology can be used. Areas subject to the model ordinance are delineated. Two ratings systems are included, one for the Puget Sound region and the other for the state as a whole. Regulated and allowed activities, procedures for wetlands permits, permit application requirements, standards for permit decisions, and enforcement and judicial review provisions are specified (Washington Department of Ecology 1990).

5.0 Analysis

To gauge state program success, a classification system was developed based on criteria identified by Mazmanian and Sabatier (1981) for determining effective policy implementation. According to their criteria, policy implementation will be enhanced if the following six conditions are met:

- The enabling legislation or other legal directive sets policy goals that are clear and consistent or at least substantive criteria for resolving goal conflicts.
- The enabling legislation incorporates a sound theory of what kind of actions, in general, will result in the achievement of its policy goals -- a "causal theory" or "implementing action" -- and it gives implementing officials sufficient jurisdiction and leverage to attain, at least potentially, the desired goals.
- The enabling legislation structures the implementation process to maximize the probability that implementing officials and target groups will perform as desired.
- The leaders of the implementing agency have substantial managerial and political skill and are committed to the stated goals of the legislation.
- The program is actively supported by organized constituency groups and by a few key legislators or the chief executive throughout the implementation process, and the courts are neutral or supportive.
- The relative priority of statutory goals is not undermined later by the emergence of conflicting public policies or by changes in socioeconomic conditions that undermine the statute's "causal theory" or political support.

Each of these criteria can be applied to the evaluation of state wetland and riparian area protection programs. The state enabling legislation should establish clearly the goal of protecting wetlands and riparian areas. The purposes of this goal should be explained by lawmakers to the public. The policy should be linked to implementing actions or causal theories to achieve its goal. In the area of wetlands protection, fundamental actions include the definition of wetlands and riparian corridors, the delineation of areas for protection, and the statutory linkage between water quality and wetland protection. One causal theory is that if there are scientifically sound definitions and delineations then wetlands and riparian areas can be protected. A second theory concerns the explicit linkage of water quality antidegradation standards to wetland and riparian area protection. The theory is that wetlands protection will result in water quality improvement.

These causal theories should lead to an implementation process that ensures that wetlands and riparian areas will be protected. Such a process should require inventories to identify the environmentally sensitive areas, numeric or narrative standards that must be met before permits are granted, mitigation measures that must be undertaken if the destruction of wetlands cannot be avoided, site plans to describe proposed actions, an honest account of options to the proposed project and of environmental consequences, and penalties for

noncompliance. Adequate funding is necessary so that qualified managers and planners can be hired to administer the program. Funding may also be necessary to acquire selected lands fee simple or for conservation easements. States without well-defined implementation processes or adequate funding will have weak and ineffective programs.

An education component for implementation is necessary to explain the purpose of wetlands and riparian protection. It is crucial that the public and elected leaders understand this purpose so that they will support the effort. The process must also ensure that the constitutional rights of both the public and property owners are protected. The regulation of wetlands under Section 404 provisions is a proper use of the police powers of government and not a taking of private property (Rapoport 1986). However, in "extreme circumstances," it might be necessary for the state to purchase property fee simple or purchase a conservation easement. State educational efforts vary, as do their case law histories. States are likely to have stronger programs if they have ample material explaining their planning process to elected officials, developers, farmers, environmentalists, and the public. States with more regulatory, rigorous efforts have faced more court challenges and, thus, have a more thoroughly articulated body of case law.

The final Mazmanian and Sabatier (1981) criterion addresses the continuity of state programs through time. Adaptability to changing conditions is an indication of continuity. Because of the relative newness of most state wetlands and riparian areas programs, the effectiveness of states in meeting this criterion is difficult to gauge. An effort will be made to evaluate the continuity of state programs after an analysis of the other five Mazmanian and Sabatier criteria as they relate to wetlands and riparian area protection.

5.1 Clear Goals

A clearly articulated policy goal to protect wetlands and /or riparian areas is missing in many states. The legal justification for protection is drawn from federal clean water and coastal management laws combined with a variety of state laws. For example, the authority to regulate wetlands in South Carolina is derived from two separate laws: the South Carolina Coastal Zone Management Act (South Carolina Code 48-39-10 et seq.) and the South Carolina Pollution Control Act (South Carolina Code 48-1-10 et seq.) (Sansbury 1990).

Following the lead of President Bush, no net loss in wetlands acreage and/or function has become the goal of several states. According to state officials, North Dakota was apparently the first state to implement a no-net loss law in 1987 (Senate Bill 2035, Chapter North Dakota Century Code). However, the bill actually is a fairly complex and delicate compromise between environmentalists and farmers. The law does clearly state that, "the public health, safety and general welfare, including without limitation, enhancement of opportunities for social and economic growth and expansion, of all the people in the state, depend in

large measure upon the optimum protection, management, and wise utilization of all the water and related land resources of the state" (North Dakota State Engineer 1989, p. 1).

The North Dakota legislature also attempted to balance the importance of wetlands, water development and management, and agriculture, and declared that the wetlands policy be the following:

1. Water development and wetland preservation activities should be balanced to protect and accommodate agriculture, water, and wetland interests and objectives.

2. Programs protecting and preserving wetlands shall provide adequate compensation to the landowner and must provide periodic reevaluation of compensation to the landowner. Annual payments are encouraged as an option of landowners.

3. Land, wetland, or water acquisition for waterfowl production areas, wildlife refuges, or other wildlife, waterfowl, or wetland protection purposes may not be acquired through the exercise of the right of eminent domain.

4. When land is removed from the tax base to protect wetlands, replacement payments must be made by the entity which purchases the land so that the amount of money that would otherwise be received in taxes if such land was not removed from the tax base is not diminished (North Dakota State Engineer, 1989, p. 2).

Michigan, the only state thus far to assume 404 responsibilities, has clearly articulated policy goals for wetlands protection. The cornerstone of Michigan's wetlands management program is the Goemaere-Anderson Wetlands Protection Act of 1979, which was approved by the governor on January 3, 1980. The act provides "for the preservation, management, protection and use of wetlands; to require permits to alter certain wetlands; to provide for a plan for the preservation, management, protection, and use of wetlands, and to provide remedies and penalties" (State of Michigan, 80th Legislature, 1979, Act No. 203).

The Michigan Goemaere-Anderson Wetland Protection Act (Act 203) establishes three key policy objectives. As summarized by Brown, these include:

> First, it establishes a state policy to protect the public against the loss of wetlands and makes explicit findings about the benefits wetlands provide. Second, it establishes a permit program regulating some activities in wetlands which are above the ordinary high water marks of lakes and streams. Third, Act 203 explicitly authorizes more stringent and broader regulation of wetlands by local governments and sets up a cooperative process for the sharing of information and expertise between the MDNR and local governments (1988, p. 6).

Michigan has set both short-term and long-term goals. For its shorter term regulatory program, the goal is no net loss by acreage or function. In the longer term, the state would like a net gain of 500,000 acres of wetland by the year 2000.

In addition to Act 203, Michigan has enacted five other laws that enhance wetland and riparian area protection, including the Soil Erosion and Sedimentation Control Act of 1972, the Subdivision Control

Act of 1968, the Michigan Environmental Protection Act (MEPA) of 1970, the Floodplain Regulatory Act of 1968, and the Shoreline Protection and Management Act of 1970. The erosion control law, for instance, requires permits "for earth changes which disturb one or more acres of land or which are within 500 feet of a lake or stream, or for alternation in the stream excluding plowing, tilling, mining, and logging land uses" (Brown 1988, p. 8). The law also requires that land users have a soil erosion and sedimentation control plan.

According to Meeks and Runyon, New Jersey has one of the strongest statement of purpose in the nation. That statement establishes clear goals and reads, in part:

> ...in this state, where pressures for commercial and residential development define the pace and pattern of land use, it is in the public interest to establish a program for the systematic review of activities in and around freshwater wetland areas designed to provide predictability in the protection of freshwater wetlands; that it shall be the policy of the state to preserve the purity and integrity of freshwater wetlands from random, unnecessary or undesirable alteration or disturbance; and that to achieve these goals it is important that the state expeditiously assume the freshwater wetlands permit jurisdiction currently exercised by the United States Army Corps of Engineers...[referring to Section 404 of the Clean Water Act] (as quoted by Meeks and Runyon 1990).

Three of the older wetlands protection laws were enacted in the New England states of Massachusetts (1963), New Hampshire (1967 for tidal wetlands program and 1969 for nontidal wetlands program), and Connecticut (1972). Massachusetts became the first state in the nation to adopt a wetlands protection law in 1963. Wetlands are considered waters of the Commonwealth of Massachusetts. In 1972 more comprehensive legislation was passed with a regulatory framework added in 1983 (Klein and Freed 1989). Wetlands protection is linked to water quality in Massachusetts, where the purpose of water quality standards is "to protect the public health and enhance the quality and value of the water resources of the Commonwealth" (314 CMR 4.0 1(4)). The intent of the Connecticut law is also quite clear: "the preservation and protection of wetlands and watercourses from random, unnecessary, undesirable and unregulated uses, disturbances or destruction is in the public interest and is essential to the health, welfare and safety of the citizens of the state" (Water Resources Unit 1989, p. 1).

In Kansas, the goal to protect wetlands and riparian areas is part of a comprehensive water planning effort. The Water Resources Planning Act directs the Kansas Water Office to "... formulate on a continuing basis a comprehensive state water plan for the management, conservation and development of the water resources of the state" (KSA 82a - 901 et seq.). The California Coastal Act (Ann. Cal. Pub. Res. Code, Section 30121) contains numerous policy goals relating to wetlands, such as "... diking, filling, or dredging in existing estuaries and wetlands shall maintain or enhance the functional capacity of the wetland or estuary."

Several states are working toward specific goals to protect wetlands. For example, the South Dakota statute definition for waters of the state includes wetlands by inference with the inclusion of the word "marshes" (SDCL 34A-2-2-12). This inference allows wetlands to be considered as waters of the state and as such, are protected by narrative statements and criteria assigned to the wildlife propagation use designation under the water quality standards. The current water quality standards do not specifically address wetlands, either by definition or by use classification. It is planned that specific water quality standards which will provide further protection for wetlands will be developed sometime in 1994. The next scheduled review in South Dakota of the water quality standards will expand the definition of waters of the state to include wetlands.

5.2 Implementing Actions

The definition and delineation of wetlands and riparian areas are fundamental actions necessary to achieve the protection goal. The definitions and delineations must be scientifically sound and clear so that implementing officials have sufficient jurisdiction to protect wetlands. But like wetlands and riparian areas themselves, their definition and delineation in state statutes and programs is fuzzy (Table 1). A South Carolina official, for instance, has observed that "nowhere in the definition" of water in the state statute "is the term 'wetlands' found" (Sansbury 1990, p. 3). The official goes on to justify how indeed wetlands are considered within the state's regulatory jurisdiction.

Michigan, through the Goemaere-Anderson Act, establishes a clearer definition in state law. The definition of Michigan wetlands has two components. First, Act 203 only regulates wetlands "where water (surface or subsurface) is present at a frequency and duration sufficient to support wetland vegetation or aquatic life" (Brown 1988, p. 6). Second, "wetlands are separated according to whether or not they are contiguous to a water body" (Brown 1988, pp. 6-7).

Several activities are exempted from Act 203 permits, but may be covered by the MEPA. Michigan officials have attempted to reduce the unnecessary duplication of permits. Generally, the exempted activities include some existing farming practices, harvesting forest products, some road construction and improvement, power line construction and maintenance, small gas or oil pipeline construction, and iron and copper tailing basins and water storage (Brown 1988). Although some agricultural activities are exempt from the state law, they may be covered by the swampbuster provisions of the federal FSA as well as the state's Soil Erosion and Sedimentation Control Act. Both of these laws require farmers to have soil conservation plans.

The Massachusetts Wetlands Protection Act regulates the filling, dredging, and altering of wetlands. According to Klein and Freed,

> Protected wetlands, also referred to as resource areas, include banks, freshwater wetlands, coastal wetlands, beaches, dunes, flats, marshes, meadows and swamps. To be protected under the Act, these resource areas must border a body of water. ... any activity within 100 feet of the edge of most wetlands is also subject to regulation (1989, p. 500).

Wetlands and watercourses are defined broadly in the Connecticut Inland Wetlands and Watercourses Act of 1972. A wetland in Connecticut is based on soil types identified by the SCS. Poorly drained, very poorly drained, alluvial, and flood-plain soils are considered wetlands in Connecticut. Rivers, streams, brooks, waterways, lakes, ponds, marshes, swamps, bogs, and all other bodies of water are watercourses in Connecticut (Water Resources Unit 1989).

In Kansas, the identification of riparian and wetland areas is accomplished through the state comprehensive planning process. In 1986, riparian protection and wetland protection sub-sections were included in the Kansas Water Plan as part of the fish, wildlife, and recreation section of the plan. Riparian areas and wetlands are defined in the water plan and their values recognized (Kansas Water Office 1990).

Sound definitions and consistent delineation techniques are significant actions necessary to protect wetlands. But they are only part of the "causal theory" framework, since the major purpose of protecting wetlands and riparian areas is water quality. Antidegradation standards need to be integral to protection efforts. As indicated in Table 2, many states have taken such action. In these states an antidegradation policy applies to wetlands. Violations of these water quality standards result in the denial of 401 certification.

EPA has identified definitions, inventories, and water quality standards as implementing actions states can take immediately to use their Section 401 authority. EPA has urged all states to begin to explicitly incorporate wetlands into their definitions of state waters in both water quality standards and 401 certification standards (U.S. Environmental Protection Agency 1989). EPA suggests that states improve or initiate inventories of wetlands. States need to designate uses for wetlands based on functions associated with the area type. This implies a classification system for state wetland inventories. Such a classification or tiering system could be used to set different standards for various wetland functions and types. EPA suggests that states should make more effective use of their existing narrative water quality standards, including their antidegradation policies, to protect wetlands (U.S. Environmental Protection Agency 1989, Meeks and Runyon 1990).

5.3 Implementation Processes and Tools

The implementation of state wetland protection program has been linked to the federal CWA process. According to many of the respondents of the survey, the principal tool used is the 404 permit program regulating the discharges of dredged or fill materials into waters, including wetlands. Section 401 provides

the opportunity for states to become involved in the federal permit process. States must provide or waive 401 certification on all 404 permits. This directly ties state agencies to the federal process. For example, in South Carolina, the 404 permit program "is very much intertwined with State water and wetlands programs. It has been estimated that over 90% of the activities requiring a 404 permit also require a permit from a State agency" (Sansbury 1990, p. 5).

The public interest is to be considered by the Corps in their permit granting. Permits can be denied on environmental grounds and are not to be issued for projects which unnecessarily alter or destroy wetlands. Applicants can be required to modify their proposals to eliminate or mitigate damage to wildlife resources. Federal agencies must consider the possible impact of projects on endangered species and their habitat as well as water quality. State agencies consider many of these elements in 401 certification, i.e., public interest, environmental consequences, wetlands damage, wildlife considerations, endangered species impact, and water quality.

The New Jersey Freshwater Protection Act of 1987 is cited as a comprehensive wetlands statute by a number of analysts (Meeks and Runyon 1990). The act specifies the conditions that an activity must meet if it is to be permitted. Specifically, it addresses whether an activity:

1. Is water-dependent or requires access to the freshwater wetlands as a central element of its basic function, and has no practicable alternative which would not involve a freshwater wetland or which would have a less adverse impact on the aquatic ecosystem, and which would not have other significant adverse environmental consequences; or

2. Is nonwater-dependent and has no practicable alternative which would not involve a freshwater wetland or which would have less adverse environmental consequences; and

3. Will result in minimum feasible alteration or impairment of the aquatic ecosystem including existing contour, vegetation, fish and wildlife resources, and aquatic circulation of the freshwater wetland; and

4. Will not jeopardize endangered and protected species;

5. Will not cause violation of state water quality standards;

6. Will not cause violation of toxic effluent standards;

7. Will not harm any marine sanctuary;

8. Will not contribute to degradation of water quality; and

9. Is in the public interest.

(Meeks and Runyon 1990, p. 13).

According to Meeks and Runyon, the New Jersey statute "explicitly states that there is a rebuttable presumption that practicable alternatives exist to any wetland activity" (1990, p. 13). To alter a wetlands of exceptional resource value a compelling public need for the proposed activity must be demonstrated.

The New Jersey law defines the following as evidence "that would be admissible to rebut the presumption that alternatives exist to wetland disturbance" (Meeks and Runyon 1990, p. 12). The evidence includes:

1. The basic project purpose cannot reasonably be accomplished using one or more other sites in the general region that would avoid, or result in less adverse impact on an aquatic ecosystem; and

2. That a reduction in the size, scope, configuration or density of the project as proposed and all alternative designs to that of the project as proposed that would avoid, or result in less, adverse impact on an aquatic ecosystem will not accomplish the basic purpose of the project; and

3. That in cases where the applicant has rejected alternatives to the project as proposed due to constraints such as inadequate zoning, infrastructure or parcel size, the applicant has made reasonable attempts to remove or accommodate such constraints (Meeks and Runyon 1990, p. 12).

In Michigan, the wetlands protection policy is implemented principally through permits. A well-established system of administration and enforcement has been put in place. Act 203 also strengthens local protection efforts. A permit is required for dredging, filling, draining, and developments, with certain exemptions. In addition to specific permits, the MDNR "may issue general permits on a state or county basis for a category of activities that are similar in nature and have only a minimal adverse effect, both individually and cumulatively, on the environment" (Brown 1988, p. 7). The MDNR's Land and Water Management Division is responsible for the administration of the permit program. An applicant may also need to request a permit with a local government if it has adopted a wetlands ordinance. The permit program is enforced through strong penalties. "Failure to obtain a necessary permit, or a violation of a condition or limitation in a permit issued under the Act, is subject to civil and criminal penalties" (Brown 1988, pp. 7-8). Legal actions may be initiated at either the local or state level. Guilty parties can face penalties up to $50,000 per day of violation and up to two years in prison. The act also authorizes municipalities to provide "more stringent definition and regulation of wetlands" in local wetland zoning ordinances (Brown 1988, p. 8).

Wetland permit procedures in Michigan are straightforward. The steps are as follows:

1. Before planning or initiating any construction in a wetland, the property owner contacts MDNR.

2. MDNR makes a wetlands determination.

3. If wetlands occur, then an application is submitted by the property owner to MDNR.

4. Applications are reviewed for completeness.

5. Once an application is complete, the MDNR must make a decision to grant, deny, or modify an application within 90 days, or within 90 days following a public hearing if one is held (adapted from Brown 1988).

The MDNR evaluates permit applications according to Act 203, which stipulates "a permit ... shall not be approved unless the department determines that the issuance of a permit is in the public interest, that the permit is necessary to realize the benefits derived from the activity, and that the activity is otherwise lawful" (emphasis added). In determining the public interest, the benefits of the activity have to be balanced against the "foreseeable detriments of the activity." In addition, the permit cannot be issued "unless it is shown that an unacceptable disruption will not result." The permit shall not be issued unless the applicant demonstrates that the "proposed activity is primarily dependent upon being located in the wetland" and a "feasible and prudent alternative does not exist."

According to Brown, if "a permit is issued, performance conditions will be attached assuring that the activity will be completed consistent with applicable law" (1988, p. 12). Applicants can appeal MDNR to the agency and through the courts. Brown notes that the "use of mitigation is becoming more and more common as a component of applications and permits" and that the "most common procedure is to compensate for wetlands destroyed by creating wetland habitat on site or, where necessary, at another nearby location" (1988, p. 12).

Michigan does not rely on permits alone to implement its program. It has a system of voluntary wetland protection and benefits to landowners. Land can be donated to a private foundation or a government agency and the landowner will receive a tax deduction. Michigan has a conservation easement provision that allows "certain rights and privileges concerning the use of land or a body of water to a non-profit organization, government body, or other legal entity without transferring title to the land" (Brown 1988, p. 13). Deed restrictions concerning future land use can be placed on the property along with the easement. Michigan also has funds for the acquisition of wetlands fee simple through the Michigan Natural Resources Trust Fund and the Michigan Duck Stamp Program as well as private and federal funding sources.

Other states have similar voluntary programs. For instance, the state of Kansas can "purchase or obtain land in the form of an easement for certain conservation purposes including riparian and wetland preservation and protection" (Kansas Water Office 1990, p. 32). In addition to easements, local conservation districts are to identify riparian and wetlands areas. In the Kansas state plan, there is also a policy recommendation which would "require local conservation districts to develop a county wetland protection program to promote the general protection and management of wetland areas. ... such a county

protection program would encourage landowners to protect and manage wetland areas as part of a comprehensive conservation plan" (Kansas Water Office 1990, p. 31).

Like Kansas, the implementation of the state wetlands program in Connecticut is done largely at the local level. As in much of New England, the town is an important level of local government in Connecticut. The town's legislative body is responsible for appointing a regulatory agency consisting of citizens from the community. In some Connecticut towns, "the planning and zoning or conservation commission may be acting as the wetland agency. The wetlands agency adopts local program regulations and a map showing the general location of regulated areas within the town" (Water Resources Unit 1989, p. 11). Similarly, in Massachusetts five-member volunteer local commissions are responsible for administering and enforcing the state wetland protection law.

In Connecticut there are consistent statewide guidelines for enforcing the Inland Wetlands and Watercourses Act and for evaluating the impacts of proposed activities on wetlands and watercourses. All municipal regulations are reviewed by the Connecticut Department of Environmental Protection (CDEP) for conformity with the wetlands act. If a local government fails to enforce the act, then the CDEP will. Each local government is required to report decisions and actions to CDEP monthly. The factors that a local commission is to consider include:

1. The environmental impact of the proposed action;
2. The alternatives to the proposed action;
3. The relationship between the short-term uses of the environment and the maintenance and enhancement of long-term productivity;
4. Irreversible and irretrievable commitments of resources which would be involved in the proposed activity;
5. The character and degree of injury to, or interference with, safety, health of the reasonable use of property which is caused or threatened; and
6. The suitability or unsuitability of such activity to the area for which it is proposed (Water Resources Unit 1989, p. 12).

These factors for consideration and any other relevant considerations are used to regulate several activities in Connecticut. The act defines "regulated activity" to mean "... any operation within or use of a wetland or watercourse involving removal or deposition of material, or any obstruction, construction, alteration or pollution, of such wetlands or watercourses..." (Water Resources Unit 1989, p. 13). In addition many Connecticut towns " ... have adopted setbacks or buffer zones in their regulations and require a permit for such activities taking place adjacent to wetlands or watercourses" (Water Resources Unit 1989, p. 14).

As in other states, some uses are exempt from wetlands protection in Connecticut, including some, but not all, farming operations; the construction of a residential home on a subdivision lot that had received a building permit prior to July 1, 1987; boat anchorages and moorings, not including dock construction; some ancillary, incidental residential uses; and the construction and operation of dams, reservoirs, and other water shortage facilities. Some activities are permitted as non-regulated uses, "provided they do not disturb the natural and indigenous character of the wetland or watercourse" (Water Resources Unit 1989, p. 15). These uses include conservation activities and outdoor recreation facilities.

Individuals who plan work in or around wetlands or watercourses in Connecticut are required to contact their local wetlands agency prior to commencing such activities. In addition to local level approval, some activities are subject to state-level regulation, including: the construction or modification of any dam; the construction, encroachment or placement of any obstruction within stream channels; construction or placement of any structure or obstruction within tidal, coastal, or navigable waters; diversion of water including withdrawals of surface or groundwater in excess of 50,000 gallons per day or any change in the instantaneous flow of any surface waters of the state where the tributary watershed area above the point of diversion is 100 acres or larger; discharges into the waters of the state; and discharge of fill or dredged materials pursuant to Sections 401 and 404 of the CWA. In addition to its regulatory program, Connecticut also uses incentives for implementation. Landowners of wetlands can receive tax relief for areas of their property with restrictions placed on it.

Virginia has also shifted the permit issuing authority to local governments in coastal tidal areas. As a result of the Virginia Wetlands Act, permits are required for wetland alteration. Local wetlands boards issue permits and the state provides advice and reviews local permitting decisions (Cox 1989). Although the state government has the authority to reverse local wetland board decisions, "few reversals occur" in Virginia (Cox 1989, p. 535).

EPA recommends that states should immediately develop or modify their regulations and guidelines for 401 certification and water quality standards to clarify their programs, codify their decision procedures, and to incorporate special wetlands considerations into their more traditional water quality approaches (U.S. Environmental Protection Agency 1989). As well, according to EPA, states should incorporate wetlands and 401 certification into their water quality management programs. Integrating this tool with other mechanisms like point and non-point source programs and areawide water quality management plans "will help fill the gaps...and allow better protection of wetlands systems from the whole host of physical, chemical and biological impacts" (Meeks and Runyon 1990, p. 16).

5.4 Commitment and Skill of Critical Implementing Officials

Several states, including Connecticut (Water Resources Unit 1989), Michigan (Brown 1988), and South Carolina (South Carolina Coastal Council and U.S. Army Corps of Engineers no date), have developed detailed guidebooks and handbooks as educational resources for parties interested in their programs. In several instances, these guidebooks and handbooks have been produced in cooperation between federal and state agencies. The Pennsylvania Department of Environmental Resources has developed an instruction booklet for a joint federal/state permit application with the Corps (Pennsylvania Department of Environmental Resources and U.S. Army Corps of Engineers 1987). Local governments have also prepared wetlands guidebooks (Chester County Planning Commission 1987).

Individuals from different state and local agencies sometimes compete for wetlands protection responsibilities and frequently view wetlands protection from divergent perspectives. One state agency may place wetlands and riparian area protection high on its agenda, while another may be lukewarm or even hostile on the issue. For example, in Kansas, the state water office has been critical of local conservation districts for taking "no action in identifying riparian and wetland protection areas" although it is their responsibility (Kansas Water Office 1990, p. 32). The water office has noted also that the Kansas Department of Wildlife and Parks has not used conservation easements for riparian and wetland protection purposes. As a result, the Kansas Water Office has concluded "thus, the [riparian and wetland protection] program which has been on the books for five years has yet to be implemented" (Kansas Water Office 1990, p. 32). This situation appears to be inconsistent with the policy of the Kansas legislature which "envisioned a cooperative among several state agencies including the State Conservation Commission, the Kansas Department of Wildlife and Parks and the conservation districts" as well as the Kansas Water Office (Kansas Water Office 1990, p. 32).

In other states, cooperation among agencies is better and officials are proud of their programs. A Connecticut publication boasts "Thanks to forward sighted citizens and our State Legislature, Connecticut is in the forefront of wetland protection in the country" (Water Resources Unit 1989, p. 1). Another state publication notes, "Existing Connecticut laws governing the use of freshwater wetlands are recognized as being among the most progressive and protective in the nation" (Department of Environmental Protection 1990, p. 1).

Massachusetts officials also consider their state to be "a leader in mandating the protection of wetlands resources" (Klein and Freed 1989, p. 506), but the decentralized approach taken in Massachusetts has caused some problems with implementation. Local officials do not always have the backgrounds necessary to adequately administer and enforce the program. According to Klein and Freed

> Although there is only one Wetlands Protection Act, there are 351 local conservation commissions administering it in their communities. This creates the potential for numerous administrative variations. Although the state environmental agencies strive to ensure consistency, there are grey areas in the Act which cause confusion at the local level (1989, p. 503).

In a survey of Massachusetts conservation commissions, it was found that some portions of the wetlands regulations "are not well understood, leading to inconsistent interpretation" by local officials (Klein and Freed 1989, p. 503). As a result of the inconsistent regulatory interpretations, wetlands are being unnecessarily lost in Massachusetts. In addition, the survey also indicated that

> commissions perceive themselves to be poorly equipped to adequately administer the Act. The lack of qualified staff and the sheer number of applications is also a factor in commission performance, as the survey showed that the commissions receiving the most filing [for permits] have not necessarily increased their staffing levels (Klein and Freed 1989, p. 503).

Assessing the commitment and skill of implementing officials is a subjective matter, especially when dealing with programs as new as most state wetlands efforts. An impression was gained by the authors of this report during telephone interviews and through the mail survey. The commitment and skill of state officials varies widely nationally. Many officials are enthusiastic and eager to share information. They are self critical, orally and in writing, and seem eager to improve their program. Other officials seem demoralized. They are discouraged by lack of budgets and staff to perform an adequate job. Another source of discouragement is the situation when state officials have worked hard to design a wetland protection program, only to see it compromised when implemented.

5.5 Continued Support from Key Political Leaders and Constituency Groups

Wetlands protection has been advocated by the nation's top leaders. President George Bush has endorsed a federal policy of preserving the nation's remaining wetlands. Federal agencies have implemented his no net loss policy. At the state level, legislators, agency officials, developers, environmentalists, local governments, and farmers have taken an interest in the issue (Table 7). Several governors, such as New Jersey's Thomas Kean, Delaware's Michael Castle, Washington's Booth Gardner, and former Arizona Governor Rose Mofford have provided leadership in wetlands and riparian area protection.

The National Wetlands Policy Forum stimulated a couple of states to undertake similar efforts. In Delaware, Governor Michael Castle initiated a freshwater wetlands roundtable. The roundtable members included academics, business people, public interest group representatives, environmentalists, farmers, and political leaders. The roundtable endorsed a policy goal of no-net loss of freshwater wetlands and recommended a "pro-active public/private partnership strategy to achieve it" (Governor's Freshwater Wetlands Roundtable 1989). The roundtable identified five central issues that had to be addressed in Delaware. Based on those issues, the roundtable made the following recommendations:

Section 404. We recommend that the State move forward with the development of a freshwater wetlands program with the goal being the eventual assumption of the Federal 404 program.

Permissible and Prohibitive Uses. We recognize that not all freshwater wetlands are alike. We, therefore, recommend that at least three classes or types of freshwater wetlands be formulated and accorded differing levels of protection.

Mitigation, Restoration, and Creation. We recommend that the State develop and formally adopt both a mitigation policy and freshwater wetland restoration and creation strategy. We have specified some guidelines that should be considered in these endeavors.

Acquisition. We note that the surest way of protecting freshwater wetlands is to acquire them. Specific recommendations are offered on how an acquisitions program should be approached.

Education. We believe that Delawareans should become more knowledgeable about freshwater wetlands. We recommend a number of education projects that should be undertaken by both the public and private sectors (Governor's Freshwater Wetlands Roundtable 1989).

South Carolina Governor Carroll Campbell, a co-vice-chair of the National Wetlands Policy Forum, established a Freshwater Wetlands Policy Forum in his state. This forum was charged to:

- Develop a plan for achieving "no net loss" of wetlands.
- Develop non-regulatory approaches to wetlands protection.
- Simplify the permit process for wetlands in South Carolina.
- Suggest single federal agency jurisdiction with authority delegated to the State.
- Enhance public understanding of the wetlands issue.
- Recommend a set of policies.
- Develop the foundation for a state wetlands conservation plan (Sansbury 1990, p. 15).

Suggestions from the governor's forum have been incorporated into proposed state legislation. Also, in South Carolina, the state supreme court found a state agency that had improperly certified the alteration and dredging of a wetland. The state agency certified the wetland change because of economic benefits of the proposal. The state supreme court noted that economic benefits cannot override wetlands protection criteria (Sansbury 1990, p. 16).

The South Carolina case was initiated by environmental groups and the League of Women Voters who commenced action to contest the validity of certification for a residential development project. The proposed project involved dredging a canal through freshwater wetlands in order to create waterfront residential lots and provide access to the river. A lower court upheld certification, but the South Carolina Supreme Court reversed the decision. The supreme court found evidence that did not support certification of the project. There was no evidence to indicate absence of feasible alternative sites, to support the

conclusion that the project would be without significant environmental impact, or to establish overriding public interest in permanent alteration of the wetland (South Carolina Wildlife Federation v. South Carolina Coastal Council, 371 S.E.2d 521 S.C. 1988).

An indicator of political support is the openness of a program to public participation. Such involvement can create awareness and support for wetlands protection. The Michigan program encourages such public participation. For a $25.00 annual fee, anyone can receive weekly notices of all permit applications. If MDNR issues a public notice, it is followed by a formal public comment period. Some large-scale activities result in the public notice being sent "to the municipality where the activity would occur, the adjacent property owners, and any other interested parties that request it including state agencies, public and private organizations, and individuals" (Brown 1988, p. 10). The public has 20 days and local governments 45 days to respond to these public notices. During the 20-day comment period, individuals may request a public hearing. During the 45-day period, local governments can hold public hearings.

5.6 Adaptability to Changing Conditions

According to Mazmanian and Sabatier, for a program to be effective, the courts need to be neutral or supportive. Legal challenges to wetlands programs are one way to gauge how responsive the programs are to changing conditions. Very little information was provided from the states concerning legal challenges (Table 8). It appears that states with more rigorous programs have been challenged more frequently. For example, in 1991 Maryland's state program faced 31 law suits. In 1990 there were 20 challenges to New Hampshire's program, while South Carolina officials report about two or three challenges a year.

Independent of the survey, most sources report that challenges to state and federal wetlands programs have not been successful (Blumm 1980, Rapoport 1986, Strong 1987, Ransel and Meyers 1988, and Want 1990). Strong notes that a public health, safety, or welfare purpose served by a regulation is crucial and, furthermore, this public purpose needs to be clear in state legislation. According to Strong, "the importance of explicit state enabling legislation becomes apparent when landowners allege that there is no valid public purpose underlying the regulation. If the state statute lists the public purposes to be advanced by regulation and explains why the state legislature finds these purposes to be important to the state, courts have generally been highly deferential to legislative intent" (1987, p. 4).

Another indication of adaptability to changing conditions is legislative amendments. Most states that have enacted laws to protect wetlands have amended them (Table 8). For example, Connecticut wetland/riparian legislation has been amended in 1974, 1978, 1981, 1987, and 1990. Generally, there appears to be a tendency toward stronger state laws. Programs also change as a result of budget increase or decrease. The

present situation is an odd mixture of more public policies and political support but lower budgets to support responsible state agencies.

State officials recognize that because their programs are relatively new, changes will be made. For instance, "Development of wetlands policies and legislation is an evolving issue in South Carolina" (Sansbury 1990, p. 14). Throughout the nation, there are many proposals to strengthen state wetlands protection programs.

In Connecticut, which has one of the older and more well established programs in the nation, there has been discussion regarding the incorporation of mitigation into the state program. Wetlands mitigation is a concept that has developed since the Connecticut program began in 1972. CDEP convened a task force in 1988-1989 "to evaluate the state's regulatory policies on wetlands creation as compensation for the loss or destruction of wetlands resulting from development activities" (Department of Environmental Protection 1990, p. 1). A proposed policy was developed by the task force that maintained Connecticut's "progressive and protective " program by not permitting compensation where wetland losses or impacts are avoidable or where mitigation is used to make unacceptable wetland losses or impacts acceptable. The task force also suggested that wetland compensation strategies should be considered separately from the development proposal and, if compensation is deemed appropriate, then compensatory mitigation measures must follow rigorous standards (Department of Environmental Protection 1990).

Actually, the Connecticut program is one that has been resilient through the years. For example, the 1987 amendments, strengthening wetland protection, provide:

> In the case of an application which received a public hearing, a permit shall not be issued unless the Commissioner [of CDEP] finds that a feasible and prudent alternative does not exist.

By amendment references, this provision was made applicable to local commissions (Sharp 1987). Rather than being undermined by changing conditions, as more is learned about the value of wetlands in Connecticut, protection for the resource has increased.

Policy, like nature, is seldom in balance. Rather, environmental policy is dynamic. Changes are bound to occur. Generally, the major changes at the state level appear to be the increased recognition of the values and functions of wetlands and riparian areas and the growing understanding of the roles of government in their protection. State leaders face a number of challenges to better protect these environmentally sensitive areas. States also have the opportunity to use their authority to ensure that the benefits of wetlands and riparian areas are maintained for future generations.

6.0 Conclusions: Problems and Opportunities

The surveys of state and federal officials identified several key issues. The major problems are:

- The definition and delineation of wetlands and riparian areas,
- The weak connection between water quality antidegradation standards and wetland/riparian protection,
- Exemptions from permit requirements for certain lands uses or activities,
- The division of responsibilities among the federal, state, and local levels of government,
- The lack of cooperation among agencies, especially relating to monitoring and enforcement activities, and
- The need for more funding and better trained staff for wetland and riparian programs.

Jon Kusler has made several recommendations to strengthen riparian habitat protection in the arid and semi-arid West, emphasizing habitat protection. First, he suggests "an effort must be made to clear away the semantic clouds" (Kusler 1985, p. 7). Kusler notes that the protection "of western riparian habitat should be advocated on its own -- as a class of lands similar to and as valuable as wetlands -- but not meeting strict wetland definitions" (Kusler 1985, p. 7).

The reasons for protecting wetlands and riparian areas need to be clearly explained and the lands that should be protected clearly delineated. Wetlands provide many important functions, values, and benefits (Williams 1990). The "why" of wetlands and riparian area protection relate most directly to water quality benefits. Most water pollution comes from non-point sources. Wetlands and riparian areas act as filters removing pollutants before they enter waterways. Such areas are also important for recharging groundwater supplies. Thus, wetlands and riparian areas are vital for water quality and surface and groundwater supply. Ancillary benefits relate to flood control, erosion and sedimentation management, fish and wildlife habitat protection, and recreation and scenic resource enhancement.

To delineate riparian habitat, Kusler (1985) suggests that the following characteristics be considered:

- location of "riparian" lands along streams, rivers, arroyos, ponds, lakes, other water bodies,
- growth of vegetation dependent upon relatively high soil moisture content,
- periodic flooding,
- alluvial or other characteristic soils (some, but not all lands),
- special water-related functions such as erosion control, and
- special management needs (Kusler 1985, p. 7).

State legislation and programs should include delineations based on these characteristics. The delineations, in turn, should be related to the purposes of wetlands and riparian areas protection. Clear goals should provide the bridge between the purposes and delineations and the actions and strategies needed to achieve water quality. Currently, several state officials note that there is a weak connection between water quality antidegradation standards and wetland/riparian protection. Strengthening this link is essential because it provides a "causal theory" for the protection of wetlands and riparian areas. Such standards may be either numeric or narrative or a combination.

Meeks and Runyon (1990) identify exemptions from permit requirements for certain land uses or activities as the major weakness of state wetland protection acts. They use the Warren S. Henderson Wetlands Protection Act in Florida as an example, where a law review author "questioned the long term prospects of wetland conservation given the language of the act" (Meeks and Runyon 1990, p. 17). According to that author

> The [Florida] Wetlands Protection Act is long and complex. It addresses a biologically complicated issue through legislation which is, in its own right, procedurally and politically complicated. While Florida has gained much through passage of the act, the complexities of negotiating such an act led to the creation of statutory exemptions which may not be consistent with the express legislative intent or the public interest (Hilley 1984, p. 141).

Meeks and Runyon note that in spite of this substantial weakness, the Florida act is a success. Its success is limited, however, by exempting certain mining and agricultural activities. Another commentator, Sherry Lynn Jacobs, also identifies the substantial weakness to existing state law as exemptions to permit requirements for agricultural practices, utilities, construction and maintenance of roads, mining, and drainage. Jacobs (1987) observes that although agriculture is the single largest cause of wetland loss, accounting for 80 percent of the conversions, farmers are largely exempted from state regulations. According to Jacobs,

> Although federal and state wetland regulations have slowed wetland conversion, the limits of existing wetland programs result in continued conversion of valuable wetlands. Further, the voluntary and piecemeal nature of the economic incentive programs and acquisition programs preclude effective management by the states.
>
> ...most state statutes are poorly drafted and their effectiveness is limited. Some states have even enacted conflicting legislation that encourages wetland conversion. Poor drafting and conflicting policies may result partially from the pressure of private interests that oppose wetland legislation. Developers and farmers have attacked the programs as unwarranted intrusions on private property rights and as bureaucratic, imposing undue delays and paperwork on applicants (1987, p. 227).

Kusler also notes that "opportunities for protection should be simultaneously pursued at all levels of government" (1985, p. 7). Currently, jurisdictional fragmentation exists. A partnership involving federal,

state, and local governments as well as private landowners and public interest groups needs to be established. At the federal level, Kusler believes "explicit riparian habitat protection guidelines should ... be incorporated into the [Corps] Section 404 guidelines since habitat is 'water of the U.S.' although it may not qualify as wetland" (1985, pp. 7-8).

Several states, including Virginia, have promoted such a local/state/federal partnership. In his explanation of the Virginia approach, Cox notes that wetlands management concerns land use and

> Local government traditionally has been delegated primary responsibility for land use control in Virginia; a significant local role in wetlands management therefore is consistent with tradition. But direct state participation is a natural consequence of the recognition that wetlands and the other resources that depend on impacts of wetlands modifications can extend far beyond the local area. ... Just as state interests in wetlands transcend local interests, a national interest broader than that of any individual state has been recognized, and wetlands protection has become a major federal objective (1989, p. 536).

The EPA has suggested that the enforcement of Section 404 would be increased if more states were to assume program responsibilities that are allowed by law. EPA has also noted that administrative funds may be necessary "before many more states would be encouraged to assume this responsibility" (GAO 1988, p. 62). Currently, funding is not adequate either on the federal or state level. For example, a Corps official notes, "it should be clearly recognized ... that the Corps staffing and funding resources are not adequate to meet the requirements of the regulatory program" (GAO 1988, p. 80). But, state-level officials complain that the Corps is ineffective for more reasons than an inadequate budget. For example, in several states there are many district offices of the Corps. These district offices frequently have "significant" differences in program operation and emphasis. The Corps is also criticized by state officials for its engineering and development orientation. Central policy questions facing wetlands and riparian protection are at what level of government the primary responsibilities should rest and how adequate funding should be provided.

Even before these questions are addressed, existing programs could be more effectively enforced. The GAO has been critical of the Corps for not emphasizing monitoring and enforcement activities, as were several state agencies in this survey. Although the Corps and EPA have claimed that staff and budget constraints are the primary reasons for the lack of enforcement, GAO notes a better job could be done with existing resources: "if the Corps and EPA better coordinated their combined resources, they could bring about a more comprehensive and systematic monitoring and enforcement effort" (GAO 1988, p. 73). The same logic can be extended to state and local governments to accomplish the kind of protection by all levels of government advocated by Kusler.

Such cooperation can be cost effective for governments; however, from this nationwide survey it is clear that state programs are currently inadequately funded and staffed. State officials note a lack of funds for

enforcement, monitoring, and education. One respondent observed that politicians are suspicious of the federal 404 and state 401 programs and as a result are not interested in strengthening them through budgets or statutes.

However, from this survey it is also clear that the number of citizen, environmental, and public interest groups involved in wetlands and riparian area protection is growing. Jan van Schilfgaarde, one of the foremost authorities on Western water policy, recently wrote about the renewed growth in environmental interests:

> We are not witnessing a flash in the pan. The changes we have seen are real and permanent. They're deep-rooted changes driven by the public. They are slowly, sloppily, and irrationally being endorsed by the Congress and by state legislatures and reluctantly, belatedly, and halfheartedly being accepted by the bureaucracy (his emphasis, 1990, p. 18).

From the experiences of other states, the features of an effective wetland and riparian area protection program can be identified. The following features of an effective state wetland protection program are drawn from a North Carolina report (North Carolina Environmental Defense Fund 1989), this survey of state officials, and the analysis based on the survey. The features are:

- Policies for the present and clear goals for the future.
- Strategies for achieving the no net loss and eventual gain of wetlands and riparian areas. Such strategies should seek
  - To explain the public health, safety, and welfare purposes of wetlands protection.
  - To define wetlands and riparian areas with explanations of their values, functions, and benefits.
  - To delineate wetlands and riparian areas to be protected.
  - To improve the 401 certification program to clarify procedures and codify the decision-making process.
  - To improve state water quality regulations by adopting numeric and/or narrative standards and strengthening antidegradation requirements.
  - To assume the 404 program at the state level.
  - To create a state wetland and riparian area permitting program with no exemptions.
  - To disseminate information about wetland areas, their functions and values, and protection effort widely.
  - To provide mechanisms for adequate public participation and local government involvement.
  - To integrate mitigation requirements into all state programs.

  - To infuse wetland and riparian area protection into local land-use planning, economic development, and growth management strategies (i.e., general plans, zoning ordinances, and subdivision regulations).

  - To create financial disincentives for wetlands destruction and financial incentives for wetlands preservation (i.e., through state tax policies, heritage programs, land acquisition, and conservation easements).

- Enforcement mechanisms and significant penalties for non-compliance.

- Funding and staffing at levels to ensure program implementation.

A program with such features requires strong and sustained support from the public and elected officials. The benefits of wetlands and riparian areas are many. The consequences of not acting and not putting in place a comprehensive program are significant. Certainly, there are short-term impacts from the continued loss of wetlands and riparian areas, but the consequences for future generations are likely to be even more profound. The value and benefits of protecting wetlands and riparian areas have been recognized in many states. Several states have put in place model programs. As a result, there are many examples to follow for other states that seek to protect wetlands and riparian areas.

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Abbreviations and Acronyms

(Note: many of these abbreviations and acronyms are used in Tables 1 through 8)

ADEC	Alaska Department of Environmental Conservation
ADEM	Alabama Department of Environmental Management
ADEQ	Arizona Department of Environmental Quality
ADID	Advance identification programs
Admin.	Administration
ADPCE	Arkansas Department of Pollution Control and Ecology
AGFD	Arizona Game and Fish Department
ASP	Arizona State Parks
ASU	Arizona State University
Avg.	Average
BMPs	Best management practices
CARL	Conservation and Recreational Lands Program
CDEP	Connecticut Department of Environmental Protection
CDFG	California Department of Fish and Game
CFR	Code of Federal Regulations
CIWPIS	Coastal and Inland Water Permit Information System
The Corps	U.S. Army Corps of Engineers
CSWS	Comprehensive state wetlands strategies
CWA	U.S. Clean Water Act
CWQC	Colorado Water Quality Control
CZMA	U.S. Coastal Zone Management Act
DEC	Department of Health and Environmental Control
DEH	Department of Environmental Health
DEHNR	Department of Environmental Health and Natural Resources
DEM	Division of Environmental Management
DEP	Department of Environmental Protection
DEPA	Department of Environmental Protection Agency
DEQ	Department of Environmental Quality
DER	Department of Environmental Regulation

DES	Department of Environmental Services
DHE	Department of Health and Environment
DHEC	Department of Health and Environment Control
DHES	Department of Health and Environmental Sciences
DHW	Department of Health and Welfare
DNR	Department of Natural Resources
DNREC	Department of Natural Resources and Environmental Control
DOC	Department of Conservation
DOE	U.S. Department of Energy
DOT	U.S. Department of Transportation
DSL	Department of State Land
DWPC	Department of Water Pollution Control
DWR	Department of Water Resources
EA	Environmental assessment
EID	Environmental Improvement Division
EIS	Environmental impact statement
EPA	U.S. Environmental Protection Agency
ESA	Environmentally sensitive area
FAA	Federal Aviation Administration
FACTA	U.S. Food, Agriculture, Conservation, and Trade Act of 1990
FSA	U.S. Food Security Act of 1985
FERC	Federal Energy Regulatory Commission
FHwA	Federal Highway Administration
Forum	National Wetlands Policy Forum
FTE	Full Time Equivalent
FY	Fiscal year
GAO	U.S. General Accounting Office
GIS	Geographic information system
GPO	U.S. Government Printing Office
HDH	Hawaii Department of Health
HEC	Health and Environmental Control
HEP	Habitat evaluation procedure

IDEM	Indiana Department of Environmental Management
IDOC	Illinois Department of Conservation
IDOT	Illinois Department of Transportation
IEPA	Illinois Environmental Protection Agency
Info.	Information
KDFWR	Kentucky Department of Fish and Wildlife Resources
KDHE	Kansas Department of Health and Environment
KDOW	Kentucky Division of Water
LESA	Land evaluation and site assessment
LWMD	Land and Water Management Division
MDE	Maryland Department of the Environment
MDEQ	Mississippi Department of Environmental Quality
MDNR	Michigan Department of Natural Resources
MEPA	Michigan Environmental Protection Act
MHW	Mean highwater mark
MOA	Memorandum of agreement
MOU	Memorandum of understanding
MPC	Minnesota Pollution Control
N/A	Not Available
NDEC	Nebraska Department of Environmental Control
NDEP	Neveda Department of Environmental Protection
NEPA	National Environmental Policy Act
NHDES	New Hampshire Department of Envionmental Protection
NPDES	National Pollutant Discharge Elimination System
NTU	Nephelometric turbidity units
NWI	National Wetland Inventory
NYDEC	New York Department of Environmental Control
OEPA	Ohio Environmental Protection Agency
OHW	Ordinary high water
ONRW	Outstanding National Resource Waters
ORW	Outstanding Resource Waters

P/T	Part-time
RAMS	Regulatory Analysis Management System
RCW	Revised Code of Washington
RHA	Rivers and Harbors Act
RWQCB	Regional Water Quality Control Board
SCDHEC	South Carolina Department of Health and Environmental Control
SCORP	State Comprehensive Outdoor Recreation Plans
SCS	U.S. Soil Conservation Service
SEPA	Washington State Environmental Policy Act
SMA	Washington Shoreline Management Act
SMP	Shoreline master programs
SOR	Save Our Rivers Program
Superfund	Comprehensive Environmental Response, Compensation and Liability Act, also known as CERCLA
Swampbuster	Provision of the U.S. Food Security Act of 1985
SWCP	State wetlands conservation plan
SWIM	Surface Water Improvement Districts Management District
SWRCB	State Water Resources Control Board
TVA	Tennessee Valley Authority
TWC	Texas Water Commission
USC	U.S. Code
USDA	U.S. Department of Agriculture
USFS	U.S. Forest Service
USFWS	U.S. Fish and Wildlife Service
WASH	Watercourse Amenities, Safety and Habitat
WCP	Wetland conservation plan
WDNR	Wisconsin Department of Natural Resources
WDOE	Washington Department of Ecology
WEP	Watershed enhancement program
WET	Wetland Evaluation Technique, also known as "Adamus Method"
WQB	Water Quality Bureau

Glossary of Terms

Acquisition - Acquiring land through purchase, gift, or inheritance. Acquisition of the land can be in fee simple or partial interest.

Advance identification (ADID) - A process of collecting existing data and generating new data on the aquatic system and its value and function to surrounding and downstream ecosystems to determine what areas are generally suitable or unsuitable for use as discharge sites. This process is conducted by the EPA and the Corps or any state that has assumed the Section 404 permitting responsibilities.

Anadromous fish - Pertaining to fish (such as salmon, steelhead, and shad) that hatch in fresh water, spend a large part of their lives in salt water and return to fresh water to spawn.

Antidegradation - Not allowing an activity which will degrade the water quality.

Antidegradation policy - The protection of existing uses and the level of water quality necessary to protect those uses in the same manner as for other surface waters. It is one of the minimum elements required to be included in a state's water quality standards. There is no explicit requirement for such a policy in the CWA. However, the policy is consistent with the intent and goals of the act ("... restore and maintain the chemical, physical and biological integrity of the Nation's waters"). EPA's water quality standards regulation requires each state to adopt an antidegradation policy and specify the minimum requirements for a policy. The existing use can be determined by demonstrating that the use or uses have actually occurred since November 28, 1975, or that the water quality is suitable to allow the use to be attained.

Best management practices (BMPs) - Management practices that are recommended to prevent or minimize environmental damage such as erosion, pollution, fish and wildlife habitat destruction, or soil productivity losses.

Biological criteria - Numerical values or narrative expressions that describe the biological integrity of aquatic communities inhabiting waters of a designated aquatic life use.

Biological integrity - The condition of the aquatic community inhabiting unimpaired waterbodies of a specified habitat as measured by community structure and function.

Causal theory (also Implementing actions) - A sound concept of what kind of actions will result in the achievement of policy goals.

Certification (401) - An applicant for a federal license or permit is required to obtain a certification from the state that any proposed discharge into navigable waters will comply with state water quality standards and effluent discharge limitations. No federal permit will be granted until required certification has been obtained or waived. A waiver may be expressed or will be implied if the state fails or refuses to act on a request for a 401 certification within 60 days after receipt of the request . If the state denies water quality certification, the federal permitting agency may not issue the permit for the proposed activity.

Clean Water Act (CWA) - The series of federal laws that provide for protection, restoration, or improvement of water quality, including wetlands and riparian areas. The objective of the CWA is to "restore and maintain the chemical, physical, and biological integrity of the Nation's waters."

Coastal Zone Management Act of 1972 (CZMA) - A federal law that provides financial incentives for states to adopt federally approved coastal zone management programs to protect coastal resources, which include beaches, barrier islands, barrier reefs, dunes, and wetlands. Federal actions, such as offshore oil leasing, must conform with a federally approved state program. If not, the state may "veto" the federal action. This is the "consistency requirement," which has been the focus of considerable debate and litigation between the states and the federal government. Approved state programs must: 1) delineate the coastal zone boundary; 2) indicate which activities are permissible within the defined coastal zone; 3) inventory special resource areas requiring protection; 4) establish a policy framework to guide decisions about appropriate resource use and protection; and 5) include sufficient legal authority to implement the program. About 24 of the 30 coastal states, including the Great Lake states, have federally approved coastal zone management programs.

Conservation easements - The acquisition of partial "rights" to property rather than fee simple ownership. Easements usually prohibit certain uses (such as development) while permitting continued private ownership. Easements can be temporary or permanent.

Criteria - Technical requirements upon which a judgement or decision may be based.

Designated uses - Uses specified in water quality standards for each waterbody or segment whether or not they are being attained.

Disturbed area - An area where vegetation, soil, and/or hydrology have been significantly altered, thereby making a wetland determination difficult.

Dredged material - Material excavated or dredged from navigable waters of the United States.

Endangered Species Act of 1973 - A federal law enacted to protect rare plants and animals. The act requires federal agencies, in consultation with the USFWS and National Marine Fisheries Service, to ensure that any action authorized will not jeopardize endangered or threatened species directly, nor hurt or destroy their habitat, including wetlands. It also prohibits any person from "taking" an endangered species. Such taking includes hunting, trapping, harming or harassing such species.

Environmentally sensitive areas (ESA) - Includes but is not limited to places with unstable soils, steep slopes, unusual or unique plants or animals, wetlands, or areas which lie within flood plains.

Federal Manual - A manual that was developed by the EPA, the Corps, SCS, and USFWS on January 10, 1989 and is used as the technical basis for identifying and delineating wetlands.

Fill material - Any material used for the primary purpose of replacing an aquatic area with dry land or for changing the bottom elevation of a waterbody (such as sand, dirt, rock, asphalt, concrete that is not pre-cast). It does not include any pollutant discharged into the water primarily to dispose of waste; this activity is regulated under Section 402.

Fish and Wildlife Coordination Act of 1977 - The federal act requires the Corps to consider the comments of federal and state fish and wildlife agencies, such as the USFWS or the National Marine Fisheries Service, before issuing a Section 404 permit.

Flood Disaster Protection Act of 1973 - A federal law that establishes a federally subsidized insurance program that is available to residents of communities which participate in the program. Program is administered by the U.S. Department of Housing and Urban Development. The act prohibits federal assistance for land acquisition and construction in flood hazard areas unless a community participates in the flood insurance program.

Flooding - A general or temporary condition of partial or complete inundation of normally dry land areas from the overflow of inland and/or tidal waters, and/or the usual and rapid accumulation or runoff of surface waters from any source.

Flood plain - The lowland and relatively flat areas adjoining inland and coastal waters including flood-prone areas of offshore islands, including at a minimum, that area subject to a 1% or greater chance of flooding in any given year.

Food Security Act of 1985 - A federal law that encourages removal of fragile lands from production and provides various opportunities for wetland habitat protection and restoration while reducing federal subsidy cost. A special wetland conservation program, commonly called *swampbuster*, removes some of the incentives for developing wetlands by denying federal subsidies to individuals who convert wetlands into agricultural land.

General permit - A permit authorized and issued by the Corps on a nationwide or regional basis for a category or categories of activities that are similar in nature and cause only minimal individual and cumulative environmental impacts.

Goal - Desired state or condition that a resource management policy or program is designed to achieve.

Governmental subsidies - Financial assistance granted by the government to an individual or entity deemed beneficial to the public.

Groundwater - That portion of the water below the surface of the ground whose pressure is greater than atmospheric pressure.

Headwaters - The point on a non-tidal stream above which the average annual flow is less than 5 cubic feet per second. For streams that are dry for long periods of the year, the headwaters may be established as that point on the stream where a flow of five cubic feet per second is equalled or exceeded 50 percent of the time.

Human-made wetland (Man-made wetland) - Any wetland area that has been purposely or accidentally created by some activity of people; also called artificial wetlands.

Hydric soil - A soil that is saturated, flooded, or ponded long enough during the growing season to develop anaerobic conditions in the upper part.

Hydrology - The science dealing with the properties, distribution, and circulation of water.

Hydrophytic vegetation - Plant life growing in water or on a substrate that is at least periodically deficient in oxygen as a result of excessive water content.

Individual permit - Projects that do not qualify for a general permit are processed as individual permits. Individual permits require greater scrutiny of the project proposal by the Corps, other concerned government agencies, and the public.

Instream flow - The amount of waterflow a stream needs to support in a natural state the aquatic and adjacent riparian habitats.

Jurisdictional delineation - Determining the legal geographical boundary for waters of the United States, including wetlands.

Memorandum of agreement (MOA) - Authorized by Section 404(q) of the CWA to allow the EPA and USFWS to request a higher level Corps review of any permit decision with which they disagree.

Mitigation - A sequencing process by which impacts to wetlands are, in order of priority, 1) avoided (by abandoning or modifying or by not taking a certain action or part of an action), 2) minimized (by limiting the degree or magnitude of an action), 3) rectified (by restoring, repairing, or rehabilitating the affected environment), 4) reduced (by making less in size, amount, number, or intensity), and 5) eliminated (by removing) over time or compensated (by making suitable amends). Mitigation options are considered as means to minimize or offset impacts if a permit is issued, but not used to determine whether to issue or deny a wetlands permits.

Mitigation Banking - Similar to maintaining a bank account. By taking measures to create, restore, or preserve flora and fauna in advance of an anticipated need for mitigation one will receive mitigation credits from the appropriate regulatory and/or planning agencies. These credits are placed in a mitigation bank account from which withdrawals can be made. When a proposed project involving unavoidable losses of habitat occurs, the losses (debits) are quantified using the same method that was used to determine the credits. This can be repeated as long as mitigation credits remain available in the bank.

Mitigation Ratio - A minimum ratio of wetlands created to wetlands lost.

Narrative Criteria - General statements that provide a further basis for managing a broad range of activities that impact the biological integrity and water quality for a given use designation.

National Environmental Policy Act (NEPA) - Directs all federal agencies to consider the impacts of major federal actions on the environment. NEPA does not prohibit development in environmentally sensitive areas but requires all federal agencies in making decisions about federally funded or permitted projects, including private projects requiring federal permits, to consider environmental impacts of a proposed action.

National Flood Insurance Act of 1968 - Provides financial incentives for communities to adopt federally approved flood-plain management programs. Administered by the Federal Emergency Management Agency, the program utilizes a financial carrot and stick approach to coax communities into adopting programs that will ultimately reduce the loss of lives and property from floods. For communities with approved programs, the federal government provides subsidized flood insurance to those who own property in the flood plain. Communities that do not participate in a program to regulate future flood-plain uses are ineligible for federal disaster assistance. In general, the program applies to new and rebuilt construction in flood plains, and usually includes restrictions on the type and location of development. The program does cover development in wetlands, since nearly all coastal and most inland wetlands occur in flood plains.

National Pollution Discharge Elimination System (NPDES) - Permit program for point source discharge.

National Wetlands Inventory Mapping (NWI) - Mapping which consists of conventional air photo and field-verified (2% sampling of total) wetland interpretation methodology that identifies and maps vegetation type and hydrologic regime of wetlands.

Nationwide permit - A form of general permit which authorizes activities on a nationwide basis. Designed to regulate with little delay or paperwork, certain activities having minimal impacts. State 401 water quality certification or waiver is required prior to the issuance of authorizing activities which may result in a discharge into waters of the United States. For the nationwide permit to be valid the Corps is proposing that the permit must comply with 13 general conditions and if activities are involved with the discharge of dredged or fill material they must also comply with nine Section 404 conditions. The Corps has identified and defined 40 conditions that are applicable on a nationwide basis.

Navigable waters - Waters of the United States.

No net loss of wetlands - Wetlands losses must be offset by wetlands gain in terms of actual acreage and, to the extent possible, ecosystem function. Policy recommended by the National Wetlands Policy Forum and supported by President George Bush.

Non-point Source (NPS) - A water quality term used for pollutants discharged by natural processes (precipitation, seepage, percolation, and runoff) that are not traceable to any discrete, discernable, or confined conveyance facility.

Non-regulatory program - Programs that involve voluntary action to encourage state and local governmental agencies to preserve and restore wetlands through a variety of mechanisms such as executive orders, easements, tax incentives, acquisition, recognition programs, best management practices, intergovernmental coordination/subsidies, technical assistance, education, and outreach programs.

Nontidal - Not influenced by tides.

Non-wetland - Any area that has sufficiently dry conditions that hydrophytic vegetation, hydric soils, and/or wetland hydrology are lacking; it includes upland as well as former wetlands that are effectively drained.

Numeric criteria - Specific numeric values for chemical constituents, physical parameters, or biological conditions that are adopted in state standards.

Ordinary high water - The line on the shore established by the fluctuations of water and indicated by physical characteristics such as clear, natural line impressed on the bank, shelving, changes in the character of soil, destruction of terrestrial vegetation, the presence of litter and debris, or other appropriate means that consider the characteristics of the surrounding areas.

Outstanding national resources waters (ONRW) - These are areas of exceptional water quality or recreational/ecological significance that are allowed special protection (no degradation). Some states refer to these types of waters as "unique waters" or "outstanding waters."

Permit (404) - Requires a permit from the Corps for the discharge of dredged or fill material into navigable waters at specific disposal site. Although the 404 process is administered by the Corps, the EPA has a veto authority over all permits. State and/or EPA must provide or waive a 401 water quality certification on 404 permits. A denial of 401 certification will prevent the 404 permit from being issued. Since the 404 permit is considered a federal action all activities must comply with all other federal environmental legislation (such as Endangered Species Act, Fish and Wildlife Coordination Act, and NEPA).

Public hearing - Public proceeding conducted for the purpose of acquiring information or evidence which will be considered in evaluating a proposed permit. Proceeding allows the public an opportunity to present its views, opinions, and information.

Public notice - A method of advising all interested parties of a proposed activity for which a permit is being sought and for soliciting comments and information to evaluate the probable impacts. The notice must include sufficient information to give clear understanding of the proposal. Public notice will be distributed for posting in post offices or other appropriate state agencies, to appropriate Indian tribes, to concerned federal agencies, to local concerned business and conservation organizations and to any other interested parties. Upon completion of the decision-making process the public is provided with an account of the final decision.

Regulatory programs - Programs that involve authoritative action to mandate state and local governmental agencies to preserve and restore wetlands through a variety of mechanisms such as rules, statutes, and laws.

Riparian area - An ecological community occurring in or adjacent to a drainageway and/or its flood plain and which is further characterized by species and/or life forms different from those of the immediately surrounding non-riparian climax.

Rivers and Harbors Appropriation Act of 1899 (RHA) - Requires the Corps to regulate "all work or structures" that are placed in or could affect the navigable water of the United States. The Corps is responsible for implementing the Section 10 permit program, although the evaluation process includes review by other agencies and notification of the public as well.

Section 301 (CWA) - Makes any discharge of a pollutant unlawful unless it complies with this section and section 302, 306, 307, 308, 318, 402, and 404.

Section 303 (CWA) - Provides for a transition to the water quality standards required by the act if states were in the process of setting their own standards immediately prior to the act's adoption in 1972. It also details the way in which such standards are reviewed and modified by states. It also requires states to identify the waters within their boundaries that cannot meet water quality.

Section 319 (CWA) - Provides a framework for coordinating non-point source pollution control and wetland protection by having the states identify non-point source impacts to all waters of the United States, including wetlands, while EPA funds activities to protect and restore wetlands that are threatened or impaired by non-point source pollution or that play a role in achieving non-point source control objectives.

Section 401 (CWA) - Gives the state the authority to grant, deny or condition certification of federal permits or licenses that may result in a discharge to "waters of the United States." Violation of water quality standards is often the basis for denials or conditioning through Section 401 certification.

Section 402 (CWA) - Requires a permit for most discharges into surface waters and can require discharge limits for various pollutants. Generally, this federal program is administered by the states with EPA having overview authority as the lead agency.

Section 404 (CWA) - Regulates the discharge of dredge and fill material into waters of the United States and establishes a permit program to ensure that such discharges comply with environmental requirements. It is administered at the federal level by the Corps and EPA. USFWS and the NMFS have advisory roles. The Corps has primary responsibilities for the permit program for the discharge of dredged and fill material. State can assume a portion of the permitting program from the federal government. EPA is responsible for approval or denial of state program assumption requests. Michigan is the only state who has assumed 404 program. EPA has veto authority over all permits. Enforcement authority is shared between the Corps and the EPA.

Section 404(b)(1) Guidelines - Guidelines developed by EPA in conjunction with the Corps. By law the Corps must follow the guidelines when reviewing permit applications, and it must deny a permit for any proposal that fails to comply with them. The guidelines state that permits should not be granted: (1) If there is a practicable alternative that would have less adverse impact on the aquatic ecosystem; (2) If the project will cause or contribute to significant degradation of the waters of the U.S.; and (3) Unless appropriate and practicable steps have been taken that will minimize potential adverse impacts on the aquatic ecosystem.

Shoreline Management Act (SMA) - A Washington state law that provides a framework and a uniform set of rules to govern the development and management of the shorelines of the state by planning for and promoting all reasonable and appropriate uses. The act gives local government the basic responsibility for planning and regulation, with the state setting guidelines and monitoring local decisions. It also serves as the basis for Washington state's coastal zone management program.

Shoreline Master Program (SMP) - Requires every local government in Washington state having shorelines to develop a master program to guide proposed activities along its shorelines. The master programs must include a statement of the desired goals and standards of the plan; a comprehensive use plan and a map designating specific types of uses to specific sites; and use regulations for uses allowed in each designated areas.

Soil - Unconsolidated material on the earth's surface that supports or is capable of supporting plants out-of-doors.

State Environmental Policy Act (SEPA) - A Washington state law that ensures environmental values are considered by state and local government officials when making decisions. One of the primary purposes of SEPA is to evaluate the environmental impacts of a proposed project and identify methods to reduce the impacts.

Stream - A watercourse or section of a watercourse that has perennial flow or that has intermittent flow.

Stream (Ephemeral) - A watercourse that can carry only surface runoff and flows only during and immediately after periods of precipitation or snowmelt.

Stream (Intermittent) - A watercourse that can carry water most of the year, but ceases to flow during the dry season because evaporation and percolation into its bed and banks exceeds the available streamflow.

Stream (Perennial) - A watercourse that normally flows yearlong, except during periods of extreme drought. These streams have well-defined channels and shows signs of washing.

Surface Mining and Reclamation Act of 1977 - A federal law that provides for the control and prevention of erosion and sediment damages from mined areas and promotes water resource conservation.

Surface waters - Water present above the substrate or soil surface.

Tax incentives - Tax deductions, exemptions, and reductions for the preservation of wetlands.

Technical assistance - The provision by a government agency of advice to the public or individuals. Such advice may include compliance procedures for regulatory programs (standards, laws, policies) or information about non-regulatory programs (tax incentives, easements, acquisitions).

Tidal - A situation in which the water level periodically fluctuates due to the action of lunar (moon) and solar (sun) forces upon the rotating earth.

Waters of the state - Each state defines surface and subsurface waters or specific types of waters within its boundaries, that are subject to its jurisdiction.

Waters of the United States - All waters which are currently used, were used in the past, or may be susceptible to use in interstate or foreign commerce, including all waters which are subject to the ebb and flow of the tide; interstate waters and wetlands; all other waters (such as intrastate waters including lakes, rivers, streams (include intermittent streams), wetlands, natural ponds), if their use, degradation or destruction could affect interstate or foreign commerce; territorial sea; and wetlands adjacent to waters identified above.

Wetland determination - The process by which an area is identified as a wetland or non-wetland.

Wetland hydrology - In general terms, permanent or periodic inundation or prolonged soil saturation sufficient to create anaerobic conditions in the soil.

Wetlands (Regulatory Definition for Section 404) - Those areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, bogs, and similar areas.

Wild and Scenic Rivers Act of 1968 - A federal law that protects certain rivers which possess outstanding remarkable scenic, recreational, geologic, fish and wildlife, historic, cultural or other similar values for the benefit and enjoyment of present and future generations.

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TABLES

Table 1 Compilation of Definitions and Inventory Status

T 1-1

State	State Definition for Wetlands and/or Riparian Areas	Distinction between Wetlands and Riparian Areas	Included in the Definition of "waters of the state"	Statewide Inventory
Alabama	No, but ADEM Administration Code R 335-8-x-.xx (amended 1988) includes fresh and salt water wetlands.	No, riparian areas are considered to be wetlands when they meet criteria set forth in the federal delineation manual.	No	No
Alaska	Yes, wetlands definition only (6 AAC 80). Riparian area defined in 41.17.950.13 in Forest Resources and Practices Act of 1990 to be a differing number of feet from a certain class water body or to the break of the slope.	Yes, for regulatory purposes use the Corps definition, but riparian areas are defined and regulated under State Forest Practices Act. Wetlands are treated as "waters" rather than lands and riparian areas are treated as "lands."	Yes, uses "marshes" in the definition of "waters of the state" which is implicitly interpreted to include all wetlands.	No, only 18% of Alaska's wetlands has been inventoried by National Wetlands Inventory of USFWS.
Arizona	Yes. Executive Order 91-6 a riparian area is "an aquatic or terrestrial ecosystem that is associated with bodies of water such as streams, lakes, wetlands, or is dependent upon the existence of perennial, intermittent or ephemeral surface or subsurface water drainage." There is no definition for wetlands.	Yes, Executive Order 91-6 does address riparian areas within which wetlands occur.	Not directly stated. Waters of the state include "marshes," "watercourses," and "waterways," but wetlands or riparian areas are not directly mentioned.	No, USFWS has mapped Arizona, but some mapping is based on old black and white photos. USFWS is doing experimental riparian area mapping for portions of Arizona.
Arkansas	No.	No, riparian areas are not considered as wetlands. The state relies on the Corps to define wetlands.	Yes. "Marsh" is interpreted to include wetlands. The term "marsh" appears in the state Water and Air Pollution Control Act (Act 472 of 1949 as amended).	No, but USFWS has done some mapping and Arkansas Natural Heritage Commission has inventoried some special wetlands. No update is scheduled at this time.
California	No statewide definition. San Francisco Regional Water Quality Control Board (RWQCB) has adopted federal definition.	No	Definition for wetlands is not explicitly included in the definition of waters of the state.	No, but an inventory is currently being prepared.
Colorado	No	No, State Water Quality Control Program does not use either wetlands and/or riparian as distinct waterbodies. Lakes, streams and reservoirs are terms that are used in Colorado.	No, not explicitly.	No
Connecticut	Yes, there are separate definitions for wetlands, watercourses, and flood plains in state laws and regulations. Wetlands defined in 22a-38.15 and 22a-39-1.19 mean "lands" with poorly drained soils.	Yes, but riparian areas are not considered as wetlands.	Yes, the term "marsh" is within the definition waters of the state.	Yes, updates are being conducted by DEP Natural Resource Data Center. Rivers Management Program will inventory and assess rivers and develop statewide strategy.
Delaware	No information	No information	No information	No information
Florida	Yes. Defined in state statute 403.817 F.S. as the natural landward extent of state waters, for regulatory purposes. Wetlands are those areas that meet vegetation criteria listed in state rule (17-301.200 F.A.C.)	No	Yes	No

Table 1 Definitions and Inventories

State	State Definition for Wetlands and/or Riparian Areas	Distinction between Wetlands and Riparian Areas	Included in the Definition of "waters of the state"	Statewide Inventory
Georgia	Yes	Yes. Not all riparian areas would be wetlands.	No information	Yes. Statewide inventory was completed in the mid 1970s, but inventory is being currently updated by Department of Natural Resources. No set time for updating.
Hawaii	Yes. State rules define coastal, elevated and low wetlands (Section 11-54-05).	No	Yes	Yes. Descriptive inventory of principal coastal wetlands in "Wetlands and Wetland Vegetation of Hawaii" (1977) and comprehensive USFWS National Wetlands Inventory for all islands completed in early 1980s. No recent updates.
Idaho	Yes (working definition). Draft rules for Comprehensive State Water Plan defines riparian area as that area within 100 feet of the mean high water mark of a waterway.	Yes, Agricultural Water Pollution Abatement Plan is being updated and will contain definitions which make a distinction between wetlands and riparian areas.	No	Yes, updates conducted by USFWS, but no definite plans for update at this time. Parks and Recreation has priority wetland list.
Illinois	Yes (official definition).	No, but riparian areas are considered as wetlands.	Yes. The only state regulatory program existing is a flood plain alteration permit program which does not conflict with 404 review process. IDOT - Division of Water Resources administers this program. IDOC advises the Corps and IDOT of projects impacts.	Yes, this inventory was recently completed. Updates conducted by IDOC
Indiana	No	Yes. Riparian areas are not necessarily wetlands.	Yes	Yes, the entire state has been inventoried. USFWS will conduct the updates, but no known scheduled update.
Iowa	No	No. Riparian areas are not necessarily wetlands.	Yes	No
Kansas	Yes. Currently has a proposed standard for wetlands. This will be a working and official definition.	Yes. Wetlands occur as oxbows, potholes, rain water basins, spring areas, saline or fresh water marshes. Riparian areas are vegetation and associated wildlife areas alongside streams.	Yes	Yes, USFWS is in the process of conducting inventory. They are approximately 50% completed at this time.
Kentucky	Yes. Wetlands are lands that have predominance of hydric soils and that are inundated or saturated by surface or groundwater at a frequency and duration to support, and under normal circumstance does support a prevalence of hydrophytic vegetation (401 KAR. 5:029).	Yes, but the Corps is responsible for making wetlands determination. Unless considered a wetland, riparian areas are separate.	Yes. Wetlands and marshes are included in definition of "surface waters" (401 KAR 5: 029).	Yes, just completed inventory of wetlands. Updates will be conducted by KDFWR, but at this time there is no scheduled plan for an update. Rivers to be inventoried in State Assessment Program.
Louisiana	Yes (official definition).	No, but riparian areas are considered as wetlands per Corps determination.	Yes	No

Table 1 Definitions and Inventories

T 1-3

State	State Definition for Wetlands and/or Riparian Areas	Distinction between Wetlands and Riparian Areas	Included in the Definition of "waters of the state"	Statewide Inventory
Maine	Yes. Definition for freshwater wetlands requires they be at least 10 acres for regulatory purposes. Definitions exist for coastal wetlands, rivers, and streams (Chapter 310).	No. Wetlands determination by federal manual.		No. Maine survey (1984) omitted wetlands <10 acres. USFWS mapping currently underway.
Maryland	Yes. Nontidal wetlands same as federal, except state regulates an additional 25'-100' buffer (COMAR 09.05.04). Tidal wetlands distinguish between state and private wetlands (Title 9-101).	Yes, wetlands are defined in accordance with the federal manual for identifying jurisdictional wetlands and riparian areas may be more inclusive.	Yes. Tidal and nontidal included as waters of the state in state regulation (COMAR 26.08.02). In statute, state includes 100 year flood plain of rivers [Title 8-101(k)].	Yes. Inventory conducted by USFWS. Will be superseded by DNR inventories. Tidal wetland inventory is in the form of boundary maps, not updated since 1971.
Massachusetts	Yes. State definition dependent upon vegetation, not soils or hydrology (310 CMR 10.00).	No, but riparian areas are considered as wetlands.	Yes, wetlands are defined as surface waters and waters of the Commonwealth (314 CMR 4.00).	No, wetlands mapping has been started by DEP - Division of Wetlands.
Michigan	Yes (working and official definition). "Riparian rights" are defined by statute (Inland Lakes and Streams Act 346 PA 1972 as amended).	No, riparian areas may or may not be wetlands depending on factors used to determine wetlands. The Goemaere-Anderson Protection Act does not define riparian relative to wetlands.	Yes, by inference only.	Yes, LWMD just completing first statewide inventory. Any updates would be conducted by LWMD.
Minnesota	Yes (working and official definition).	No, but riparian areas are considered as wetlands.	Yes	Yes, inventory conducted by USFWS, but it is not known when update will be conducted.
Mississippi	Yes (working and official definition).	No	Yes	No
Missouri	Yes, wetlands only (official definition).	Yes, riparian refers to adjacent to or contiguous to streams or rivers. Wetlands, are mostly riparian, may be isolated.	Yes	Yes, inventory conducted by USFWS.
Montana	Yes, state MOU refers to federal definition for wetlands while riparian areas are defined in state documents.	Yes, depending on individual situation and circumstances distinction is made between wetlands and riparian.	Yes	No
Nebraska	Yes (working definition).	Yes, wetlands and streams are regulated but riparian areas are not in definition of water of the state. So if wetlands is located in riparian area then regulation extends only to boundary of wetlands.	Yes	No, only partial NWI inventory has been completed. This covers approximately half of the state. No updates are planned at this time.
Nevada	No	No, but riparian areas are considered as wetlands.	Yes	No
New Hampshire	Yes (official definition). Same as federal definition.	No, they are mentioned separately in law but are combined in terms of permitting and enforcement. Riparian are considered as wetlands.	Yes	No, a pilot Landsat to GIS mapping project has mapped only 1000 square miles. DES hopes to map the entire state next year.

Table 1 Definitions and Inventories

State	State Definition for Wetlands and/or Riparian Areas	Distinction between Wetlands and Riparian Areas	Included in the Definition of "waters of the state"	Statewide Inventory
New Jersey	No information	No information	No information	No information
New Mexico	No	No answer	No	No
New York	Yes (official definition).	Yes	No	Yes, only situational updates at this time.
North Carolina	No (working definition).	No	No	No
North Dakota	Yes (working and official definition).	Yes	Yes	No, inventory in progress by USFWS.
Ohio	Yes (official definition is not used very much, it is outdated. The federal definition is the working definition).	No, but riparian areas are considered as wetlands.	Yes	No, Ohio DNR has been working on inventory using Landsat imagery. Scheduled for completion December 1991.
Oklahoma	No, just a working definition.	Yes, wetlands are protected as "waters of the state" in the state water quality standards but riparian areas are not.	Yes	Yes, inventory has not been updated.
Oregon	Yes, working and official definition.	Yes, but many riparian areas do not meet the hydric soil criteria for wetlands.	Yes. Wetlands are included but not riparian areas.	Yes, inventory is NWI. Division of State Lands updates as money is available. Oregon Dept. of Fish and Wildlife is updating riparian habitat.
Pennsylvania	Yes, working and official definition. Although the term wetlands appears in the act, its definition does not. The definition used by DER is contained in the department's regulations (25 Pa Code Chapter 105).	Yes	Yes. Wetlands are also included in "bodies of water" of the Commonwealth.	Yes, NWI inventory updated by the USFWS in the late 1980s.
Rhode Island	Yes. R.I.G.L. 2-1-18 et seq. - Freshwater wetlands, rivers, riverbanks, and flood plains. R.I.G.L. 46-23-1 et seq. - Coastal wetlands.	No. Riparian areas are considered wetlands under the term riverbanks.	Yes	No. General mapping exists but no official inventory.
South Carolina	Yes, working definition as stated by the Governor's Wetlands Forum Report and the official definition is the same as federal definition.	No, riparian areas are considered as wetlands.	No, not specifically mentioned but "waters of the state" includes marshes.	No
South Dakota	No information	No information	No, not specifically mentioned but "waters of the state" includes marshes.	No information
Tennessee	Yes (working definition).	No, riparian areas are considered as wetlands if they meet all 3 criteria (hydric soils, hydrology and predominance of hydrophytic vegetation).	No	No, USFWS conducted inventory but inventory is incomplete.
Texas	Yes (official definition).	No	Yes	No, USFWS has conducted inventory for the coastal areas only.
Utah	No information	No information	No information	No information

Table 1 Definitions and Inventories

State	State Definition for Wetlands and/or Riparian Areas	Distinction between Wetlands and Riparian Areas	Included in the Definition of "waters of the state"	Statewide Inventory
Vermont	No information	No information	No information	No information
Virginia	No information	No information	No information	No information
Washington	Yes (working definition).	No, but riparian areas are considered as wetlands if they meet the required parameters (federal definition of wetlands and/or functionally related to water quality habitats).	Yes	Yes, last update was in the late 1980s.
West Virginia	Yes (official definition).	No, but riparian areas are considered as wetlands.	Yes	Yes, West Virginia Natural Heritage Program will update the inventory.
Wisconsin	Yes, working and official definition.	No, but riparian areas are considered to be shoreland or flood plain and wetlands may or may not be part of either.	Yes. Wetlands are included in the definition of the "waters of the state" and there is a separate wetlands definition in the state statute.	Yes, the entire state has been mapped and digitized. By law, Wisconsin Wetland Inventory should be updated every 10 years. Current funding only allows this update to occur on a 20 year schedule.
Wyoming	Yes, wetlands only (working and official definition).	Yes, wetlands are considered to be surface waters of the state, and riparian areas are not.	Yes, wetlands definition is in the surface water regulations and in statue due to the enactment of Wyoming Wetlands Act.	No, USFWS conducted inventory but inventory is partially complete. USFWS will update inventory.

Table 2 **Compilation of Wetlands and Natural Resource Regulatory Programs Including Clean Water Act Section 404 Permitting and 401 Certification and State Wetlands Programs**

T 2-1

State	State 404	Federal 404	401	State Wetlands / Riparian Program	State Water Quality Standards	Natural Resources	Regulatory BMPs
Alabama	No	Yes	Yes	No. Coastal wetlands addressed in ADEM Administration Code R (335-8-x-.xx).	Does not apply antidegradation policy to wetlands. Protected uses in coastal areas, but restricted to water dependent uses or uses of overwhelming public good. Limit filling of wetlands and require mitigation for wetland losses on approved projects. Work has begun on outstanding waters program. No biological, narrative or numeric standards for wetlands/riparian.	Yes. Has coastal area management program. This program regulates its beaches and shorelines.	Forestry practices and mining have regulatory BMPs. Established to help prevent non-point source pollution. Developed by ADEM Mining and Nonpoint Source Section.
Alaska	No	Yes	Yes	No. Juneau/Anchorage have developed wetland plans which identify and catalog wetlands for their resource values. Information is used in zoning and planning to protect areas of high wetland value from development. State Forest Practices Act include riparian standards.	Does not apply antidegradation policy to wetlands. Water quality standards (18 AAC 70). No biological, narrative or numeric standards for wetlands and/or riparian. Wetlands standards (6 AAC 80).	Yes. Alaska Forest Resources and Practices Act 1990 and coastal zone management program.	BMPs for riparian areas in Forest Practices Act.
Arizona	No	Yes	Yes	No	Not had much experience in applying antidegradation policy for wetland/ riparian areas. There is no state regulatory program to implement antidegradation standards. Accessed through 401 certification of federal permits or licenses. State water quality standards apply to all waters of the state (Environmental Quality Act of 1986). Protect chemical integrity mainly, and limited physical integrity. No protected uses designated for wetlands, but existing designated uses protect wetlands/riparian areas by protecting them from discharge of pollutants that interfere with designated protected uses or violate general standards (AAC R18-11-201 through 214 and appendix A and B). Does have outstanding waters program. It is referred as "Unique Waters" instead of outstanding waters. No biological criteria standards for wetlands. AAC R18-11-204 and 205 deal with discharge that "adversely affect the ecosystem" and "toxic to people, animals and plants." Has narrative and numeric standards that are general and apply to all surface waters of the state. Numeric standards apply to specific protected uses.	Yes. County flood control districts (ARS 48-3601).	Yes. BMPs for watercourse alteration are being developed through Nonpoint Source Unit and a Technical Advisory Group. BMPs for grazing activities also through Nonpoint Source Technical Advisory Group.

Table 2 Regulatory Programs

State	State 404	Federal 404	401	State Wetlands / Riparian Program	State Water Quality Standards	Natural Resources	Regulatory BMPs
Arkansas	No	Yes	Yes	No. A SCORP plan was prepared in 1985 to investigate wetland losses and proposed a policy to abate these losses.	Does apply antidegradation policy to wetlands if a project involves physically altering a significant segment of a waterbody including (wetlands) resulting in changing or removing a designated use. No protected uses designated for wetlands. Initial efforts have been undertaken to designate extraordinary and ecologically sensitive areas. Has biological criteria for fishery uses. No narrative/numeric standards for wetlands/riparian areas. Ecoregion standards. Arkansas Water and Air Pollution Control Act (82-1901 through 1943).	No	No
California	No	Yes	Yes	No. A variety of state and local laws, ordinances and policies are administered by numerous agencies creating a patchwork of jurisdictional protection for wetlands. San Francisco Bay Water Quality Board prepared proposed wetlands policy procedural guidelines (1988).	Porter-Cologne Water Quality Control Act 1989 establishes comprehensive water quality program. Regional boards prepare water quality control plans (basin plans). State Water Quality Management Plan also prepared. San Francisco Bay Water Quality Control Plan (12/86) has wetlands beneficial use.	1976 Coastal Act, Streambed Alteration Act, Forest Practice Act of 1973, and California Environmental Quality Act. Streambed Alteration Act administered by California Fish and Game. Regulates construction in or change of rivers, streams, lakes, and stream beds with any intermittent flow.	Yes. Regional Water Quality Control Boards determine regulatory / non-regulatory BMPs. Forest Practice Act contains BMPs.
Colorado	No	Yes	Yes	No	Does apply antidegradation policy if wetlands are a part of a waterbody designated as high quality. All permits (402 and 404) must undergo an antidegradation review. No protected uses designated for wetlands except as included in the designated uses for the classified stream, lake or reservoir. Has outstanding waters program. No biological criteria, or narrative/numeric standards for wetlands/riparian areas.	No	No
Connecticut	No	Yes	Yes	Yes. Tidal Wetlands (22a-28-35); Inland Wetlands and Watercourse (22a-36-45); Stream Channel Encroachment (22a-342-349); Diversion (22a-365-378); and Rivers Management (Statute Pending). Inland Wetlands and Watercourse Act regulates filling, dredging, building, obstructing or polluting a wetland or watercourse.	Does apply antidegradation policy for wetlands. No outstanding waters program. No biological criteria or narrative/numeric standards for wetlands/riparian areas. Has biological (macroinvertebrate) narrative criteria for classes of inland water.	Has coastal zone management program.	Yes. Implemented for state projects only. Also used as guidance by local officials.

Table 2 Regulatory Programs

State	State 404	Federal 404	401	State Wetlands / Riparian Program	State Water Quality Standards	Natural Resources	Regulatory BMPs
Delaware	No	Yes	Yes	DNREC has authority under the Wetlands Act to regulate activities in wetlands through permits (Del. Code Ann. tit. 7 sec. 6604 (a).	No information	Has coastal zone management program. DNREC regulates coastal uses through two statutes, the Coastal Zone Act which regulates manufacturing within the coastal zone and Beach Preservation Act which regulates beach construction activities.	
Florida	No	Yes	Yes	Yes. Warren S. Henderson Wetlands Protection Act of 1984 (Section 403.91 through 403.938), regulates by permit dredge and fill activities in wetlands and other surface waters of the state (Rules in chapter 17-312). Activities requiring state permits must meet a 7 factor test which considers water quality and public interest. Factors include adverse effects to fish and wildlife habitats, erosion, and area functions [Title 403.918(2)(a)].	Does apply antidegradation policy to wetlands. Wetlands have been assigned a water class which corresponds to designated use; permits may not be issued for projects that adversely affect designated use. Has outstanding waters program. Has biological criteria standards; biological integrity expressed in terms of percent of background macroinvertebrates affected. No narrative or numeric standards for wetlands/riparian areas.	Has coastal zone management program.	Yes. BMPs established for agricultural/silvicultural activities that are exempt from permitting in certain circumstances.
Georgia	No	Yes	No	Yes. Marshland Protection Act 1970, Mountain and River Corridor Protection Act of 1991, and Georgia Planning Act of 1989.	No information	No	No
Hawaii	No	Yes	Yes	Although Hawaii does not have specific wetlands protection legislation or a formal wetlands protection program per se, there are wetland protection mechanisms as part of other programs.	Does apply antidegradation policy to wetlands. Water quality standards classify wetlands as state inland and marine waters (Chapter 11-54-02). State is considering an outstanding waters program. No biological criteria or standards for wetlands / riparian areas. No specific narrative standards exist, but overall narrative standards for water quality apply to wetlands.	Hawaii Coastal Zone Management Act regulates development including placement of fill, grading, dredging, removing, construction,etc. Streambed Alteration permitting by Hawaii Dept. of Land and Natural Resources (State Statute 42-3801 et seq).	Yes. General BMPs apply to wetlands as well as to non-wetland areas.
Idaho	No	Yes	Yes	No	Does not apply antidegradation policy to wetlands. State water quality standards apply to and protect wetlands. Has governor's executive order 88-23 on antidegradation of water quality. No protected uses designated for wetlands. Has outstanding waters program. No specific biological, narrative or numeric standards for wetlands / riparian areas.	Stream Channel Protection Act is administered by Idaho Dept. of Water Resources. Idaho Comprehensive State Water Plan (Idaho Code 42-1730-31 and 42-1734 A) provides for development of a state plan which may include protected rivers. Idaho Lake Protection Act establishes permits for encroachment on or above beds of navigable lakes. Idaho Forest Practices Act establishes BMPs for forest practices.	Yes. BMPs are being developed for riparian areas by an interagency group. Implemented through the State Ag. Water Quality Program by conservation districts. Idaho Forest Practices Act establishes BMPs for forest practices.

State	State 404	Federal 404	401	State Wetlands / Riparian Program	State Water Quality Standards	Natural Resources	Regulatory BMPs
Illinois	No	Yes	Yes	No, but has interagency Wetland Policy Act of 1989 (non-regulatory).	Does not apply antidegradation policy to wetlands. No protected uses designated for wetlands. No outstanding waters program. No biological criteria standards for wetlands. Has narrative/numeric standards for wetlands.	Yes. Floodplain Alteration Permit Program. IDOT administers flood plain program. IDOC advises the Corps and IDOT of project impacts.	No state BMPs. The 404 program contains BMPs for certain activities.
Indiana	No	Yes	Yes	No	Water quality standards apply to all waters of the state. Does apply antidegradation policy to wetlands. The anitdegradation policy is utilized to protect and maintain existing uses for waters of the state. No state wetlands standards. No protected uses designated for wetlands. Has outstanding waters program. Has biological criteria standards for wetlands, but language is general instead of specific. Has narrative/ numeric standards for wetlands.	No	No
Iowa	No	Yes	Yes	Yes. Wetland Act of 1990 prohibits the draining of a protected wetland without obtaining a permit from DNR. DNR will issue a permit only if the protected wetland is replaced by a wetland of equal or greater value or the protected wetland is no longer designated as a protected wetland. Also, the law allows for exemption from certain real estate taxes if wetlands are designated as protected wetlands.	State water quality standards apply to and protect wetlands. Does apply anitdegradation policy to wetlands. Antidegradation policy prevents loss of wetlands without applicable mitigation and includes protection of physical and biological integrity of high-quality resource waters. Protected uses are designated for wetlands. Has outstanding waters program. No biological criteria standards for wetlands. Has narrative standards for wetlands.	No	No
Kansas	No	Yes	Yes	No, but Kansas Water Resources Planning Act (K.S.A. 82a-901 et seq.), mandates preparation of Kansas Water Plan for instream flow and wetlands/riparian protection. Wetlands/riparian protection programs [K.S.A. 2-1915(b)] consist of conservation districts identifying areas and obtaining easements.	Does apply antidegradation policy to wetlands. Has protected uses designated for wetlands - these regulations apply through permit programs. Has outstanding waters program. Has biological criteria standards. Uses ecological integrity definition and classifies wetlands as "special aquatic life use" waters in water quality standards (Proposed revisions 1/14/91). No specific narrative/numeric standards for wetlands/riparian areas.	Yes. 1987 Water Projects Environmental Coordination Act.	Yes. Currently cataloging BMPs for all areas of which some will apply to wetlands.

Table 2 Regulatory Programs

State	State 404	Federal 404	401	State Wetlands / Riparian Program	State Water Quality Standards	Natural Resources	Regulatory BMPs
Kentucky	No	Yes	Yes	No	Does not apply designated uses or antidegradation policy to wetlands. No protected uses designated for wetlands. Has outstanding waters program, but wetlands are not included. No biological criteria or specific narrative / numeric standards for wetlands/riparian areas.	Yes. Kentucky Wild Rivers Act (Title 401, Chapter 4: 100-4: 140) requires changes of use permits within designated wild rivers.	No
Louisiana	No	Yes	Yes	No	Does not apply antidegradation policy to wetlands. Does not have protected uses designated for wetlands. Has outstanding waters programs. No biological criteria or narrative / numeric standards for wetlands/riparian areas.	Has coastal zone management program.	No. BMPs are being developed.
Maine	No	Yes	Yes	Yes. Protection of Natural Resources Act of 1987 - permits required for dredging, draining, filling or construction in inland and salt wetlands, great ponds, rivers, streams and significant wildlife habitat. Will not allow unreasonable soil erosion, soil transport change, harm to habitats, interference with waterflow, lowered water quality, flooding, sand dune movement, etc.	Has outstanding rivers program.	Has Mandatory Shoreline Zoning Act, 38 MRSA, Section 435-449 which requires municipalities to adopt ordinances to regulate land use around great ponds, rivers,wetlands and streams. Site location of Development Act 38 MRSA, Section 481-490 requires permits for development that may substantially affect the environment and wetlands.	Yes. General permit for certain watercourse alteration activities allowed if BMPs are used (Chapter 305, state rule). BMPs are used as performance standards in Maine.
Maryland	No	Yes	Yes	Yes. Nontidal Wetlands Protection Act (Title 8-1201 et seq and DNR regulations). Regulates dredge, fill, grading and clearing of vegetation. Also regulates 25' to 100' buffer. Tidal Wetlands Act (Title 9-101 through 603) and state is drafting tidal wetlands regulations.	Does apply antidegradation policy to wetlands. Possible violations of water quality standards result in denial of water quality certification under the provision of antidegradation policy. No outstanding waters program. No biological, narrative and numeric water quality standards that apply to wetlands/riparian areas (COMAR 26.08.01 and .02).	Has coastal zone management program through Chesapeake Bay Critical Area Act and other laws.	Yes. Through tidal wetland program. BMPs also in Nontidal Wetland Act. Generally DNR permits activities and Maryland soil conservation districts work with agricultural and forestry activities. Agricultural and forestry activities not subject to permits. These activities are reviewed and approved by the soil conservation districts. BMPs are also required through the 401 water quality certification. BMPs are part of both regulatory and non-regulatory efforts throughout MDE programs.

Table 2 Regulatory Programs

State	State 404	Federal 404	401	State Wetlands / Riparian Program	State Water Quality Standards	Natural Resources	Regulatory BMPs
Massachusetts	No	Yes	Yes	Yes. Wetlands Protection Act (MGL, Chapter 131, s40) and regulations (310 CMR 10.00). State establishes 4 inland and 11 coastal resource areas subject to protection. Resource areas separately and individually regulated. Each contains a set of specific statutory wetlands values (8 total) and a corresponding set of performance standards. Regulates dredge, fill, and alteration. Also regulates 100' buffer (no performance standards). State delegates wetlands permitting to local conservation commissions.	Does apply antidegradation policy to wetlands. Wetlands are designated as "high quality" surface waters and protected to some degree from new discharges [314 CMR 4.04 (2)]. Outstanding waters program are protected from new discharges. No biological, narrative or numeric standards for wetlands/ riparian areas. Water quality authorities under MA Clean Water Act (MGL, Chapter 21, Section 26-53). Standards regulations (314 CMR 4.00).	Has coastal zone management program. MA Environmental Policy Act (MGLC 30, Sections 61-62h).	No. Use BMPs from other agencies/sources.
Michigan	Yes	Yes	Yes	Yes. Goemaere - Anderson Wetland Protection Act (Act 203, P.A. 1979); Michigan's Inland Lakes and Stream Act (1972 Public Act 346 as amended and Administrative Rules); and Great Lakes Submerged Lands Act (247 P.A. 1955).	Does not apply antidegradation policy to wetlands. No protected uses designated for wetlands. Michigan's waters of the Great Lakes are of special significance and are designated as outstanding state resource waters. Wetlands are not considered to be outstanding resource waters. Biological, narrative or numeric standards are being developed for waters of the state, but no specific standards for wetlands.	Has coastal zone management program. Natural River Act of 1970, Act 231 of 1970, (local admin. with oversight by Land & Water Mgt. Division); Soil Erosion and Sedimentation Control Program (local administration with oversight by Land & Water Mgt. Division).	No
Minnesota	No	Yes	Yes	Yes. State statute (MS 115).	Does apply antidegradation policy to wetlands. No protected uses designated for wetlands. Has outstanding waters program. No biological criteria standards. Has narrative/numeric standards.	No	No
Mississippi	No	Yes	Yes	No	Does not apply antidegradation policy to wetlands. No protected uses designated for wetlands. No outstanding waters program. No biological, narrative or numeric standards.	Has coastal zone management program.	No
Missouri	No	Yes	Yes	No, but a state wetland conservation plan is being developed by Missouri Department of Natural Resources.	Does apply antidegradation policy to wetlands. Water quality standards apply to wetlands. No protected uses designated for wetlands. Has outstanding waters program. No biological criteria standards. Has narrative/numeric standards.	No	Yes. Missouri channel modification guidelines.

Table 2 Regulatory Programs

State	State 404	Federal 404	401	State Wetlands / Riparian Program	State Water Quality Standards	Natural Resources	Regulatory BMPs
Montana	No	Yes	Yes	Yes. Montana Water Quality Act (Section 75-5-101 through 75-5-641), Natural Streambed & Land Preservation Act (Section 75-7-101 through 75-7-124), and Stream Protection Act (Section 87-5-501 through 87-5-509).	Does apply antidegradation policy to wetlands. Have protected uses (Montana Water Quality Act and Stream Protection Act) designated for wetlands. No outstanding waters program.	No	Yes. Regulatory BMPs through permitting programs and voluntary BMPs through Nonpoint Source Pollution Control Program. BMPs or "reasonable soil and water conservation practices" are generally required for compliance with state water quality standards.
Nebraska	No	Yes	Yes	Yes. State statute: The Nebraska Environmental Protection Act (Sections 81-1501 through 81-1533).	Does apply antidegradation policy to wetlands. Antidegradation policy is used with the 401 program. If fill eliminated or impairs a beneficial use of a surface water body, including wetlands, then the antidegradation clause of Nebraska Surface Water Quality Standards is violated and 401 certification is denied. Has protected uses designated for wetlands. Has outstanding water program. Has biological criteria standards, but no numeric standards.	No	Yes. For 404 activities that are permitted from the Corps.
Nevada	No	Yes	Yes	No	Does apply antidegradation policy to wetlands by requiring mitigation and monitoring plans. No protected uses designated for wetlands. No outstanding waters program. No biological criteria standards. Has narrative/numeric standards.	No	Yes. BMPs are regulatory when they are a condition of the 404 permit (nationwide) process
New Hampshire	No	Yes	Yes	Yes. State statute (Fill and Dredge in Wetlands and Riparian - RSA 482-A). No minimum size and no exclusions. Local municipalities can designate wetlands as "prime" under a part of the state law which gives additional protection to prime wetlands.	Does not apply antidegradation policy to wetlands, but one is being developed. No information on outstanding waters program and biological criteria, narrative, and numeric standards for wetlands.	Has coastal zone management program. Wetlands and riparian protection and jurisdiction to 100 feet above highest observable tideline covered in the state fill and dredge statute (RSA 482-A).	Yes. Incorporated in rules of New Hampshire Wetlands Board under RSA 482-A.
New Jersey	No info.	No info.	No info.	No information	No information	No information	No information
New Mexico	No	Yes	Yes	No	Does apply antidegradation policy to wetlands if applicable. No protected uses designated for wetlands. No outstanding waters program. No biological criteria or narrative / numeric standards for wetlands.	No	Yes. Implemented by the USFS.

Table 2 Regulatory Programs

State	State 404	Federal 404	401	State Wetlands / Riparian Program	State Water Quality Standards	Natural Resources	Regulatory BMPs
New York	No	Yes	Yes	Yes. State statute (Article 24 - Environmental Conservation Law).	Does apply antidegradation policy to wetlands - by practice more than statute. Has protected uses designated for wetlands (Freshwater Wetlands Act - Article 24 -ECL and Tidal Wetlands Act -Article 25 - ECL). No outstanding waters program. Has biological criteria and narrative / numeric standards for wetlands.	Has coastal zone management program. Goal is balanced development.	No. Not formal or codified. As a general rule yes.
North Carolina	No	Yes	Yes	Yes. General statute (Coastal Area Management Act - GS 113 A. Article and Permits to Dredge and Fill GS 113 - 229) for coastal wetlands only.	Antidegradation provision in the water quality standards protect significant existing uses that wetlands provide. No protected uses designated for wetlands. Has outstanding waters program. No biological, narrative or numeric standards for wetlands.	Has coastal zone management program.	No
North Dakota	No	Yes	Yes	Yes. North Dakota State Commission regulates wetlands drainage laws.	Does apply antidegradation policy to wetlands only. Treated the same as other surface waters. Has protected uses designated for wetlands (beneficial uses). No outstanding waters program. No biological criteria, narrative or numeric standards for wetlands.	No	Yes. Regulatory BMPs for Section 401 certification.
Ohio	No	Yes	Yes	No	Does apply antidegradation policy to wetlands. All wetlands are classified as State Resource Waters in the State Water Quality Standards. Designates state resource waters by rule. No biological criteria standards for wetlands. Has narrative standards ("free from") which apply to all waters of the state, including wetlands. No separate standards for wetlands.	No. Coastal zone management program is in process of being developed and implemented in 1992.	No information provided.
Oklahoma	No	Yes	Yes	Yes. Senate Bill 599, 90th Session, 1990 and Oklahoma Water Quality Standards, 1988.	Does apply antidegradation policy to wetlands. No protected uses designated for wetlands. Has outstanding waters program. No biological criteria, narrative or numeric standards for wetlands.	No	Yes

Table 2 Regulatory Programs

State	State 404	Federal 404	401	State Wetlands / Riparian Program	State Water Quality Standards	Natural Resources	Regulatory BMPs
Oregon	No	Yes	Yes	Yes. State statute and administrative rules (ORS 196.600 through 196.665, ORS 196.668 through 196.692, and ORS 196.800 through 196.995).	Water quality standards are being developed to apply and protect wetlands and riparian areas.	Yes. Coastal zone management program goals are specified by resources. There are 14 statewide planning goals and 4 coastal goals (estuarine resources, coastal shorelands, beaches and dunes, and ocean resources).	No
Pennsylvania	No	Yes	Yes	Yes. State statute - Dam Safety and Encroachments Act, 32 P.S. §693.1 through §693.27. Regulations found at 25 Pa Code Chapter 105.	State water quality standards applies to and protects wetlands. Does apply antidegradation policy to wetlands. Has outstanding waters program. Has biological criteria, narrative, and numeric standards for wetlands.	Yes. Pennsylvania natural diversity inventory. Other natural resource programs include: coastal zone mgt., wild plant mgt. permit, vulnerable plant license, PA ginseng certificate, and floodplain mgt., stormwater mgt. program and numerous other related natural resource programs.	Yes. Erosion and sediment controls, plus agricultural conservation plans implemented by the Bureau of Soil and Water Conservation.
Rhode Island	No	Yes	Yes	Yes	Does apply anitdegradation policy to wetlands. Currently developing regulatory standards.	Has coastal zone management program.	Yes. Agricultural activities in and adjacent to wetlands.
South Carolina	No	Yes	Yes	No	Does apply antidegradation policy to wetlands. No protected uses designated for wetlands. Has outstanding waters program. No biological, narrative or numeric standards for wetlands.	Has coastal zone management program.	Yes. BMPs are voluntary but are often "made" regulatory by requiring BMP use as condition.
South Dakota	No	Yes	No, regulated by EPA.	No	No	No	No
Tennessee	No	Yes	Yes	No	Does apply antidegradation policy to wetlands. State has used the antidegradation policy in denying 401 certification. Has protected uses designated for wetlands. No outstanding water program. No biological criteria for wetlands. Has narrative standards for wetlands.	No	Yes. Implemented by TN Department of Conservation, Division of Forestry.
Texas	No	Yes	Yes	No	Does apply antidegradation policy to wetlands. No protected uses designated for wetlands. No outstanding waters program. No biological criteria for wetlands. Has narrative standards (general criteria, antidegradation statement, and protection measures relating to unclassified waters apply) for wetlands.	No	No

Table 2 Regulatory Programs

State	State 404	Federal 404	401	State Wetlands / Riparian Program	State Water Quality Standards	Natural Resources	Regulatory BMPs
Utah	No info.	No information	No info.	No information	No information	No information	No information
Vermont	No info.	No information	No info.	No information	No information	No information	No information
Virginia	No info.	No information	No info.	No information	No information	No information	No information
Washington	No	Yes	Yes	Yes. The SEPA and Water Quality Laws.	Does apply antidegradation policy to wetlands. No protected uses designated for wetlands, but are in the process of developing them. Has proposed an outstanding waters program. No biological criteria standards for wetlands. Has narrative standards for wetlands. In the process of revising their water quality standards so they include wetlands standards. WDOE's procedures under SEPA are being revised to detail exactly how wetlands will be regulated by WDOE when they have jurisdiction.	Has shorelines management program.	Yes. Have BMPs for activities which can impact wetlands: (1) Forest practices (regulation, and forest practices rules and regulations); agriculture (MOA with conservation districts and SCS); and storm water (storm water manual is available for public review and a storm water rule is being developed).
West Virginia	No	Yes	Yes	No	Antidegradation policy applies to wetlands, but has been only used to a limited extent on national forest areas. No protective uses based on designations other than for all waters of the state. Designation of outstanding national resource wetlands will take place within the next year. Narrative standards implicitly apply to wetlands since wetlands are included in the definition of waters of the state.	No	Yes. Implemented by the non-point source program.
Wisconsin	No	Yes	Yes	Yes. State statute and administrative code. State directly regulates any alteration of wetlands on the beds of waterways (Chapter 30, Stats.). Local governments required by statute to adopt ordinances protecting wetlands in corridor along lakes and streams. State directs, assists and enforces local governments to adhere to the statute. Local ordinances allow only open space uses and rezoning based on absence of wetland function.	State water quality standards apply to and protect wetlands. Has separate narrative water quality standards for wetlands in administrative code. Developing standards to apply antidegradation in Chapter 30 (dredge and fill) program. Antidegradation standards are in water quality standards for wetlands. Has state wetlands standards. Prohibited uses are designated for wetlands. Designated uses are not in water quality standards but they allow only open space use and setbacks within shoreland or flood plain areas. No biological criteria standards; only narrative standards for wetlands.	Yes. Has coastal zone management program. Coastal program is located in the Department of Administration.	Yes. Every permit is "conditioned." These conditioned permits are in effect BMPs.

Table 2 Regulatory Programs

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State	State 404	Federal 404	401	State Wetlands / Riparian Program	State Water Quality Standards	Natural Resources	Regulatory BMPs
Wyoming	No	Yes	Yes	Yes. Wyoming Wetlands Act was passed in February and will become effective July 1, 1991. This legislation requires guidelines to be developed for determining wetland values and functions and that a mitigation banking system be created.	Antidegradation policy applies mostly to the discharge of pollutants. Does not necessarily apply to physical alterations. Has protected uses designated for discharge of pollutants into an existing wetland. Protected uses are water quality based. Use as a wildlife habitat is not necessarily protected from filling or draining. Has an outstanding waters program, biological criteria, narrative, and numeric standards for all waters of the state.	No	No

Table 3 Elaboration of the Clean Water Act 404 Permitting Activities within Each State

T 3-1

State	State 404 Program	Jurisdictional Delineation for Wetlands	Public Notification and Pre-Application Information	Monitoring and Enforcement	Penalties	Data Management	Mitigation	Indian Lands
Alabama	No. The Corps has primacy. Review of assumption has been conducted by AL Water Resources Institute and final report is due out soon.	The Corps determines delineation. Riparian areas are regulated up to the headwaters which is defined as being less than 5 cfs flow. The Corps does not claim jurisdiction above headwaters. Headwaters may be regulated by the state.	Nationwide and general permits, the resource agencies (state/federal) get a 15 day notice. Individual permits have a 30 day public notice with legal notices appearing in local papers. A permit information booklet is available from ADEM for the coastal areas. Pre-application meetings are encouraged. Has an MOA between ADEM and the Corps regarding joint application for 404/401.	The Corps tries to monitor progress on projects they are responsible for. ADEM does minimal monitoring due to limited staff. The Corps and EPA provide enforcement. No state agencies are involved in enforcement.	Cannot exceed $25,000 per day. Most common violation is filling without a permit and failure to remove fill when ordered.	Projects are tracked by the individual Corps district project officers.	Mitigation proposals include (3, 4, 5, 7)*. Types of mitigation consist of creation or restoration of wetlands, planting with native vegetation in coastal zone. Ratio of 1.5:1.0 if in the same watershed and 2.0:1.0 if outside. Outside coastal zone there are no requirements. Method in coastal zone is based on best professional judgement and precedent. Monitoring for 2 to 5 years depending on wetland type created.	Yes. One Indian tribe has expressed an interest in establishing their own water quality control organization. If that is established, this Indian tribe would then be able to assume 401 or 404 responsibilities on their lands. Unknown if there are any agreements between agency and Indian tribe.
Alaska	No. The Corps has primacy. Assumption has been reviewed twice and rejected.	The Corps determines delineation. 404 permits in coastal areas are reviewed by a variety of state agencies and a single decision rendered on the project through the governor's office. Non-coastal areas ADEC is only involved with 401.	Joint public notices (404, 401, and coastal management) have a 30-day comment period. A coastal project questionnaire must be filled out for coastal wetlands projects.	The Corps monitors 404 permits. State agencies monitor compliance with water quality and habitat standards for the Alaska coastal mgt. program. State resource agencies enforce state/regional stipulations and the Corps enforces 404 conditions.	Filling not in conformance	Governor's office maintains a project file. State agencies and the Corps retain copies of application.	Mitigation proposals include (2, 4, 5)*. Compensatory mitigation is not commonly used. This could change soon with the new Corps/EPA MOA on mitigation. Mitigation banking has been used infrequently and some restoration projects are beginning. Alaska has no mitigation ratios. No methodology in determining mitigation.	Yes. Alaska has only one federally recognized Indian Tribe (Metlakatla) and a vast amount of native lands. Native lands are subject to the state 401, but the Metlakatla Indian Tribe is not.

Table 3 404 Permitting Activities

State	State 404 Program	Jurisdictional Delineation for Wetlands	Public Notification and Pre-Application Information	Monitoring and Enforcement	Penalties	Data Management	Mitigation	Indian Lands
Arizona	No. The Corps has primacy. ADEQ has had preliminary discussions about 404 assumption. ADEQ 5-year strategic plan indicates that it will assume all federal programs that relate to its mission.	The Corps determines delineation for wetlands, but riparian areas which function as wetlands in the arid southwest are not being protected or delineated. For enforcement purposes the Corps and EPA determine ordinary high water (OHW). OHW methodology is not working in Arizona. OHW are interpreted as a narrow strip and in some instances OHW are established at the 31/2 year flood plain level. Neither delineation is meeting goal of CWA to "restore and maintain chemical, physical, and biological integrity of the nation's water."	Public notification is handled by the Corps. The applicant is provided 404 procedures by the Corps. The Corps refers the applicant to ADEQ for water quality requirements. ADEQ provides water quality standards, Water Quality Control Council Policy (WQCC), 1990 Report of Governor's Riparian Task Force, and other informational needs. The Corps and ADEQ distribute a brochure on 401 certification entitled "ADEQ and Your Section 404 Permit."	State 401 certification may include monitoring. Records are maintained by permittee for inspection by the Corps and ADEQ. No compliance monitoring for 401 certification. The Corps enforces the 404 permit conditions and ADEQ enforces the water quality standard violations. 404 compliance monitoring by the Corps is limited.	Do not know the penalties for the Corps. Penalties can be administered by ADEQ per ARS Title 49 for water quality standards. In the last 5 years, no penalties for state regarding 404 regulated activities.	404 permits are tracked by the Corps.	ADEQ mitigation procedures are determined by the WQCC Policy. State uses policy (Executive Order 91-6) that any loss or degradation of riparian areas will be balanced by restoration or enhancement of riparian areas of equal values and functions. EPA, AGFD, and USFWS are the main players for the biological mitigation process, at this time. The Corps uses professional judgement regarding mitigation requirements; no ratios, and monitoring.	Yes. 401 certification is handled by the EPA on Indian lands. The Corps would be responsible for the 404 process. No agreement between state agencies and Indian tribes for the handling of the 401/404 process.
Arkansas	No. The Corps has primacy. Assumption has been explored. EPA determined ADPCE did not have adequate funding or staff necessary to assume 404 primacy. State natural resource agency committee reviews all 404 permits and works for wetlands protection.	The Corps determines delineation as per the federal manual. EPA and the Corps conducted ADID on Faulkner Lake Wetlands Complex in 1986.	The Corps issues a public notice for review to the public and to various state agencies. A technical review committee (consists of various state agencies) provides comments to the chairman who makes a recommendation to the governor for the official state position for the public notice. Applicant works with the Corps when applying for the permit.	No monitoring mechanisms or procedures. Minimal monitoring by the Corps, usually the Corps responds to public complaints. The Corps/EPA provides enforcement. State agencies are not involved unless there is a specific violation such as water quality.	Civil and/or criminal penalties. Common violation are placing fill in wetlands or construction activities outside the limits of the permit.	The Corps	No specific mitigation types. Some mitigation on site and off site. Mitigation procedures depend upon the Corps, EPA and USFWS recommendations. State has recently considered mitigation banking and re-creation of wetlands. No specific mitigation method, just on a case by case basis.	No

Table 3 404 Permitting Activities

State	State 404 Program	Jurisdictional Delineation for Wetlands	Public Notification and Pre-Application Information	Monitoring and Enforcement	Penalties	Data Management	Mitigation	Indian Lands
California	No	The Corps determines delineations for wetlands.	Public notification is handled by the Corps. Conditions on certification of nationwide permits require the Corps to undertake special coordination with several RWQCB's in regard to nationwide number 26.	Self-monitoring and reporting may be included as a condition of 401 certification. Otherwise, minimal monitoring by the Corps. No systematic state monitoring.	Administered by the Corps.	State has recently begun tracking 401 permits.	Mitigation on a case by case basis. RWQCB's may specify compliance with basic plan requirements. CDFG and USFWS take lead on biological mitigation.	No information
Colorado	No. The Corps has primacy. Assumption has been explored.	The Corps determines delineation.	The three Corps districts have their own public notice procedures. The Corps procedures determine what information the applicant will receive prior to applying for a permit.	Monitoring is usually not required as part of 401 certification. The Corps/EPA provides the enforcement.	The Corps and EPA procedures.	After 401 certification, 404 tracking is not done.	No specific proposal requirements or types or methodology in determining mitigation. Mitigation is permit specific.	Yes. Indian lands are subject to the state 401 and federal 404 process. No agreements between the state agency and the Indian tribes.
Connecticut	No. The Corps has primacy. Assumption is currently being explored.	The Corps - 3 parameter approach (hydric soils, hydrology and vegetation). Similar to state delineation of wetlands.	The Corps issues notification. The Corps procedures determine what information the applicant will receive prior to applying for a permit.	Monitoring is minimal. The Corps provides enforcement. No state involvement unless state jurisdiction is violated.	$1000 per day up to $10,000, if state jurisdiction is violated. Civil penalties can be implemented also.	Tracked via 401 process only.	Mitigation proposals include (1, 2, 3, 4, 5, 6, 7, 8)*. Proposed Policy for Wetland Compensation has been established (11/1/90).State Inland Wetlands and Watercourse Act requires a "no feasible and prudent alternatives" test for permits.	Yes. No agreements between agency and the Indian tribes for the handling of 401/404 programs.
Delaware	No information	No information	No information	No information	No information	No information	No information	No information

Table 3 404 Permitting Activities

State	State 404 Program	Jurisdictional Delineation for Wetlands	Public Notification and Pre-Application Information	Monitoring and Enforcement	Penalties	Data Management	Mitigation	Indian Lands
Florida	No. The Corps has primacy.	The Corps determines delineation. The 404 program regulates both contiguous and isolated wetlands. The state program regulates only contiguous wetlands. Some of the 5 water management districts have begun to regulate isolated wetlands. State jurisdiction defined as natural landward extent of waters (Section 403.817), which extends to wetlands, not riparian areas.	The Corps and Florida have joint application booklet and form, but the permitting process is separate (dual permits). Florida Game and Fish will comment on DER applications.	No information	No information	Required by state statute to have state permit data management system. Annual report to legislature to identify impacts to wetlands, with losses and gains.	Mitigation proposals include (1, 2, 3, 4, 5, 6, 7, 8)*. Ratios: Creation 1:1 - 6:1; enhancement 4:1-20:1; and preservation 10:1-100:1. Ratios are set based on the quality of area to be impacted and quality of mitigation. Mitigation must offset functions of wetland lost. Type for type and on-site is preferred. Mitigation is monitored until "successful". Monitoring of "success" required to be gauged against use of a reference site. Criteria in state regulation (17-312.300 F.A.C.).	Yes.
Georgia	The Corps has primacy. Assumption has not been pursued.	The Corps determines delineation for wetlands.	No information	No information	No information	No information	Federal program.	No
Hawaii	No. The Corps has primacy.	The Corps determines delineation.	As per Corps procedures.	The Corps	As per the Corps procedures.	The Corps	As per the Corps procedures.	Not applicable

Table 3 404 Permitting Activities

State	State 404 Program	Jurisdictional Delineation for Wetlands	Public Notification and Pre-Application Information	Monitoring and Enforcement	Penalties	Data Management	Mitigation	Indian Lands
Idaho	No. The Corps has primacy. In response to a new fee schedule proposed by the Corps last November 1990, Idaho has been exploring the possibility of assuming primacy. The Corps will be increasing the number of general permits issued which will essentially give the state the final say in most instances. This will determine whether the state continues to pursue primacy.	The Corps or private consultants with verification by the Corps. Dredge and fill activities are regulated by the DWR through administration and enforcement of the Stream Channel Alteration Act which requires a permit for any project or activity which will alter a stream channel. MOA between 4 state agencies on their coordination of comment on 404 permits.	The Corps sends public notices to agencies and adjacent landowners. Has joint application booklet, but dual permits. Pre-application meetings are encouraged.	The Corps usually monitors in response to complaints. The Corps provides enforcement. DWR gets involved when there is a stream channel alteration.	The Corps can issue civil penalties or require restoration or modification of project. In the last 5 years, 3 projects (40 acres) have been issued penalties.	The Corps	Mitigation proposals include (1, 2, 3, 4, 5, 6, 7)*. On-site mitigation is preferred. Mitigation monitoring is for 3 to 5 years. Method includes habitat evaluation guide, wetland evaluation techniques and professional judgement. State mitigation banking by Dept. of Transportation.	Yes. Section 404 is done by the Corps and the 401 certification is done by the tribe.
Illinois	No. The Corps has primacy. Assumption has not been explored.	The Corps determines delineation without outside guidance. Recent changes have required the cooperation of the SCS in regards to farmed wetlands.	The Corps issues public notices. 404 notices also contain notification of the 401 and request public comment. The 404 program is administered by 5 Corps district offices within 3 divisional offices. This has resulted in significant differences and emphasis. The joint application form contains a brief overview of the 401 and 404 program. There are no dual permits. Pre-application meetings are encouraged.	The Corps is primarily responsible for permit monitoring. Actually monitoring of the permit condition varies depending on the impact of the resource, field time and the interest of any of the resource agency. EPA has taken the enforcement lead since 1986. The state is consulted in the pre-enforcement phase by EPA.	See EPA.	Permits are tracked by each Corps office individually. No need has arisen to consolidate process.	Mitigation proposal requirements are the responsibility of the Corps and it varies from case to case and from district to district. There are no rules or guidelines for mitigation types. The current emphasis is on wetland re-creation within the same watershed or on the same site if possible. Replacement ratios often are 1.5:1. The IDOC interagency program has created a wetland bank and is developing replacement ratio guidelines.	No information

State	State 404 Program	Jurisdictional Delineation for Wetlands	Public Notification and Pre-Application Information	Monitoring and Enforcement	Penalties	Data Management	Mitigation	Indian Lands
Indiana	No. The Corps has primacy. Has informally explored 404 assumption but declined to pursue primacy due to lack of staffing and funding constraints.	The Corps determines delineation for wetlands.	Description of project and other information is required by the Corps. The Corps issues public notices.	The Corps and the state monitor 401 conditions for a 404 permit. The enforcement is primarily the Corps responsibility.	See the Corps.	See the Corps.	Typical conditions of 401 certification are the implementation of a mitigation plan, redesign of project to minimize impacts to wetlands, adherence to construction guidelines, and best management practices.	No
Iowa	No. The Corps has primacy. Has informally explored 404 assumption.	The Corps determines delineation for wetlands.	The Corps and Iowa have joint application booklet and form. The Corps issues public notices.	Monitoring is informally conducted by the Corps and DNR field staff. The Corps is responsible for enforcement.	Most common types of violations are not meeting conditions of the certification such as inadequate size of mitigation, more fill than applied for, and non-authorized activities.	By the Corps.	A mitigation policy and guideline document (Water Quality Standards Mitigation Policy and Guidelines for Projects Affecting Iowa's Lakes and Streams) is used. Mitigation proposals include (3, 4, and 7)*. Primary efforts are toward in-kind mitigation.	Yes. No information if there are agreements between state agency and Indian tribes for the handling of 401/404 programs.
Kansas	No. The Corps has primacy.	The Corps determines delineation.	Application made to the Corps with a copy of the application for 401 is sent to KDHE. A joint public notice is then issued by the two agencies with comments sent to both. Applicants receive a regulatory program application booklet.	Limited monitoring conducted by the Corps. The Corps provides enforcement and the state will get involved if there is a water quality violation.	See the Corps.	The Corps.	Mitigation proposals include (1, 2, 3, 5, 7)*. Mitigation types consist of mitigation banking; mitigation ratio 1:1 no net loss; re-creation of wetlands and enhancement of existing wetlands in area. Mitigation must be monitored for 5 years to establish a benchmark to see if project is successful.	Yes. No agreements between agency and the Indian tribe for the handling of 401/404 programs.

Table 3 404 Permitting Activities

State	State 404 Program	Jurisdictional Delineation for Wetlands	Public Notification and Pre-Application Information	Monitoring and Enforcement	Penalties	Data Management	Mitigation	Indian Lands
Kentucky	No. The Corps has primacy. Assumption has been explored through a feasibility study dated 9/88. Study rejected assumption due to lack of funding, and staffing, federal 404 program ineffective in protecting wetlands, and 404 alone will not totally protect wetlands.	The Corps determines delineation per federal delineation manual. Begun ADID for Western Coalfield region.	The Corps issues public notices (30 days) for individual permits. There is no public notice for nationwide permits. The Corps will send notice to DEP. The Corps has checklist for 404 permit application but minimal guidance is provided to an applicant.	Monitoring by the Corps is very minimal. The Corps is responsible for enforcement, but neither Corps nor state enforces permit conditions.	Applicants are not penalized for violations of permit conditions. Unpermitted violations receive minimal fines from EPA.	The Corps and the state have 404 tracking systems. Neither are computerized, but the state will soon track permits via computer.	Mitigation proposals include (1, 2, 3, 4, 5, 6, 7, 8)*. Mitigation types consist of in-kind functional replacement at a 2:1 ratio. Method consists of federal delineation manual, wetland evaluation technique and mist manual. Mitigation monitoring is required for 5 years. Not strongly applied by the Corps and EPA. State 401 certification requires alterative analysis and mitigation for wetlands.	There are no federal or state recognized Indian lands or tribes in Kentucky.
Louisiana	No. The Corps has primacy. Assumption has not been explored.	The Corps determines delineation.	No information	No information	No information	The Corps	No information	Yes. No agreements between agency and the Indian tribe for the handling of 401/404 programs.
Maine	No. The Corps has primacy. State may never get primacy because state regulates wetlands over 10 acres; inconsistent with 404. State adopted wetland classification (Chapter 310) where wetlands have different values; incompatible with EPA.	State program regulates to normal high water line (Title 38-480-B.6) and federal program regulates to ordinary high water.	No information	No information	No information	No information	State Natural Resources Protection Act requires mitigation for significant habitat (38-480.D). State rules (Chapter 310) classify wetlands according to value and different mitigation requirements apply to each. Does require functions evaluation. Allows for mitigation banking and requires mitigation monitoring for 3 years.	No information

Table 3 404 Permitting Activities

State	State 404 Program	Jurisdictional Delineation for Wetlands	Public Notification and Pre-Application Information	Monitoring and Enforcement	Penalties	Data Management	Mitigation	Indian Lands
Maryland	No. The Corps has primacy. Assumption has been explored, but funding and political aspects have kept state from assuming 404 program. State will work toward primacy by sharing responsibility for 404 under a new general permit (under development). State may process permits for <5 acres, if no federal objections.	Under the Maryland General Permit both the state and the Corps determine delineation per federal manual for identifying and delineating wetlands. There are two Corps district offices involved with 404 process. State nontidal wetlands regulations go beyond this jurisdictional line to regulate a 25' or 100' buffer. Buffers provide the leverage needed to meet CWA goals in highly erodible soils and steep slope areas. Dual permits currently.	Adjacent property owners and the public at large via the issuance of a public notice. Public notice may be joint with other regulatory agencies at the local, state, or federal level. Public notice may be given in the Maryland Register (local newspaper) or through individual mailings. Pre-application meetings including on-site meetings. Joint application booklet. Assessment guidelines for marina construction or stormwater mgt. projects.	The Corps monitors 404, but not on a routine basis. 404 enforcement in the past has not been vigorous, timely, or effective. Enforcement will improve since the Corps has a MOU with USFWS for field enforcement. WRA (part of DNR) has an enforcement division which monitors regulatory compliance of state wetland laws. State permit is a requirement of the general permit and DNR enforces their own permits.	Fines and restoration orders. Most common violations are failure to obtain water quality certification, operating without an approved grading and sediment control plan or plan not implemented, construction not in compliance with approved plans or specifications and construction through time-of -year restriction periods.	The Corps has installed the Regulatory Analysis Mgt. System (RAMS). Both DNR and MDE are in the process of linking to this system.	Mitigation proposals include (1, 2, 3, 4, 5, 7, 8)*. Method is site specific and mitigation monitoring is usually required for 3 years. For nontidal wetlands, state requires that activity be water dependent and that applicant avoid then minimize wetlands impacts. If activity not water dependent applicant must show there is no practical alternative. Where mitigation not feasible, monetary compensation goes into a compensation fund. State statute establishes mitigation ratios. DNR must prepare compliance reports for the Maryland General Assembly on a yearly basis regarding nontidal wetlands mitigation and the compensation fund.	No

Table 3 404 Permitting Activities

State	State 404 Program	Jurisdictional Delineation for Wetlands	Public Notification and Pre-Application Information	Monitoring and Enforcement	Penalties	Data Management	Mitigation	Indian Lands
Massachusetts	No. The Corps has primacy. Assumption has not been explored. Separate state and federal permit application.	The Corps determines delineation in 404. For purposes of 401 certification, state uses federal delineation.	No information	The Corps provides primary enforcement with occasional enforcement by DEP.	No information	No information	Mitigation proposals include (3, 4, 5, 7, 8)*. The Corps does not require wetland replication for nationwide permits. Individual permit method consists of using the MA Wetland Protection Act Standards [310 CMR 10.55 (4)(B)] which require equal areas, comparable hydrology, successful growth in indigenous wetland species over 75% of the area in two growing seasons. Ratio usually is 1:1. DWPC sometimes requires monitoring reports.	No information
Michigan	Yes. State administers 404 except in interstate commerce waters where the Corps has retained jurisdiction over Section 10 of the Federal River and Harbor Act of 1899 and Section 404 activities in and adjacent to the Great Lakes including waterways, adjacent wetlands, and major tributaries.	MDNR determines delineation.	Public notices issued to local government, neighboring property owners, environmental groups, various state agencies and anyone who requests notice on a given project. Applicant receives application form, copy of the Act and other general information and guidelines.	Site visits by field staff, but due to high work loads and serious budget constraints staff is limited to minimal final project certification. MDNR provides enforcement.	Penalties consist of fines and restoration.	404 permits are on a computer system referred to as CIWPIS (Coastal and Inland Water Permit Information System).	Mitigation proposals include (2, 3, 4, 5, 6, 7)*. Types of mitigation consist of on-site mitigation at least 1:1 ratio. Monitoring often is required for 3 to 5 years.	Yes. No agreements between agency and Indian tribes for the handling of 401/404 program.
Minnesota	No. The Corps has primacy. Assumption has been explored.	The Corps determines wetlands delineation and DNR determines delineation ordinary high water.	The Corps issues public notice.	See the Corps.	EPA administers penalties. Most common violation is filling without a permit.	See the Corps.	No information	Yes. No agreement between agency and the Indian tribe for the handling for 401/404 programs.

Table 3 404 Permitting Activities

State	State 404 Program	Jurisdictional Delineation for Wetlands	Public Notification and Pre-Application Information	Monitoring and Enforcement	Penalties	Data Management	Mitigation	Indian Lands
Mississippi	No. The Corps has primacy. Assumption has not been explored.	The Corps determines delineation.	Joint public notice with two Corps districts. If the project site is not located within these districts the applicant is required to publish once a notice in an area newspaper. Applicant receives an application booklet, plus pre-application meeting are encouraged. There are not dual permits.	No monitoring. The Corps provides enforcement. State advises the Corps of noncompliance.	See the Corps.	No information	Mitigation proposals include (1, 4, 5, 7)*. Mitigation types consist of mitigation banking, re-creation of wetlands, native species, on-site mitigation. Method consists of professional judgement. In rare cases the Wetland Evaluation Technique is used. Mitigation monitoring is required for 3 to 5 years.	Yes. No agreements between agency and the Indian tribe for the handling of 401/404 programs.
Missouri	No. The Corps has primacy. Assumption has been explored.	The Corps determines delineation.	The Corps issue public notice for individual permits or recommends a nationwide permits. EPA, USFWS, Missouri Dept. of Conservation, State Flood Plain Mgt. Agency, Water Pollution Control Agency and the general public.	See the Corps about monitoring. The Corps provides enforcement. State provides surveillance but no enforcement.	See the Corps.	See the Corps.	No mitigation program at this time, but Missouri is considering a mitigation program.	No
Montana	No. The Corps has primacy. In 1985, Montana contacted Michigan to find out what was needed to assume primacy. As result of this inquiry, concluded that they neither had the financial or personnel resources to undertake the program and abandoned the idea. No official application was submitted at that time.	The Corps determines delineation.	The main Corps office issues general and nationwide permits. All individual permits are public notice. The Corps includes WQB/DHES in their public notices. Applicant receives an application packet.	The Corps conducts random compliance inspections. The Corps provides enforcement but WQB/DHES often handles enforcement since the Corps has been weak to enforce compliance. EPA handles some enforcement.	The EPA and Corps can issue civil or administrative penalties. WQB/DHES can issue civil penalties. Most common violations are unauthorized wetland fill and unauthorized stream bank stabilization.	See the Corps.	Mitigation proposals include (2, 3, 4, 5, 7)*. Mitigation types consist of bonding, mitigation banking, and recreation of wetlands. Method is normally determined by interagency team using format established in MOU. MOU developed for highway projects. Mitigation monitoring varies.	Yes. 401/404 programs are administered by the EPA on Indian lands. Talks are currently on-going between agency and Indian tribes. The Salish and Kootenai Tribe is investigating 404 program assumption.

Table 3 404 Permitting Activities

State	State 404 Program	Jurisdictional Delineation for Wetlands	Public Notification and Pre-Application Information	Monitoring and Enforcement	Penalties	Data Management	Mitigation	Indian Lands
Nebraska	No. The Corps has primacy. Assumption was explored in 1982 and state declined primacy due to cost.	The Corps determines delineation.	See the Corps.	State notifies the Corps of noncompliance. Game and Parks make infrequent spot checks and review aerial photos at a lesser degree to evaluate compliance. Citizens do report violations to the various agencies on occasions.	See the Corps.	See the Corps.	See the Corps about mitigation proposal requirements. Types of mitigation consist of re-creation of wetlands, on-site and off-site mitigation , and mitigation through habitat enhancement. See the Corps about methodology.	Yes. No agreements between agency and the Indian tribes for handling of 401/404 programs.
Nevada	No. The Corps has primacy. Assumption has not been explored.	The Corps determines delineation.	The Corps issues public notice for individual permits. Pre-application meetings when requested.	See the Corps.	See the Corps. Common violation is disturbance without a permit.	No information	Mitigation proposals include (1, 4, 5, 7, 8)*. No information on types of mitigation. Mitigation is monitored from 1 year to life of project.	Yes. No agreements between agency and the Indian tribes for handling of 401/404 programs.
New Hampshire	No. The Corps has primacy. Assumption has been explored but determined too expensive to implement. Current state law is stronger than 404.	New Hampshire Wetlands Program is adopting the federal method of determining delineation. Previously state used vegetation for delineation. For lakes and streams state has jurisdiction to the top of bank. Coastal areas to 100' inland of highest observable tideline.	No information	No information	State wetland/riparian fees and fines are distributed back to the program.	No information	Mitigation proposals include (1, 2, 3, 4, 5, 6, 7)*. Types of mitigation vary but prefer restoration of disturbed sites or creation of buffers around wetlands. Mitigation is considered on a function by function basis. Methods vary but mitigation of major projects generally has to be proven before project is started. Mitigation monitoring is usually 2 to 3 years, but has been as much as 15 years.	No
New Jersey	No information	No information	No information	No information	No information	No information	No information	No information

Table 3 404 Permitting Activities

State	State 404 Program	Jurisdictional Delineation for Wetlands	Public Notification and Pre-Application Information	Monitoring and Enforcement	Penalties	Data Management	Mitigation	Indian Lands
New Mexico	No. The Corps has primacy. Assumption has not been explored.	Not delineated	No information	No information	No information	No information	No information	Yes. No agreements between agency and the Indian tribes for the handling 401/404 programs.
New York	No. The Corps has primacy.	The Corps determines delineation.	State provides notice of application on all major projects in newspaper and Environmental Notice Bulletin. A joint permit application is given to applicants, plus general information on wetlands and their programs.	State has field enforcement staff.	No information	No information	No information on mitigation proposal. Types of mitigation are usually limited to re-creation or enhancement of wetlands. No information on method of determining wetland mitigation.	No information
North Carolina	No. The Corps has primacy.	The Corps determines delineation.	A public notice is required for all 401 water quality certifications. If an individual 404 permit is involved the Corps issues the public notice. If the project is in the coastal zone the Division of Coastal Mgt. issues the public notice. If the project does not fall into either of the above categories the DEM issues the public notice. General certifications have been issued for nationwide 14 and 26. If a project qualifies for the general certification a public notice is not required. DEM is in the process of developing an application form for 401 certifications. There is no formal pre-application information available.	Currently the state does not monitor or enforce 401 certification conditions involving a 404 permit. State is in the process of developing wetlands regulations which will address monitoring and enforcement.	State does not impose penalties for violation of 401 certification. This will be addressed in the wetland regulations which are being developed.	Data management program is being developed.	The state has no formal mitigation policy.	Yes. The Corps administers 404 process and EPA administers 401 process. No agreements between agency and the Indian tribes for handling 401/404 programs.

Table 3 404 Permitting Activities

State	State 404 Program	Jurisdictional Delineation for Wetlands	Public Notification and Pre-Application Information	Monitoring and Enforcement	Penalties	Data Management	Mitigation	Indian Lands
North Dakota	No. The Corps has primacy. Assumption has not been explored.	In the process of determining how wetlands are delineated.	Various agencies are notified and public notices are posted in Post Offices.	If there is a conditional 401 certification then the applicant is required to monitor the appropriate parameters.	No information	No information	See State Water Commission or USFWS.	Yes. Tribes and EPA certify. No agreements between agency and Indian tribes for handling of 401/404 programs.
Ohio	No. The Corps has primacy. Assumption has not been explored.	The Corps determines delineation.	The Corps public notice is issued for 30 days and is sent to state agencies, EPA, USFWS and neighbors around the project. Notice is posted in the Post Office. OEPA public notice is issued after receiving the Corps public notice. Comments from the public on water quality issues are accepted for 30 days. Public notice is placed in local newspaper. Pre-application meetings are encouraged.	See the Corps for information on monitoring. The Corps provides enforcement. State agencies are not involved with 404 enforcement	Civil and criminal penalties, plus removal and restoration orders can be imposed by the Corps. Common violation is filling without a permit. USEPA may impose penalties for unpermitted violations.	OEPA tracks 401 projects via computer.	Mitigation proposals include (1, 2, 3, 4, 5, 6, 7, 8)*. Ohio EPA does not have a written policy on mitigation, but projects are reviewed using 404 (b)(1) guidelines. Method is based on case by case. At present time, the length of time for monitoring is 5 consecutive years after construction.	No
Oklahoma	No. The Corps has primacy. Assumption has been explored.	The Corps determines delineation.	Public notice is sent out for individual permits. State and federal agencies and all interested parties are notified. Application and public notices are handled jointly. Pre-application are encouraged.	No formal schedule or report or review. Responsible state agencies and the Corps evaluate compliance. The Corps provides enforcement. State only advises the Corps of non-compliance.	Project suspended or permit cancelled. Fines have been minimal.	Tracked by the Corps.	Mitigation proposals include (1, 2, 3, 4, 5, 7, 8)*. Types of mitigation consist of re-creation of wetlands and on site and off site mitigation. Mitigation ratio is ≥3:1. Monitoring is required for 5 years.	Yes. State and the Corps handle 401/404 program with the cooperation and input of tribal governments.
Oregon	No. The Corps has primacy. Assumption has been explored.	Use the federal manual for identifying and delineating jurisdictional wetlands.	DSL notifies state agencies and local governments and provides unified position to the Corps. Applicant receives a joint application booklet, state/federal brochures, and pre-application meetings are encouraged.	The Corps is responsible for monitoring. State enforces state laws and the Corps and EPA enforce 404 permits.	State can impose a civil penalty (up to $10,000 per day), criminal misdemeanor, and civil nuisance.	404 permits are not tracked very well by the Corps.	Mitigation proposals include (1, 2, 3, 4, 5, 6, 7, 8)*. Mitigation method is not formalized other than no net loss. Monitoring is typically required for 5 years.	Yes. No agreements between agency and the Indian tribes for handling of 401/404 programs.

State	State 404 Program	Jurisdictional Delineation for Wetlands	Public Notification and Pre-Application Information	Monitoring and Enforcement	Penalties	Data Management	Mitigation	Indian Lands
Pennsylvania	No. The Corps has primacy. Assumption has been explored.	Use the federal manual for identifying and delineating wetlands.	Applicants may schedule pre-application meetings with environmental review personnel. Public notification of an application to encroach or obstruct floodways, watercourse or bodies of water including wetlands are published in the Pa Bulletin.	Yes. The Bureau of Dams and Waterway Management has staff that monitor and enforce impacts to wetlands.	Penalties for unpermitted wetland encroachments can be issued by: DER Bureau of Dams and Waterway Mgt., Pa Fish Commission, Pa Game Commission, USFWS (for EPA), and the Corps. Fines can be issued for each day of violation.	Yes. Tracked by the state system titled LUMIS.	Mitigation proposals include (1, 2, 3, 4, 5, 7)*. Method of determining mitigation is the federal manual, WET II, and HEP (Pa modified). Monitoring is required for mitigation but the length is depended upon the permit conditions.	No Indian lands in Pa.
Rhode Island	No. The Corps has primacy. Assumption has been explored but rejected.	The Corps and the state program are separate.	No state involvement.	Enforcement actions are generally separate between state and the Corps.	No information	No information	No information	No information
South Carolina	No. The Corps has primacy. SCDHEC made decision not to apply for assumption as result of feasibility study completed in December 1986. This study identified three main reasons: (1) State assumption would not relieve complexity of present program in the state, (2) A large percentage of waters are navigable and primacy would be retained by the Corps, and (3) The lack of federal funding. The study recommended development of 401 regulations to strengthen program (has been completed) and development of a state wetlands program (has met considerable resistance in the state legislature for the last three years).	The Corps or consultants determines delineation.	Joint public notice is published by the Corps for the Corps, 401 agency, and the coastal zone permit or state navigable water permit. SCDHEC sends public notices to adjacent landowners, interested parties and state and federal agencies who comment. In coastal zone area, applicant has pre-application meetings with involved state and federal permitting and commenting agencies.	No established program. The Corps monitors compliance. The Corps has contracted with South Carolina Wildlife and Marine Resources for compliance monitoring on selected projects. EPA provides enforcement. EPA enforces illegal fills but not noncompliance with permit conditions.	See EPA for information on penalties.	404 tracked by the Corps. SCDHEC tracks 401.	Mitigation proposals include (1, 3, 4, 5, 7, 8)*. Types of mitigation consist of re-creation of wetlands, on site mitigation is preferred. Mitigation ratio is at least 1:1. Method is determined by South Carolina Wildlife and Marine Resources and USFWS. SCDHEC reviews and approves mitigation as condition of 401 certification. Monitoring is usually required for 5 years.	Yes. Not sure how 401/404 process is handled on Indian community since there is only one Indian reservation (Catawba).

Table 3 404 Permitting Activities

State	State 404 Program	Jurisdictional Delineation for Wetlands	Public Notification and Pre-Application Information	Monitoring and Enforcement	Penalties	Data Management	Mitigation	Indian Lands
South Dakota	No information	No information	No Information	No Information	No Information	No Information	No Information	No Information
Tennessee	No. The Corps has primacy. Assumption has been explored.	The Corps determines delineation.	30-day public notice period. Notice is mailed to agencies, organizations and any interested parties.	Permit applicant has the responsibility for the monitoring. The Corps provides enforcement. No state agency is involved in federal 404 enforcement.	The Corps issues penalties. State can only enforce violations of 401 certification.	Tracked manually and by computer.	Mitigation proposals include (1, 2, 4, 5)*. Types of mitigation consist of restoration and enhancement, on site and off site , re-creation and preservation. Pre-construction banking is under consideration (Proposed Tennessee Wetlands Mitigation Policy) and mitigation banking is under serious consideration from a proposal by the Tennessee Dept. of Transportation. Method is based on WET. EPA and Tennessee now require monitoring for 5 years.	No
Texas	No. The Corps has primacy.	The Corps determines delineation.	Public notice is provided by using a joint public notice between the Corps and Texas Water Commission. 30 day joint public notice period. Notice is mailed to agencies, organizations and any interested parties.	The Corps provides enforcement. No state agency is involved in federal 404 enforcement.	The Corps issues penalties. State can only enforce violations of 401 certification and/or a willful act which impacts state surface water quality standards.	The Corps is the lead agency for tracking permits.	No information except that Texas Parks and Wildlife Dept. and General Land Office suggest mitigation plans to the Corps.	Yes. No agreements between agency and the Indian tribes for handling of 401/404 programs.
Utah	No information	No information	No information	No information	No information	No information	No information	No information
Vermont	No information	No information	No information	No information	No information	No information	No information	No information

Table 3 404 Permitting Activities

State	State 404 Program	Jurisdictional Delineation for Wetlands	Public Notification and Pre-Application Information	Monitoring and Enforcement	Penalties	Data Management	Mitigation	Indian Lands
Virginia	No information	No information	No information	No information	No information	No information	No information	No information
Washington	No. The Corps has primacy. Assumption has been explored.	The Corps determines delineation.	The Corps holds monthly meetings	The Corps provides compliance monitoring and enforcement.	The Corps issues the penalties.	Tracked by the Corps.	Mitigation proposals include (1, 2, 3, 4, 5, 6, 7, 8)*. Types of mitigation consist of re-creation of wetlands, mitigation banking, on-site and off-site pre-construction bonding. Mitigation ratios vary. Monitoring is required for 5 years.	Yes. 401/404 process on the Indian lands are administered by the Corps and EPA. The Centennial Accord provides an avenue for governmental relations.
West Virginia	No. The Corps has primacy. Assumption has not been explored.	The Corps basically determines delineation, but WVDNR may provide input.	Yes	The Corps monitors 404 permit compliance but is very weak due to lack of staff and high workload. The Corps enforces the 404 permit conditions. WVDNR enforces standards and 401 conditions. Most common 404 permit violations are: illegal fills and not following conditions of permit.	For state water quality standards violations: civil penalty - up to $10,000 per day. criminal penalty - up to $25,000 per day but rarely used for 401/404.	Permit number log system.	Mitigation proposals include (1, 2, 4, 7). Method for mitigation is determined by field reviews which establishes type, quality, value and function. Mitigation monitoring is not required frequently.	No
Wisconsin	No. The Corps has primacy. Assumption has been explored.	The Corps determines delineation but in some cases the Corps will accept WDNR determination for wetlands. NWI maps are used to help delineate wetlands.	For individual permits, public notices are sent to WDNR, EPA, USFWS, WI Attorney General's Office, and public interest groups. Applicants receive joint application form and brochures on the 404 program.	The Corps monitors once for compliance. The Corps enforces the permit conditions but state gets involved if there is a violation of state law.	Federal law is imposed.	The Corps tracks permits by computer program. WDNR tracks Corps' 404 individual permit applications.	Mitigation procedures are not accepted or considered because Wisconsin has no authority to do so.	Yes. Only one Indian tribe does own permitting. In the process of developing agreements between state agency and the Indian tribes for handling 401/404 programs.

Table 3 404 Permitting Activities

State	State 404 Program	Jurisdictional Delineation for Wetlands	Public Notification and Pre-Application Information	Monitoring and Enforcement	Penalties	Data Management	Mitigation	Indian Lands
Wyoming	No. The Corps has primacy. A bill that would have provided sufficient authority for 404 assumption died in legislative committee in 1991. As a result, no application was made to EPA for assumption. The bill died because of the high costs related to a state 404 program and EPA would still maintain significant decision-making authority.	The Corps determines delineation.	There is a 30-day period for public notices. Notices are sent to adjacent landowners, local governments state and federal agencies and interested parties. Applicants of large projects generally arrange pre-application meetings. The only information the applicant receives is the application form.	The Corps enforces the permit conditions and DEQ enforces the water quality standards. Turbidity monitoring is usually required for construction. Bioassessments may be required for large projects.	Up to $10,000 per day for water quality violations. See the Corps for permit violations.	The Corps tracks their own activity. DEQ tracks 404 activities in the state for their own uses.	No information	Yes. No agreements between the agency and the Indian tribes for handling 401/404 programs.

Footnotes:

Mitigation Proposal Requirements*

1. A clear statement of the objectives of the mitigation.
2. An assessment of the wetlands values and functions that will be lost and that will be replaced.
3. A statement of the location, elevation, hydrology, soils, and vegetation of the new site.
4. A description of what will be planted where and when.
5. A monitoring and maintenance plan.
6. A contingency plan.
7. A schedule of completion.
8. A guarantee of work as planned and approved.

Table 4 Clean Water Act 401 Certification Activities

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State	State 401 Program	Activities Certified By 401	401 Regulations	Certification Criteria	Monitoring and Enforcement	Penalties
Alabama	Yes. The Corps does not issue permits without or before certification is granted.	Any activities which require a Section 404 permit or a Section 10 (Rivers and Harbors Act) permit.	No	There are no written criteria. Each project is reviewed individually and criteria are established on the basis of best professional judgement and precedent to ensure that the state water quality standards will not be violated. The water quality standard for turbidity limits the allowable change to 50 NTU from background or upstream values.	ADEM monitors 401 conditions. Monitoring is limited due to lack of personnel and is generally short-term in nature. There are no 401 regulations so there are no enforcement guidelines. The only enforcement option is to deny or revoke certification.	If an activity caused a violation of water quality standards, then a regulatory action would be taken under the ADEM Water Program Regulations.
Alaska	Yes. The Corps does not issue 404 permits without or before certification is granted. They do issue Section 10 permits without 401 certification. They are still honoring the State Coastal Zone Mgt. consistency determination on both 404 and Section 10 permits.	ADEC certifies all activities involving 404 permits, NPDES permits, and FERC licenses.	Yes. 401 regulations (18 AAC 15).	Compliance with Alaska's water quality standards and coastal management program.	ADEC monitors 401 conditions. USFS uses water quality impact models in EIS and EA reports.	Civil and criminal penalties can be issued.
Arizona	Yes. The Corps does not issue permits without or before certification is granted.	ADEQ certifies individual 404 permits (excluding Indian reservations), Section 402 (excluding Indian reservations), Section 10 permits (Colorado River), U.S. Coast Guard permits for bridges over Section 10 waters, and FERC hydroelectric power licenses.	No state rules, ADEQ follows 40 CFR Part 121	Water quality standards (AAC R18-11, article 1, 2, and 3) and WQCC policy.	ADEQ's position is that 401 certification conditions for 404 permits should be monitored by the Corps. 401 certification conditions are monitored by the Corps only when there is a complaint.	Penalties are enforced by the Corps.

Table 4 401 Certification Activities

State	State 401 Program	Activities Certified By 401	401 Regulations	Certification Criteria	Monitoring and Enforcement	Penalties
Arkansas	Yes, but not a formal policy. The Corps does not issue 404 permits without or before certification is granted. MOA between AK Dept. of Pollution Control and Ecology and each Corps district regarding 401 certification on 404 permits.	ADPCE certifies activities involving 404 permits, and other federal permits and licenses such as hydroelectric power and flood control projects.	Yes. 401 regulations (Regulation No. 2, as Amended Regulation Establishing Water Quality Standards for Surface Waters of the State of Arkansas). Other criteria consist of location of project, hydrology (pre and post project), type of activity, pre and post water quality (numerical), and uses (pre and post).	Compliance with water quality standards for surface waters (Regulation No.2). Also, conditions must not impair a designated use and must protect an existing use.	Limited monitoring and enforcement of 401 conditions, unless a complaint is received.	Civil penalties can be issued but are very rare.
California	Yes. The Corps does not issue permits unless the state has certified or waived 401 certification.	Certifies mostly Section 404, FERC licenses, and some FAA.	Yes	No violations of the water quality standards.	The Corps monitors permit conditions.	Penalties are enforced by the Corps.
Colorado	Yes. The Corps does not issue permits without or before certification is granted.	Colorado Water Quality Control certifies federal 402 (federal facilities) and 404 permits. CWQC waive certification for FERC permits. The Corps application serves as the 401 application.	Yes	No violations of the water quality standards.	The Corps monitors 401 conditions for the 404 permits.	No penalties have been imposed because of violation of 401 certification conditions.
Connecticut	Yes. The Corps usually does not issue permits without or before certification is granted.	401 certification is waived by the Corps for all general and nationwide 404 activities.	No. Regulations are in the process of being developed.	No certification criteria. Projects must not violate water quality standards. DEP occasionally uses stream-impact models on large projects such as dredging, and runoff generating projects.	DEP monitors 401 certification conditions for the 404 permits.	No information
Delaware	No information	No information	No information	No information	No information	No information
Florida	Yes. The Corps usually does not issue permits without or before certification is granted, but it does occur infrequently.	DER certifies all direct federal activities.	Yes. Regulations (17-312, F.A.C.)	Assurance must be provided that state water quality standards will not be violated. As for outstanding waters, ambient water quality will not be degraded. The Corps permits do not always reflect all certification conditions requested by the state.	DER monitors and enforces 401 conditions with state permit.	Penalties vary.

Table 4 401 Certification Activities

State	State 401 Program	Activities Certified By 401	401 Regulations	Certification Criteria	Monitoring and Enforcement	Penalties
Georgia	No	No information	No information	No information	No information	No information
Hawaii	Yes	HDH certifies 404, 402, Section 9, MPRSA (102 and 103), and Federal Power Act (23 [b]).	Yes. (Section 11-54-09.1)	Water quality considerations	No information	No information
Idaho	Yes. Covers all surface water of the state. The Corps does not issue permits without or before certification is granted.	DHW certifies 404, NPDES, FERC, and some Coast Guard permits.	No	Criteria for 401 certification consist of complying with water quality standards, wastewater treatment requirements and special resource waters. All construction shall be conducted during low flow, and all areas disturbed by construction shall be stabilized with physical and/or vegetation methods to ensure erosion protection.	The Corps monitors and enforces 401 conditions for the 404 permits.	Penalties that could be imposed are fines, mitigation, and certification revocation. To date no substantial penalties have been imposed.
Illinois	Yes. The Corps does not issue permits without or before certification is granted.	Dredge and fill activities constitute the major portion of 401 actions. FERC licenses are an important but smaller portion of 401 actions. The nature of certification conditions varies from case to case.	Yes. Regulations (35 Illinois Adm. Code, Chapter II, Part 395).	Must meet all applicable water quality standards and other environmental rules and statutes under which the IEPA operates.	The Corps and IEPA have monitored the 401 conditions for the 404 permits. Some specific water quality monitoring and reporting is done by the applicant directly to the IEPA.	To date no substantial penalties have been imposed.
Indiana	Yes. The Corps will not issue permits without or before certification is granted.	The state (IDEM) does not certify projects that the Corps requires a 404 permit. IDEM either denies or waives 401 certifications. The 401 waivers are with conditions (mitigation).	No	Must not violate state water quality standards.	The state and the Corps monitor 401 conditions for 404 permits as time and resources allow. The enforcement is primarily the responsibility of the Corps.	Primary responsibility of the Corps.

Table 4 401 Certification Activities

State	State 401 Program	Activities Certified By 401	401 Regulations	Certification Criteria	Monitoring and Enforcement	Penalties
Iowa	Yes. The Corps does not normally issue permits without or before certification is granted. 401 certification is issued by the water quality planning section after receiving comments from USFWS.	Certify 404 permits.	No	Must not violate state water quality standards. No numerical criteria for mitigation. Typical conditions of 401 certification include area of mitigation, type of bank protection or runoff control, material used for bank protection, size of rock, and rebar cut at face.	The Corps normally monitors 401 conditions for 404 permits but DNR wildlife/fisheries staff will occasionally monitor 401 conditions.	No information
Kansas	Yes. The Corps does not issue permits without or before certification is granted.	DHE certifies all 404 permits.	Yes. Regulations are within the state's water quality standards.	See information in file	KDHE conducts spot checks (monitoring).	No penalties have been imposed.
Kentucky	Yes. The Corps does not issue permits without or before certification is granted.	KDOW certifies 404 permits, FERC licenses, and some Section 10 activities but the Corps refuses to recognize 401 for Section 10.	No. Regulations are in the process of being developed.	Applies applicable water quality standards to wetlands. Includes wetland mitigation and stream restoration as 401 certification condition. Also requires alternative analysis for wetlands and stream channelization.	No compliance enforcement by the Corps or state for 401 conditions for the 404 permits.	There have been no penalties for 401 violations.
Louisiana	Yes. The Corps does not issue permits without or before certification is granted.	DEQ certifies all 404 permits.	Yes	Must not violate state water quality standards.	The Corps enforces the 401 conditions for the 404 permits.	No information
Maine	No information	No information	No information	No information	No information	No information

Table 4 401 Certification Activities

State	State 401 Program	Activities Certified By 401	401 Regulations	Certification Criteria	Monitoring and Enforcement	Penalties
Maryland	Yes. Individual 404 permits are not issued until 401 certification is granted. The Corps determines if nationwide permits are acceptable provided the applicant obtained a 401 certification.	MDE certifies all 404 permits including those authorized under nationwide (7, 12, 13, 14, 17, 21, and 26); dredging projects to maintain navigation channels in the Chesapeake Bay region; all FERC licenses and all Coast Guard bridge projects in the Chesapeake Bay region.	Yes. (COMAR 26.08.02.10A et seq.).	Application content requirements (COMAR 26.08.02.10B). Projects are reviewed for impacts to water quality. Standards (COMAR 26.08.02.01 through 26.08.02.08) that apply antidegradation policy have provisions for general certifications i.e. BMPs for certain activities. Public participation required (COMAR 26.08.02.10). Wetland mitigation sequencing and alternatives analysis required as a condition of 401 certification (Draft Section 401 Water Quality Certification Mitigation Assessment Guidelines). Water quality standards apply to wetlands since wetlands are included in the definition of "waters of the state."	MDE can enforce as can the Corps, but not done on a routine basis. MDE issues "water quality determination" for 401 wetland compliance action.	Penalties include stop-work orders, restoration orders, fines in accordance with the provisions of the Environment Article, suspension, revocation, or denial of 401 water quality certification.

Table 4 401 Certification Activities

State	State 401 Program	Activities Certified By 401	401 Regulations	Certification Criteria	Monitoring and Enforcement	Penalties
Massachusetts	Yes. The Corps does not issue permits without or before certification is granted.	Certify 404 permits, FERC licenses, NPDES permits, and Coast Guard permits (bridges). A project is subject to DWPC 401 certification review for dredge or fill activities. Wetlands for 401 certification purposes uses federal delineation; 100' buffer zone not subject to 401 certification. Also review to condition the certification to provide suitable stormwater runoff management. The attempt is to prevent stormwater impoundments in wetlands.	Yes. Certification rules for dredge and fill (314 CMR 9.00) - these rules contain an application for dredging only. A second application for wetlands filling is in use, but does not contain formal rules.	Wetlands destruction is considered a significant degradation for aquatic and wildlife designated use, and therefore violates antidegradation policy. Criteria include maintenance and attainment of applicable water quality standards including maintenance of designated uses, minimization of damage to environment and compliance with other applicable state laws. Typical conditions for 401 certification are erosion control, work during low flow period, replication of lost wetland, avoidance of sensitive fish breeding/migrating periods (dredging projects), and use or nonuse of a specific construction method. Replacement of wetlands (mitigation) must meet performance standards of wetland protection regulations [310 CMR 10.55(4)(b)].	The Corps has the responsibility to enforce 401 conditions. State has no 401 certification enforcement staff.	Have imposed a few administrative penalties. No significant degradation is allowed for water quality certification. If alternatives are available to avoid the impact, state issues an "intent - to - deny" letter asking for changes in the projects. If project not changed, it is denied.
Michigan	Yes	MDNR certifies 404 permits, Section 10, and FERC licenses.	No	Must not violate water quality standards.	No information	No information
Minnesota	Yes. The Corps does not issue permits without or before certification is granted.	MPC certifies 404 permits, FERC licenses, and Coast Guard permits	Yes. MN Rule 7050.	Must not violate state water quality standards and the Clean Water Act. Must comply with antidegradation if applicable.	The Corps is responsible for monitoring and enforcing 401 conditions for the 404 permit.	No information

Table 4 401 Certification Activities

State	State 401 Program	Activities Certified By 401	401 Regulations	Certification Criteria	Monitoring and Enforcement	Penalties
Mississippi	Yes. The Corps does not issue permits without or before certification is granted.	No information	No information .	No information	The Corps has the responsibility for monitoring and enforcement, but monitoring is minimal by the Corps. MDEQ will advise the Corps of noncompliance.	Penalties are imposed by the Corps. MDEQ will withdraw certification if not in compliance.
Missouri	Yes. The Corps does not usually issue permit without or before certification is granted.	MDNR certifies 404 permits and on occasion NPDES permits.	Yes. (10 CSR 20-6.060).	Must not violate state water quality standards as specified in the water quality regulation 10 CSR 20-7.031. Water quality standards for certification consist of toxic pollutant criteria, narrative "free from" relating to animal and aquatic life.	MDNR monitors and enforces 401 conditions for the 404 permits.	Penalties that can be imposed range from fines to mitigation.
Montana	Yes. The Corps does not issue permit without or before certification is granted.	DHES certifies all individual 404 permits and some other activities requiring federal permit or licenses.	No. Rules are in the process of being developed (anticipated completion is 1991).	Must not violate (long-term compliance) state water quality standards. Typical conditions for 401 certification are erosion control, use of alternative materials, and requiring additional monitoring.	WQB/DHES monitors and enforces 401 conditions for 404 permits.	Civil penalties can be imposed for violation of the state water quality standards. Maximum fines up to $10,000 per day.

Table 4 401 Certification Activities

State	State 401 Program	Activities Certified By 401	401 Regulations	Certification Criteria	Monitoring and Enforcement	Penalties
Nebraska	Yes. The Corps has ability to assume waivers after a period of inaction (minimum of 60 days) by the state.	NDEC certifies primarily 404 permits, plus FERC licenses, Coast Guard permits and USDA permits.	Yes. Title 120 - Procedures Pursuant to Section 401 of the Clean Water Act.	Yes. Title 117 - Nebraska Surface Water Quality Standards. Water quality standards for certification are narrative biological criteria, aesthetics and public health criteria and antidegradation clause. Antidegradation is used as the final check for certification - beneficial uses shall be maintained. Typical conditions for 401 are erosion control, replacement of destroyed aquatic habitat, wetlands mitigation, and design specifications or specific types of projects such as waterways, dugouts pivot crossings.	The Corps is responsible for monitoring and enforcement.	The Corps is responsible for enforcing penalties.
Nevada	Yes. The Corps has ability to assume waivers after a period of no response (within 30 days after the public comment due date) by the state.	NDEP certifies 404 permits.	No	Must not violate state water quality standards.	The Corps has the responsibility of monitoring and enforcing of 401 conditions for the 404 permits.	Penalties vary.
New Hampshire	Yes. The Corps does not issue permit without or before certification is granted.	NHDES certifies primarily 404 permits, and FERC licenses.	No	Must not violate state water quality standards. All underlying state permits must be obtained.	The Corps has the responsibility of monitoring and enforcing of 401 conditions for the 404 permits.	State agricultural office is responsible for enforcing penalties.
New Jersey	No information	No information	No information	No information	No information	No information
New Mexico	Yes. The Corps does not issue permit without or before certification is granted.	EID certifies 404 and 402 permits.	No	Applicable water quality standards are used for certification. There are no typical conditions for 401 certification, just on a case by case basis.	The Corps has the responsibility of monitoring and enforcing of 401 conditions for the 404 permits.	No information

Table 4 401 Certification Activities

State	State 401 Program	Activities Certified By 401	401 Regulations	Certification Criteria	Monitoring and Enforcement	Penalties
New York	Yes. The Corps does not issue permits without or before certification is granted.	NYDEC certifies all activities that require federal permit or licenses.	Yes (Part 608).	Must not violate state water quality standards, plus judgement. Typical conditions for 401 certification are general best management practices.	DEC and/or federal agencies monitor and enforce 401 conditions for the 404 permits.	No information
North Carolina	Yes. The Corps does not issue permits without or before certification is granted.	DEHNR certifies 404 and NPDES permits.	Yes. Procedural rules only.	Must not violate state quality standards and meet 404 (b)(1) criteria guidelines. Water quality standards for certification are turbidity, dissolved oxygen, heavy metals (occasionally), and chloroform. Typical condition for 401 is turbidity for projects involving dredging and filling.	The Corps has the responsibility for monitoring and enforcement.	No penalties have been imposed according to the survey respondent.
North Dakota	Yes. The Corps does assume waivers for some nationwide permits.	DEH certifies all 404 permits.	No	Must not violate state water quality standards.	The Corps has the responsibility for monitoring and enforcement.	Penalties that can be imposed are revocation of permit, restoration, and/or fines.
Ohio	Yes. The Corps does occasionally assume waivers for permits.	OEPA certifies 404 and FERC permits.	Yes	Must not violate state water quality standards. Antidegradation policy - existing instream water uses must be maintained to protect existing designated uses. Water quality cannot exceed levels to support propagation of fish and shellfish, wildlife, and recreation.	The Corps has the responsibility of monitoring and enforcement.	Criminal and civil penalties can be imposed. Maximum civil penalty is $25,000 per day per violation. Maximum criminal penalty is $100,000 per day per violation, plus 6 years in jail.
Oklahoma	Yes. The Corps does not issue permits without or before certification is granted.	WRB certifies all dredge and fill activities except those above the headwaters (nationwide permits).	Yes	Must not violate state water quality standards and antidegradation policy. Typical conditions for 401 are prevention of turbidity, avoidance or minimization of habitat alteration, and replacement mitigation.	The Corps and the state monitors and enforces 401 conditions for the 404 permits.	Penalties that can be imposed are revocation of permit, and removal of materials or structures.

Table 4 401 Certification Activities

State	State 401 Program	Activities Certified By 401	401 Regulations	Certification Criteria	Monitoring and Enforcement	Penalties
Oregon	Yes. The Corps does issue permits without or before certification is granted. The staffing for 401 (0.5 FTE) is inadequate for the job.	Certifies all federal permits or licenses.	Yes	No information	State enforces state laws.	No information
Pennsylvania	Yes	All activities require 401 certification from the state.	Yes, standards are in Chapter 16 (toxics) and 93.	Must not violate water quality standards.	The Corps and state monitor and enforce 401 conditions in Section 404.	State program of the Clean Streams Law assesses strict penalties, §602, 605 (civil) up to $10,000 per day per offense and up to 90 days imprisonment. Criminal charges up to $25,000 per day per offense and up to 2 years imprisonment.
Rhode Island	Yes. The Corps assumes waivers for some nationwide permits. Others require certification prior to approval.	State certifies NPDES, coastal and freshwater wetlands, FERC licenses, and 404.	Yes	Must not violate water quality standards and must comply with antidegradation policy.	The state monitors conditional approvals.	Civil and criminal penalties up to $25,000 per day.
South Carolina	Yes. The Corps does not issue permits without or before certification is granted.	SCDHEC certifies 404 permits, Section 10 if results in discharge, FERC licenses and Coast Guard bridge permits.	Yes. State Regulation - 61-101.	Must not violate state water quality standards. See regulations 61-101, section D, E, and F. Typical conditions for 401 are reserved right to impose additional conditions, use appropriate BMPs to minimize erosion and sedimentation, provide appropriate stormwater handling and treatment for upland, and provide mitigation for unavoidable wetlands losses.	No formal monitoring and enforcement procedures by the state. The state belief is that once 401 certification process becomes part of the federal permit it must be enforced by the federal permitting agency.	No penalties by the state.
South Dakota	No information	No information	No information	No information	No information	No information

Table 4 401 Certification Activities

State	State 401 Program	Activities Certified By 401	401 Regulations	Certification Criteria	Monitoring and Enforcement	Penalties
Tennessee	Yes. The Corps can assume waivers for 401 if the state does not issue certification notice within 60 days of the public notice. The Corps can issue emergency permits without 401 certification.	DOC certifies 404 permits, 26A from the TVA, and the FERC licenses.	Yes	Must not violate state water quality standards. Typical conditions for 401 are best management practices, erosion control, and provision of mitigation.	DOC monitors and enforces 401 conditions for the 404 permit.	Penalties that can be imposed are revocation of permit and/or civil penalties.
Texas	Yes. The Corps does not issue permits without or before certification is granted.	TWC certifies 404 permits, NPDES permits and Coast Guard permits.	Yes. Title 31 - Texas Administrative Code, Chapter 279.	Must not violate state water quality standards. General water quality criteria apply statewide to all other waters and include the agency's antidegradation policy.	The Corps is primarily responsible for monitoring and enforcement with limited monitoring by the state on a case-by-case basis.	Penalties (up to $10,000 per day) can be imposed.
Utah	No information	No information	No information	No information	No information	No information
Vermont	No information	No information	No information	No information	No information	No information
Virginia	No information	No information	No information	No information	No information	No information
Washington	Yes. The Corps does not issue permits without or before certification is granted.	DOE certifies 404 permits, FERC licenses, NPDES permits, and FAA approvals.	Yes. Public notice only (173-225 WAC).	Must not violate aquatic protection laws and rules. (See 173-201 WAC)	The Corps has primary responsibility of 401 conditions for the 404 permits, WDOE and Fisheries also monitor and enforce 401 conditions.	No information
West Virginia	Yes	Certifies 404 permits and FERC licenses.	Yes	No information	WVDNR enforces standards and 401 conditions on a limited basis.	No information
Wisconsin	Yes. The Corps does not issue permits without or before certification is granted.	Certifies 404 permits, FERC, and new construction by federal agency, typically the Corps.	Yes. Administrative code (NR 299).	For wetlands, criteria per NR 103. For other waters, existing water quality standards. Have used D.O. mixing zoning model to deny water quality certification for dredged material disposal site.	The Corps monitors and enforces 401 conditions for 404 permits.	The state can impose state penalties if separate state authority exists.

Table 4 401 Certification Activities

T 4-12

State	State 401 Program	Activities Certified By 401	401 Regulations	Certification Criteria	Monitoring and Enforcement	Penalties
Wyoming	Yes. The Corps does not issue permits without or before certification is granted.	DEQ certifies 404 permits and FERC licenses.	No	No certification criteria. Professional judgement is used to determine if proposed project will violate the state water quality standards. Antidegradation is generally applied to the discharge of pollutants to an existing wetlands or waterbody. For streams and rivers it is used to prevent significant degradation of the beneficial uses of the water.	The Corps has the responsibility of monitoring and enforcement.	No penalties have been imposed, according to the survey respondent.

Table 5 Measurement of Implementation of 404, 401, and State Wetland Program by Staff Numbers and Budget

T 5-1

State	Year	Number of 401s	Number of 404 Permits				401 Staffing	Wetland Staffing	401 Funding	Wetlands Funding	Meeting Goals
			Permit Applied	Permit Issued	Conditional Permits	Permits Denied					
Alabama	1990	—	—	—	—	—	Clerical 2		No information		No response[1]
	1989	—	—	—	—	—	Admin. 2				No response[2]
	1988	—	—	—	—	—	Field 2				No response[3]
	1987	—	—	—	—	—					Yes[4]
	1986	—	—	—	—	—					
Alaska	1990	490	500	—	490	≈10	Clerical 1	Clerical 1	1991 ≈ $400,000	No information	No[1]
	1989	350	350	—	includes	—	Admin. 0	Admin. 0			No[2]
	1988	—	—	—	permits	—	Field 3	Field 3			Yes[3]
	1987	—	—	—	that	—					Yes[4]
	1986	—	—	—	were issued	—					
Arizona	1990	29	—	—	29	—	Clerical 0.1	N/A	1991 $44,000 (technical staff only)	N/A	No response[1]
	1989	62	—	—	62	—	Admin. 0.3				No response[2]
							Field 0.1				No. The Corps use of OHW is inadequate to protect for chemical, physical, and biological integrity[3]
							Tech. 0.8				No. Need better water quality standards and more staff[4]
Arkansas	1990	243	—	—	—	—	Clerical 0		No information		No[1]
	1989	102	—	—	—	—	Admin. 1				No[2]
	1988	88	—	—	—	—	Field 0				No[3]
	1987	75	—	—	—	—					No[4]
	1986	107	—	—	—	—					
California	1990 through 1986	Avg. 50	—	—	—	—	No staff specifically for 401 certification. Estimate 1.6 used for certification by SWRCB and RWQCB.	No staff specifically for wetlands.	None specifically budgeted.	None specifically budgeted. An EPA grant for $128,000 for development of wetland standards will be budgeted in fiscal year 1991-1992.	No specific goals have been articulated for 401 or wetlands activities.

Table 5 Implementation

State	Year	Number of 401s	Number of 404 Permits: Permit Applied	Permit Issued	Conditional Permits	Permits Denied	401 Staffing	Wetland Staffing	401 Funding	Wetlands Funding	Meeting Goals
Colorado	1990 through 1986	75	80	75	75	5	Clerical 0 Admin. 1 Field 1		1991 = $80,000 1990 = $80,000 1989 = $80,000 1988 = $80,000 1987 = $80,000 1986 = $80,000		Not applicable[1] Not applicable[2] Yes[3] Yes[4]
Connecticut	1990	30	—	—	—	—	Clerical .25 Admin. .50 Field .50	Clerical 2 Admin. 3 Field 12	1991 $25,000 1986 $0	1991 $500,000 1986 $200,000	Yes[1] No response[2] No response[3] No[4]
	1989	20	—	—	—	—					
	1988	15	—	—	—	—					
	1987	9	—	—	—	—					
	1986	6	—	—	—	—					
Delaware	No info.	—	—	—	—	—	No info. —	No info. —	No information	No information	No information
Florida	1990 through 1986	Avg. 4000	Avg. 6000	Avg. 2000	N/A	Avg. 200		Clerical 24 Admin. 6 Field 108		No information	No response[1] No response[2] No response[3] No response[4]
Georgia	No info.	—	—	—	—	—	No info. —	No info. —	No information	No information	No information
Hawaii	No info.	—	—	—	—	—	No info. —	No info. —	No information	90-91 $4,230,444 89-90 $4,192,000 88-89 $4,211,598	No response[1] No response[2] No response[3] No response[4]
Idaho	1990	122	—	380[5]	285	9	Clerical 0 Admin. 0 Field 1		No information	No information	Yes[1] Yes[2] No[3] No[4]
	1989	61	—	360[5]	—	—					
	1988	83	—	—	—	—					
	1987	116	—	—	—	—					
Illinois	1990	—	—	—	—	—	Clerical 1 Admin. 1 Field 2		No information	No information	No response[1] No response[2] No response[3] Yes[4]
	1989	412	909	—	—	—					
	1988	286	939	—	—	—					
	1987	247	722	—	—	—					
	1986	179	734	—	—	—					

Table 5 Implementation

State	Year	Number of 401s	Number of 404 Permits				401 Staffing	Wetland Staffing	401 Funding	Wetlands Funding	Meeting Goals
			Permit Applied	Permit Issued	Conditional Permits	Permits Denied					
Indiana	1990	147	—	—	—	—	Clerical 1		No information	No information	No response[1]
	1989	99	—	—	—	—	Admin. 2				No response[2]
	1988	51	—	—	—	—	Field 3				No response[3]
	1987	32	—	—	—	—					Yes[4]
	1986	47	—	—	—	—					
Iowa	1990	≈200	≈1500	≈500	≈100	≈10	Clerical 0		No information	No information	No[1]
	1989	≈200	≈1500	≈500	≈100	≈10	Admin. .5				No[2]
	1988	≈200	≈1500	≈500	≈100	≈10	Field .1				No[3]
	1987	≈200	≈1500	≈500	≈100	≈10					No[4]
	1986	≈200	≈1500	≈500	≈100	≈10					
Kansas	No info.	—	—	—	—	—	Clerical .25		No information	No information	No response[1]
							Admin. .25				No response[2]
							Field .25				Yes[3]
											Yes[4]
Kentucky	1990 through 1986	Avg. 200[6]	Avg. 140	Avg. 140	Avg. 100	0	Clerical .25 Admin. .50 Field 1.25		1991 $70,000 1990 $35,000 1989 $35,000 1988 $35,000 1987 $35,000	No information	No[1] No[2] No[3] No[4]
Louisiana	1990	1400	—	—	—	—	Clerical 1 Admin. 0 Field 2		No information	No information	No response[1] No response[2] No response[3] No response[4]
Maine	No info.	—	—	—	—	—	Total 9			No information	No information
Maryland	1990	774	1330	1144	1144	41	Clerical 1	Tidal Wetlands	401 Program	Tidal Wetlands	Yes[1]
	1989	979	1545	1125	1125	6	Admin. 1	Clerical 2	1991 $180,000	1991 $611,883	No response[2]
	1988	793	—	1010	1010	—	Field 4	Admin. 1	1990 $175,000	1990 $468,002	No response[3]
	1987	568	—	1148	1148	—		Field 6	1989 $160,000	1989 $446,635	Yes[4]
	1986	262	—	1203	1203	—			1988 $150,000	1988 $575,930	
								Nontidal Wetlands	1987 $90,000	1987 $709,265	
								Clerical 4	1986 $60,000	1986 $483,426	
								Admin. 1			
								Field 25		Nontidal Wetlands	
										1991 $1,580,238	

State	Year	Number of 401s	Number of 404 Permits				401 Staffing		Wetland Staffing		401 Funding	Wetlands Funding	Meeting Goals
			Permit Applied	Permit Issued	Conditional Permits	Permits Denied							
Massachusetts	1990	≈500	—	—	—	—	Clerical	1			No information	No information	No response[1]
	1989	≈500	—	—	—	—	Admin.	1					No response[2]
	1988	≈450	—	—	—	—	Field	1					No response[3]
	1987	≈331	—	—	—	—							Yes[4]
	1986	≈182	—	—	—	—							
Michigan	1990	No info.	N/A.	—	No info.	353	No info.	—	Clerical	—		1989 $2,800,000	Yes[1]
	1989		3,074	—		—			Admin.	23[7]			No[2]
	1988		3,100	—		—			Field	33			Yes[3]
	1987		2,818	—		—							Yes[4]
	1986		2,985	—		—							
Minnesota	1990	125	—	—	—	—	Clerical	P/T			No information	No information	No response[1]
							Admin.	1					No response[2]
							Field	0					No response[3]
													Yes[4]
Mississippi	1990	110	167	—	75	2	Clerical	0			1991 ≈$57,000	No information	No response[1]
	1989	64	129	—	22	1	Admin.	1			1990 ≈$57,000		No response[2]
	1988	59	111	—	21	3	Field	2			1989 ≈$50,000		No response[3]
	1987	61	131	—	11	3					1988 ≈$40,000		No[4]
	1986	45	115	—	31	5					1987 ≈$30,000		
											1986 ≈$30,000		
Missouri	1990	228	—	—	—	—	Clerical	.25			1991 <$20,000	No information	Yes[1]
	1989	≈225	—	—	—	—	Admin.	.15			1990 <$20,000		Yes[2]
	1988	≈225	—	—	—	—	Field	.05			1989 $20,000		Yes[3]
	1987	≈220	—	—	—	—					1988 $50,000		Yes[4]
	1986	≈200	—	—	—	—							
Montana	1990	60	275	275	10	5	Clerical	.2	Clerical	0	1991 $7,000	1991 ≈$100,000	No[1]
	1989	55	250	250	5	5	Admin.	.4	Admin.	.2	1990 $6,000	1990 ≈$100,000	No[2]
	1988	50	225	225	5	5	Field	.1	Field	.1	1989 $6,000	1989 ≈$20,000	No[3]
	1987	—	—	—	–	–							Yes[4]
	1986	—	—	—	–	–							
Nebraska	1990	145	≈590	—	—	—	Clerical	.10			Not readily available since money is funded through general water division funds and consolidated grants.	No information	No response[1]
	1989	184	565	—	—	—	Admin.	.30					No response[2]
	1988	182	571	—	—	—	Field	1					No response[3]
	1987	117	317	—	—	—							No[4]
	1986	106	200	—	—	—							

Table 5 Implementation

State	Year	Number of 401s	Number of 404 Permits				401 Staffing		Wetland Staffing	401 Funding	Wetlands Funding	Meeting Goals
			Permit Applied	Permit Issued	Conditional Permits	Permits Denied						
Nevada	1990	10	15	10	—	3	Clerical Admin. Field	0 .75 .25		No information	No information	No[1] No[2] Yes[3] Yes[4]
New Hampshire	No info.	—	—	—	—	—	No info.	—	Wetlands Bureau Clerical 6 Admin. 1 Field 8 plus 5 seasonal 11 Board members		1991 $500,000[8] 1990 $500,000	Yes[1] No response[2] No response[3] No response[4]
New Jersey	No info.	—	—	—	—	—	—	—	No info. —		No information	No information
New Mexico	1990 through 1986	Avg. 20	—	—	—	—	Clerical Admin. Field	0 0 1		No information	No information	No response[1] No response[2] Yes/No[3] Yes/No[4]
New York	1990 through 1986	±1700 —	±2400[9] ±1000[10]	— —	— —	— —	No info.	—		No information	No information	Yes[1] No response[2] No response[3] Yes[4]
North Carolina	1990 1989 1988 1987 1986	120 118 110 — —	— — — — —	— — — — —	— — — — —	— — — — —	Clerical Admin. Field	.50 1 4		No specific budget for 401	No information	Yes[1] - coastal wetlands only. No response[2] No[3] No[4]
North Dakota	1990 1989 1988 1987 1986	65 60 60 45 45	70 65 65 50 50	— — — — —	15 10 10 10 5	— — — — —	Clerical Admin. Field	0 1 0		1991 $10,000 1990 $10,000 1989 $10,000 1988 --- 1987 --- 1986 ---	No information	No response[1] No response[2] No response[3] No[4]
Ohio	1990 1989	200 200	— —	— —	— —	— —	Clerical Admin. Field	0 0 2		1991 2 work years 1990 2 work years 1998 1 work year 1988 1 work year 1987 1 work year 1986 1 work year	No information	No response[1] Yes[2] No response[3] Yes[4]

Table 5 Implementation

State	Year	Number of 401s	Number of 404 Permits				401 Staffing		Wetland Staffing		401 Funding	Wetlands Funding	Meeting Goals
			Permit Applied	Permit Issued	Conditional Permits	Permits Denied							
Oklahoma	1990	52	53	52	38	1	Clerical	1			Information not available	No information	Yes[1]
	1989	47	48	47	31	1	Admin.	1					Yes[2]
	1988	40	41	40	28	1	Field	2					Yes[3]
	1987	36	39	36	29	3							Yes[4]
	1986	35	37	35	25	2							
Oregon	No info.	—	—	—	—	—	Clerical	0	Clerical	2.5	No information	No information	Yes[1]
							Admin.	0	Admin.	1			No[2]
							Field	.5	Field	9			No response[3]
													No[4]
Pennsylvania	No info.	—	—	—	—	—	No info.	—	Clerical	2	No information	No information	Yes[1]
									Admin.	2			Yes[2]
									Field	4			No Response[3]
									Review	5			Yes[4]
Rhode Island	No info.	—	—	—	—	—	Clerical	.10	Freshwater Wetlands		Information not available	Information not available	moderate success
							Admin.	.10	Clerical	5			
							Field	.10	Admin.	3			
									Field	15			
South Carolina			# of 401's for 404		# of 401's for Sect.10		Clerical	.33			Information not available	No information	Not applicable[1]
	1990	164	111		53		Admin.	0					Not applicable[2]
	1989	130	85		45		Field	3					Yes[3]
	1988	180	121		59								Yes[4]
	1987	—	----		---								
	1986	—	----		---								
South Dakota	No info.	—	—	—	—	—	No info.	—				No information	No information
Tennessee	1990	75-100	150-200	75-100	75-100	10-20	Clerical	1	Clerical	1	1991 $450,000[11]	No information	No[1]
	1989	75-100	150-200	75-100	75-100	10-20	Admin.	2	Admin.	1	1990 $430,000[11]		No[2]
	1988	75-100	150-200	75-100	75-100	10-20	Field	9	Field	9			Yes[3]
	1987	75-100	150-200	75-100	75-100	10-20							Yes[4]
	1986	75-100	150-200	75-100	75-100	10-20							
Texas	1990	157	—	—	10	7	Clerical	1	Clerical	1	No information	No information	Yes[1]
	1989	155	—	—	8	3	Admin.	2	Admin.	2			No response[2]
	1988	239	—	—	7	1	Field	6	Field	6			No response[3]
	1987	279	—	—	7	1							Yes[4]
	1986	256	—	—	5	0							

Table 5 Implementation

T 5-7

State	Year	Number of 401s	Number of 404 Permits				401 Staffing	Wetland Staffing	401 Funding	Wetlands Funding	Meeting Goals
			Permit Applied	Permit Issued	Conditional Permits	Permits Denied					
Utah	No info.	—	—	—	—	—	No info. —		No information	No information	No information
Vermont	No info.	—	—	—	—	—	No info. —		No information	No information	No information
Virginia	No info.	—	—	—	—	—	No info. —		No information	No information	No information
Washington	No info.	—	—	—	—	—	Clerical 0 Admin. 1 Field 2	Clerical 0 Admin. 1 Field 3	No information	No information	No response[1] No response[2] No response[3] No response[4]
West Virginia	1990	166	170	—	—	—	Clerical 2 Admin. 1 Field 5+ All 8 have other responsibilities (wetlands, 404 ,and FERC).			1991 $170,000 1990 $170,000 1989 $170,000	Yes[1] Yes[2] Yes[3] Yes[4]
	1989	159	170	—	—	—					
	1988	167	170	—	—	—					
	1987	170	170	—	—	—					
	1986	170	170	—	—	—					
Wisconsin			General Permit	Nationwide Permit	Individual Permit	After Permit	No info. —	Clerical 1[13] Admin. 9[13] Field 21[13]		1990 $1,624,800	No response[1] No response[2] No response[3] No response[4]
	1990	No info.	—	—	—	—					
	1989		378	1982	234	34					
	1988		322	1989	259	34					
	1987		395	1765	233	32					

Table 5 Implementation

State	Year	Number of 401s	Number of 404 Permits				401 Staffing		Wetland Staffing	401 Funding	Wetlands Funding	Meeting Goals
			Permit Applied	Permit Issued	Conditional Permits	Permits Denied						
Wyoming	1990	40[12]	40[12]	30[12]	—	1[12]	Clerical	0		No information	No information	No response[1]
	1989	24[12]	25[12]	16[12]	—	1[12]	Admin.	.5				No response[2]
	1988	—	—	—	—	—	Field	0				No response[3]
	1987	—	—	—	—	—						No response[4]
	1986	—	—	—	—	—						

Footnotes - Meeting Goals

[1]Are state wetland and riparian programs meeting the stated goal?
[2]Are state non-regulatory programs meeting the stated goal?
[3]Is the federal 404 permitting program meeting the stated goal?
[4]Is the state 401 certification program meeting the stated goal?

General Footnotes

[5]Estimates for stream channel alteration permit.
[6]401 certification includes nationwide permits.
[7]Michigan's State Wetland/404 staff consist of 23 clerical and administrative personnel.
[8]DES Wetlands Bureau and New Hampshire Wetlands Boards only.
[9]404 permits.
[10]Streambed alteration permits.
[11]Figure includes wetlands budget.
[12]Numbers reflect only individual permits and represent approximately 30% of the total. The remainder are nationwide and general permits.
13Staffing for state program includes 401 and 404 personnel.

Table 6 Compilation of Non-Regulatory Programs

T 6-1

State	Executive Orders	Tax Incentives	Easements	Recognition Programs	Subsidies	Acquisition	Technical Assistance & Education	Voluntary BMPs
Alabama	No	No	No	No	No	No	No	No information
Alaska	No. Chief of Water Quality Mgt. proposed state wetland policy (3/1/90). State Wetlands Task Force in 1990 recommended actions on National Wetlands Policy. State Wetlands Policy under development.	Yes, local communities offer property tax incentives.	Yes	No	Yes	Yes. State Water Fowl Conservation Stamp Program and SCORPS.	Yes	Yes. Coastal mgt. program.
Arizona	Yes. Executive Order 89-16, Streams & Riparian Resources and Executive Order 91-6, Protection of Riparian Areas.	No	Yes. Has legislation allowing the state to accept voluntary easements for the purpose of protecting land for outdoor recreation; fish, wildlife or ecosystem needs or for other conservation purposes. AZ Game & Fish AGFD has an easement program.	Yes. Has the following programs: AZ Rivers Assessment Program by AZ State Parks (will develop an evaluation of AZ rivers and establish a database); AZ Natural Areas inventory by AZ State Parks; Verde River Corridor Study by AZ State Parks (facilitate a community led plan for the Verde River); AGFD's Heritage Program has a database of sensitive species and their habitat, many of which involve riparian areas.	No	Yes. AGFD has nongame checkoff on tax form. AZ State Parks (ASP) has state parks that were acquired to protect riparian areas. State Heritage Fund, passed by citizens initiative in 1990, provides money from lottery funds to AGFD and ASP to acquire and protect natural areas and protect habitat, and for environmental education.	Yes. Environmental Education Act establishes an interagency committee on environmental education (ARS 49-161). Committee facilitates and promotes environmental education in the state. Also Heritage Fund provides environmental education.	Yes. Arizona Water Quality Control Council Policy for construction and related activities in watercourses April 1977. Implemented in 401 certification and other project review programs.
Arkansas	No	Yes	Yes	No	Yes	No. State has considered land purchases, conservation easements, tax incentives on a case by case basis.	No	No information

State	Executive Orders	Tax Incentives	Easements	Recognition Programs	Subsidies	Acquisition	Technical Assistance & Education	Voluntary BMPs
California	No	No	No	Yes. SWRCB has a water quality assessment database which includes some wetlands. CDFG has a natural diversity database of sensitive species and their habitats, including wetland-related species.	No	No information	No information	No information
Colorado	No	No	No	Yes. State outstanding waters programs.	No	No	No	No. There are no BMPs for wetlands protection in the state.
Connecticut	No	Yes	No	Yes. State river management program. Will assess rivers and their management needs. Identify highly significant river corridors.	Yes	No	Yes	No information
Delaware	No information	No information	No information	No information	No information	No information	No information	No information
Florida	No	No	No	Yes. State outstanding waters program.	No	Yes. CARL - Conservation & Recreational Lands Program. SOR - Save Our Rivers Program (Water Mgt. District). SWIM - Surface Water Improvement Districts Management Program.	No	No information
Georgia	No	No	Yes. Conservation easements and setbacks and vegetative buffer zone requirements on some streams.	No	Yes	Yes. Purchase of lands with funds from hunting and fishing licenses.	No	Yes. Voluntary BMPs for agricultural and forestry practices.

Table 6 Non-Regulatory Programs

State	Executive Orders	Tax Incentives	Easements	Recognition Programs	Subsidies	Acquisition	Technical Assistance & Education	Voluntary BMPs
Hawaii	No	No	Easements and setbacks for wetlands can be established for some lands within designated conservation districts.	No	No	Trade or purchase of lands for wetland sanctuaries, usually for waterfowl or wildlife habitat.	No	No information
Idaho	No	No	No	Yes. Comprehensive State Water Plan Act of 1988 which allows for designation of rivers as natural or recreational. These designations can then exclude certain activities. Also, Idaho has outstanding resource waters.	Yes	Yes. Dept. of Parks and Recreation has acquisition program. Idaho Natural Heritage Program (non - game tax form checkoff). Idaho Fish and Game acquisition program (hunting license fees).	Yes	Yes. Agricultural activities.
Illinois	No	No	Yes	No	Yes	Yes	Yes	No information
Indiana	No	No	No	No	Yes	No	Yes	No
Iowa	No	Yes	Yes	Yes	Yes	Yes	Yes	No
Kansas	No	No	Yes. Riparian and Wetland Easement Program [K.S.A. 2-1915(b)] - not implemented yet by conservation districts.	No	No	No	Yes	No information
Kentucky	No. Did fund Kentucky State Natural Preserves Commission for 1986 Wetland Protection Strategies for Kentucky	No	Yes	Yes. Kentucky Rivers Assessment Program will evaluate rivers. KY Wild Rivers Program (Title 401, Chapter 4).	No	Yes. State Fish & Wildlife acquisition.	Yes. Water Watch Program encourages volunteers to assist in monitoring, education, etc. rivers and wetlands.	No information
Louisiana	No	No	No	No	No	No	No	No information

State	Executive Orders	Tax Incentives	Easements	Recognition Programs	Subsidies	Acquisition	Technical Assistance & Education	Voluntary BMPs
Maine	No	No	No	No	No	No	No	No information
Maryland	No. MD has "no net loss of wetlands" policy through Chesapeake Bay agreement. "No net loss of wetlands" is also part of statute (Nontidal Wetland protection Act).	No	Yes	No	Yes. Nontidal Wetland Compensation Fund may be used to create, restore or enhance wetlands. Funds come from fees in lieu of mitigation (COMAR 08.05.04).	Yes	Yes	MDA works with farmers and soil conservation districts to implement BMPs.
Massachusetts	No.	No	No	No	No	No	Yes	No information
Michigan	No	No	Yes	No	No	Yes	Yes	No information
Minnesota	Yes	No	Yes	Yes	Yes	Yes	Yes	No information
Mississippi	No	No	No	No	No	No	No	No information
Missouri	No	No	Yes	No	Yes	Yes	Yes	No information
Montana	No	No	No	No	Yes	Yes	Yes	BMPs through non-point source pollution control program.
Nebraska	No	Yes	One of the 26 natural resource districts (quasi-state agency) has initiated a conservation easement on a watershed basis. This district is looking at the surface and groundwater quality.	No	Yes	Yes. The USFWS, Ducks Unlimited and Neb. Game and Parks have initiated a plan for land acquisition called Rainwater Basin Joint Venture. Plan is in the planning stage. Other environmental groups (private and public) will probably become involved.	Yes	BMPs through non-point source program. State encourages BMPs through education and project incentives.
Nevada	No	No	No	No	No	No	No	Yes. When BMPs are used as guidelines.
New Hampshire	No	Yes. In the form of reduced property tax for acreages (ten acres or more) left in current use, such as farm, timber, and wetlands.	Yes	No	Yes. Only tax incentives.	Yes	Yes	There are forestry BMPs on erosion control but it is referenced in the wetlands rules.

Table 6 Non-Regulatory Programs

T 6-5

State	Executive Orders	Tax Incentives	Easements	Recognition Programs	Subsidies	Acquisition	Technical Assistance & Education	Voluntary BMPs
New Jersey	No information	No information	No information	No information	No information	No information	No information	No information
New Mexico	No	No	No	No	No	No	No	No information
New York	Yes	Yes	No	No	Yes	No	No	No information
North Carolina	No	Yes	No	No	Yes	No	No	No information
North Dakota	No	No	No	No	No	No	Yes	Voluntary BMPs for Section 319 non-point pollution program.
Ohio	Yes	No	Yes. Through state scenic river program.	No	No	Yes	Yes	No information
Oklahoma	No	No	No	No	Yes	No	Yes	No information
Oregon	No	Yes. Oregon Dept. of Fish and Wildlife administers a riparian tax incentive program.	Yes	No	Yes	No	Yes	No
Pennsylvania	No	Yes	Yes	No	Yes	No	Yes	DER encourages the industry (agriculture forestry, etc.) to establish voluntary BMP's.
Rhode Island	No	Yes. Rhode Island Farm, Forest and Open Act allows for reduction in taxes for privately owned wetlands.	Yes. Conservation easements and coastal zone right-of-way easements.	No	No	Limited	No	Yes
South Carolina	No	No	No	No	Yes, Heritage Trust	No	No	BMPs for forested wetlands established by Forestry Association . BMPs uses are voluntary.
South Dakota	No	No	No	No	No	No	No	No information
Tennessee	Yes	No	Yes	No, but is in the process of being developed.	Yes	Yes	Yes	No information

Table 6 Non-Regulatory Programs

State	Executive Orders	Tax Incentives	Easements	Recognition Programs	Subsidies	Acquisition	Technical Assistance & Education	Voluntary BMPs
Texas	No	No	No	No	No	No	No	No information
Utah	No information	No information	No information	No information	No information	No information	No information	No information
Vermont	No information	No information	No information	No information	No information	No information	No information	No information
Virginia	No information	No information	No information	No information	No information	No information	No information	No information
Washington	Yes	No	No	No	No	Yes	Yes	No information
West Virginia	No	No	No	No	No	Yes	Yes	Yes
Wisconsin	No	No	No	Yes, through Natural Areas program, NAWFP, and RAMSAR	Yes	Yes, through fisheries, wildlife, parks and forestry programs.	Yes	Yes. Implemented through the state non-point source management plan and various projects funded under Section 319 of the CWA.
Wyoming	Yes, but only in draft form. May not be completed because of the enactment of the Wyoming Wetland Act.	No	No	No	No	No	Yes	Yes. Implemented through the state non-point source management plan and various projects funded under Section 319 of the CWA.

Table 7 Education and Support

T 7-1

State	Type of Educational Promotion	Key Political Support	Constituency Monitoring and/or Comments	Public Understanding
Alabama	ADEM personnel speak to citizens groups, involved with conferences on wetlands regulations, and have participated in research on wetlands ("A Feasibility Study of Management of the Section 401 and 404 Program by the State of Alabama" and "Suggestions for Planting and Maintaining Wetlands in Coastal Alabama").	ADEM Director and Environmental Management Commission members conduct meetings with key political leaders to gain their support for wetlands protection.	Monitoring of wetlands has been conducted by the Audubon Society, Nature Conservancy, Wildlife Federation, and other local environmental groups. Audubon Society, Fowl River Protection Association and other local groups do review and comment on 401/404 applications.	Poor understanding of the 404 process and the acceptance of the permit process varies with project types.
Alaska	Yes. No information about what type of activities are involved in promotion of wetlands. Fragmented approach in promoting the non-regulatory programs. The community strongly supports these promotions.	Meetings with political leaders only when there is a problem. Meetings have occurred with Congressional delegates about the "no net loss" policy and the Corps/EPA mitigation MOA.	Monitoring of wetlands has been conducted by the Anchorage Waterways Council and local conservation groups. Sierra Club, Trustees for Alaska, and Audubon Society do review and comment on 401/404 applications.	Understanding of the 404 process ranges in sophistication.
Arizona	Yes. ADEQ focus is on water quality standards which are limited in the protection of wetlands and generally do not address protection of riparian areas. Non-regulatory programs are promoted by state agencies with brochures, seminars or any other means.	Meetings with political leaders are infrequent.	Public interest or citizens groups do not review or comment on the 401 applications. Do not known if constituency groups monitor wetlands.	Low understanding and acceptance of the 404 permit process.
Arkansas	No. The non-regulatory programs are not promoted by the state agencies with brochures, seminars or any other means. Occasionally the Corps promotes the 404 program.	Meetings with political leaders occur very rarely. Occasionally politicians are supportive of state and federal wetland programs.	Monitoring of wetlands has been conducted by the National Wildlife Federation and other conservation groups. The National Wildlife Federation and other conservation groups do review and comment on 401/404 applications.	Major conflicts between the 404 permit process and the agricultural community regarding the introduction of the federal delineation manual.
California	No educational promotion specifically focused on 401 or 404 programs.	New administration is developing policies on an array of environmental issues, including wetlands.	Public interest groups generally do not monitor wetlands or review 401/404 applications.	Development consultants generally understand program and environmental groups probably do not.
Colorado	Currently working with a group of state agency personnel trying to develop a state wetland policy. Colorado does not promote non-regulatory programs since they have not initiated any non-regulatory programs.	Not known	Monitoring of wetlands has been conducted by environmental groups. Public interest or citizens groups very rarely review or comment on 401/404 applications.	Poor understanding of the 404 process.
Connecticut	Yes. No information about what type of activities are involved in promotion of wetlands. The non-regulatory programs are not promoted by state agencies with brochures, seminars or any other means.	Frequent meetings do occur with key political leaders to gain their support toward wetlands protection. The state wetlands program is well supported by politicians and by the citizens.	Monitoring of wetlands has been conducted by the Connecticut Conservation Association, Connecticut Fund for the Environment, Sierra Club, Audubon Society, Ducks Unlimited, and Trout Unlimited. Public interest and/or citizen groups do occasionally review and comment on 401/404 applications.	Very limited understanding of the 404 process results in confusion and occasional violations.
Delaware	No information	No information	No information	No information

State	Type of Educational Promotion	Key Political Support	Constituency Monitoring and/or Comments	Public Understanding
Florida	Funds for wetlands research is provided through the coastal zone program. The non-regulatory programs are not promoted by state agencies with brochures, seminars or any other means.	Periodic meetings with key political leaders to discuss and seek political support for wetland programs.	Monitoring of wetlands has been conducted by the Sierra Club, Audubon Society, National Wildlife Federation, and other local groups. These groups also do review and comment on the 401/404 applications.	No information
Georgia	Non-regulatory programs are just beginning to be promoted but wetlands are very controversial at this time due to the change in the federal policies. As a result, most of the dialogue involves the federal program.	State programs have been supported by the political leadership, but the federal activities have been controversial.	Constituency groups do monitoring of the protection of wetlands. Public interest or citizens do review and comment of 404 applications.	No information
Hawaii	No information	No information	No information	No information
Idaho	DEQ provides funds to the Idaho Soil Conservation Commission to develop educational materials about riparian issues. These materials are distributed to the Soil Conservation Districts and the general public. The promotion of the non-regulatory programs by state agencies with brochures, seminars or any other means are being explored by DWR.	Occasional meetings are conducted with key political leaders throughout the legislative session to gain their support toward general water quality issues.	Monitoring of wetlands has been conducted by the Idaho Conservation League on a case by case basis. Public interest or citizens groups do occasionally review and comment on the 401/404 applications.	Fair understanding of the 404 process, but have a low acceptance of the process.
Illinois	No information about promotion and enhancement of wetlands/riparian protection. The IDOC Wetland Program is still in development and does not generally affect the public. Projects are privately financed.	No information	No information	Understanding varies between the regions.
Indiana	The state conducts presentations on the 401 process to interested parties such as environmental, agricultural, and development groups. State distributes a brochure on wetlands in general which explains the 401 certification process and the state laws. Non-regulatory program is promoted by state agencies with brochures, seminars, or any other means. The response by the community has been good.	Infrequent meetings are held with politicians to gain their support for wetlands protection. Key wetland legislation has failed to pass legislature in past several sessions.	Monitoring of wetlands has been conducted by environmental groups. Public interest or citizens groups do review and comment on the 401/404 applications.	Understanding varies but is improving.
Iowa	No	No information	Audubon Society and various local conservation groups do review and comment on the 404 application.	Poor understanding and acceptance of the 404 process.
Kansas	No	Meetings with key political leaders occur very rarely. Politicians are generally supportive of state and federal wetland programs.	No information on constituency groups that monitor for the protection of wetlands. Public interest or citizens groups do occasionally review and comment on 404 applications.	No information

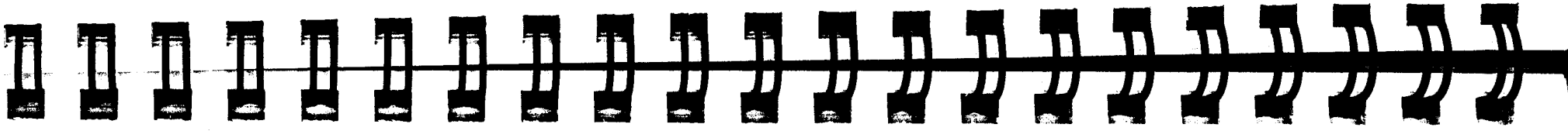

Table 7 Education and Support

T 7-3

State	Type of Educational Promotion	Key Political Support	Constituency Monitoring and/or Comments	Public Understanding
Kentucky	The state does promote the education and the research of wetland and riparian areas. The state does promote their Water Watch program (non-regulatory) with brochures and seminars. The community is very supportive of this program.	Meetings with key political leaders occur very rarely. Politicians are not supportive of state and federal wetland programs.	No monitoring being conducted by constituency groups for the protection of wetlands. Kentucky Resources Council does review and comment on 404 applications. No public interest or citizen groups review or comment on 401 applications.	Poor understanding and acceptance of the 404 process.
Louisiana	No	No	No	Fair understanding and acceptance of the 404 process.
Maine	State works with the Audubon Society and the Natural Resource Council of Maine in the promotion and enhancement of wetlands and riparian protection.	Informal meetings are conducted with key political leaders to gain their support on wetlands protection.	No information	No information
Maryland	Tidal Wetlands Division does promote and enhance wetlands protection. No information about what type of activities are involved in the promotion of wetlands. Nontidal Wetlands Division conducts training and education workshops 5 to 9 times a year, plus conducts numerous presentations of governmental and nongovernmental groups. The non-regulatory programs are promoted by the state agencies with brochures, seminars or any other means.	Tidal wetlands personnel meet key political leaders as needed to gain support for new wetland programs and/or changes to existing laws. Nontidal wetlands personnel meet key political leaders as needed to gain support and/or changes to existing laws. Politicians are supportive of state and federal wetlands programs.	Monitoring of wetlands has been conducted by Chesapeake Bay Foundation and other local environmental groups. Public interest and citizens groups such as the Audubon Society, Issak Walton League, and Chesapeake Bay Foundation do review and comment on 401/404 applications.	Tidal and Nontidal Wetlands Divisions feel there is a low understanding and acceptance of the 404 process. MDE feels there is a high understanding of the 404 process due to the number of seminars given over the last 5 years by the Corps, MDE, and DNR staff. MDE also feels there is a good acceptance of the 404 process in the metropolitan areas as compared to the rural areas where it is less accepted.
Massachusetts	No information	No information	No information on if constituency groups monitor the protection of wetlands. No information if public interest or citizen groups review or comment on 404 applications. No public interest or citizen groups review or comment on 401 applications because there are no public notices.	The public is aware of the 404 process.
Michigan	Yes. No information about what type of activities are involved in the promotion of wetlands. The non-regulatory programs are promoted with brochures and seminars.	No information	Monitoring for the protection of wetlands has been conducted by local conservation groups. Public interest groups do review and comment on 401/404 applications.	No information
Minnesota	Yes. No information about what type of activities are involved in the promotion of wetlands. The non-regulatory programs are promoted but no information about how they are promoted.	Annual meetings are conducted with key political leaders to gain their support toward wetlands. Mixed support from politicians for state and federal wetlands programs.	Monitoring for the protection of wetlands has been conducted by local environmental groups. Public interest or citizens groups do review and comment on 401/404 applications.	No information

Table 7 Education and Support

State	Type of Educational Promotion	Key Political Support	Constituency Monitoring and/or Comments	Public Understanding
Mississippi	No information	No information	No monitoring for the protection of wetlands has been conducted by constituency groups. The Sierra Club and Wildlife Federation do review and comment on the 404 application. No public interest or citizen groups review or comment on 401 applications.	Knowledge of the 404 program is very high due to the introduction of the "no net loss" policy and the new delineation methodology. Understanding and acceptance of the 404 process is very low.
Missouri	No information	No information	No information	Generally accepted
Montana	Yes. Significant effort is being undertaken by key agencies for wetlands and riparian area education. The non-regulatory programs are promoted.	Infrequent meetings are conducted with key political leaders to gain their support toward wetlands. Politicians are generally unfamiliar with state and/or federal wetland programs. Permitting programs such as the Montana Water Quality Act and the Natural Streambed and Land Preservation Act have increased the public's awareness and understanding of wetland and riparian protection programs.	Not sure if constituency groups conduct monitoring for the protection of wetlands. Public interest groups such as Clark Fork Coalition do review and comment on the 404 applications. No public interest or citizens groups review or comment on the 401 applications.	Fair understanding and acceptance of the 404 process.
Nebraska	Corps/EPA Section 230.80 project involved state agencies, USFWS, USDA, and Natural Resources Districts.	No information	Monitoring has been conducted by Nebraska Preserve Our Water Resources Association, Concerned Citizens of Nebraska, and Audubon Society. Public interest or citizens groups do not review or comment on 401 applications.	Public knows that the 404 program exists, but does not fully understand the process.
Nevada	No	No	Monitoring of wetlands has been conducted by the Sierra Club and Citizen Alert. Public interest groups (Sierra Club) and public citizens groups do review and comment on the 404 applications. No public interest or citizens groups review or comment on the 401 applications.	Fair understanding and acceptance of the 404 process.
New Hampshire	Yes. No information about what type of activities are involved in the promotion of wetlands. The non-regulatory programs are promoted depending on the funding received.	Frequent meetings are conducted with key political leaders to gain their support for wetland protection. New Hampshire legislature has been very supportive of state wetland programs.	Monitoring of wetlands has been conducted by the Conservation Commission and other local environmental groups. Conservation commission review and comment on RSA 482-A which is more inclusive than 404.	High understanding and acceptance of RSA 482-A.
New Jersey	No information	No information	No information	No information
New Mexico	No	No	No	No information

Table 7 Education and Support

State	Type of Educational Promotion	Key Political Support	Constituency Monitoring and/or Comments	Public Understanding
New York	No information	No information	No information	Overall, poor understanding and low acceptance of the 404 process. For larger projects that use private consultants the understanding and acceptance is good.
North Carolina	No	No	Monitoring of wetlands has been conducted by North Carolina Federation. Public interest (North Carolina Federation) or citizens groups do review and comment on the 404 process. Public interest or citizens groups do not review or comment on the 401 applications.	No information
North Dakota	No information	No meetings are held with key political leaders to gain their support for wetlands protection. Local politician are generally not supportive of state and federal programs for wetlands, but the governor is very supportive.	No	Fair understanding of the 404 process, but it is improving.
Ohio	Yes. Ohio EPA has brochures and seminars explaining wetlands and their regulatory program (401). The Corps assists Ohio EPA when they present these educational seminars. There is a strong demand for these educational seminars.	Infrequent meetings with key political leaders to gain their support for wetlands protection. Usually the meetings are a result of a specific problem or about a specific project.	Monitoring of wetlands have been conducted by the Sierra Club and Ohio Sportsman's Association. Ohio EPA does not identify individual monitoring information as official data. Anybody can comment on 401/404 applications. Rivers Unlimited, Sierra Club, and Ohio Sportman's Association do review and comment on the 401/404 applications.	Low understanding and acceptance of the 404 process.
Oklahoma	Yes. No information about what type of activities are involved in the promotion of wetlands. The non-regulatory programs are promoted by infrequent press releases for specific projects.	Meetings with key political leaders to gain their support for wetlands protection are on an as needed basis. Generally, politicians are supportive of state and federal wetland programs.	Monitoring of wetlands by constituency groups are conducted. Public interest or citizens groups do not review or comment on the 401/404 applications.	High understanding of the 404 process.
Oregon	Work directly with Oregon State University, Water Resources Research Institute, and individual researchers to identify research needs and to promote wetland and riparian areas. To date, not a strong effort to promote non-regulatory programs.	No regular meetings with key political leaders to gain their support for wetlands. Politicians have been supportive for approximately 20 years. Occasional newsletters are sent to the legislators.	Monitoring of wetlands have been conducted by the Wetlands Conservancy, Audubon Society, Oregon Shores Conservation, and Oregon Environmental Council. Public interest groups (1000 Friends of Oregon and The Wetlands Conservancy, and the Audubon Society) and citizen groups do review and comment on 404 applications.	Recently completed a statewide regional public information workshops.
Pennsylvania	Speak to conservation districts, local governments, schools, and at public meetings. Non-regulatory programs are promoted by state agencies. The response of the community has been positive.	No information	Monitoring of wetlands has been conducted by many local environmental groups. Public interest and citizens groups do review and comment on 404 applications.	The educational effort, initiated by the Wetlands Protection Action Plan (September 1988), has had a significant impact in informing the public on wetland values, functions and regulations.

State	Type of Educational Promotion	Key Political Support	Constituency Monitoring and/or Comments	Public Understanding
Rhode Island	DEM regulatory personnel speak occasionally to different groups. DEM office of Environmental Coordination participates in or sponsors seminars or land use management and protection relating to wetlands.	Meetings are on an as needed basis. Support from politicians vary.	Members of the public and environmental groups are allowed by statute to object to and comment on all formal permit applications.	Moderate to good understanding of the state process. Very limited understanding of the 404 process.
South Carolina	Yes. DHEC speak occasionally to groups when requested. The non-regulatory programs are not promoted.	Meetings are usually held with key political leaders to discuss specific projects or specific parts of legislation.	Monitoring of wetlands is conducted by agriculture and silviculture groups. Public interest (South Carolina Wildlife Federation, Audubon Society, and South Carolina Environmental Law Project) or citizens groups do review and comment on 401/404 applications.	Generally, there is a fair understanding of the 404 process. Applicants are confused about multiple agency involvement (federal 404, state 401, state navigable waters and coastal zone permits).
South Dakota	No information	No information	No information	No information
Tennessee	State works with the Governor's Interagency Wetlands Task Force which includes local, state, and federal agencies and various organizations. State is not actively involved nor does it promote wetlands research. Under a proposed EPA grant the state will implement a wetland education program.	No meetings are held with key political leaders to gain their support for wetlands protection. Politicians are generally not supportive of state and federal wetlands programs.	Monitoring of wetlands has been conducted by constituency groups. The Farm Bureau, Tennessee Forestry Association, and the Sierra Club do review and comment on the 401/404 applications.	Generally the 404 process is understood, but many people continue to ignore the process and conditions of the permit.
Texas	Yes. No information about what type of activities are involved in the promotion of wetlands.	Infrequent meetings are held with key political leaders to gain their support for wetlands protections.	Monitoring of wetlands has been conducted by the Sierra Club, Gulf Coast Conservation Association, and other local environmental groups. Public interest or citizen groups do review and comment on the 401/404 application.	No information
Utah	No information	No information	No information	No information
Vermont	No information	No information	No information	No information
Virginia	No information	No information	No information	No information
Washington	Yes. WDOE have an education specialist on staff and this person is responsible for disseminating materials and promoting wetlands education through publications, videos, general information and presenting a traveling wetlands display. Technical and policy staffs hold periodical workshops for other agency personnel and local government staff dealing with wetlands issues.	Infrequent meetings are held with key political leaders to gain their support for wetlands protection. Politicians are very supportive of state wetlands programs.	Monitoring of wetlands has been conducted by the Washington Council, Friends of Earth, and local environmental groups. Public interest or citizens groups do not review or comment on the 401/404 applications.	Low understanding of the 404 process.

Table 7 Education and Support

State	Type of Educational Promotion	Key Political Support	Constituency Monitoring and/or Comments	Public Understanding
West Virginia	Some education occurring through contact with public and concerned citizens. Citizens in the state's eastern panhandle have formed a wetlands watch group; technical assistance has been provided by WVDNR. Additional education through state-specific publications is anticipated within the next year.	No meetings with key political leaders to gain their support for wetlands protection.	Monitoring of wetlands has been conducted by the West Virginia Environmental Council. No public interest groups or citizen groups review or comment on 401/404 applications.	Overall, a poor understanding of the 404 process but in areas that have river related construction activities the understanding is fair. The 404 process is not accepted well.
Wisconsin	Promote wetlands protection through education activities of regulatory, fisheries, wildlife and water quality programs. Outreach strategy recently developed for specific audiences.	Meet with key political leaders on an as needed basis to gain their support for wetlands protection.	Monitoring of wetlands has been conducted by individual lake protection associations and Wisconsin Waterfowlers. Public intervener and groups such as Ducks Unlimited, Trout Unlimited, Wisconsin Wetland Association, Audubon Society, and Great Lakes Coalition do review and comment on 401/404 applications.	404 permit program is generally not understood or recognized by the general public.
Wyoming	Promote wetlands protection through the Nonpoint Source Management Plan. Hydrologic modification section of the Nonpoint Source Plan has not yet been released to the public, but when it is, the state anticipates a strong promotional campaign to it.	No meetings are held with key political leaders to gain their support for wetlands protection. DEQ personnel meet with politicians upon their request only.	No information about monitoring of wetlands by constituency groups. Public interest or citizens groups do not review or comment on the 401/404 applications.	Low understanding and acceptance of the 404 process.

Table 8 Changing Conditions

T 8-1

State	Local Legal Challenge	State Legal Challenge	Federal Legal Challenge	State Program Subject to Changing
Alabama	No information	No information	No information	State wetland/riparian legislation has not been amended.
Alaska	No information	No information	No information	Yes. The amended Forest Resources Practices Act was passed in May 1990. State non-regulatory programs are subject to change. ADEC has urged a comprehensive program be undertaken which includes tax incentives, conservation easements, joint public sector/agency acquisition programs, public education and training.
Arizona	No information	No information	No information	No legislative amendments at this time. Non-regulatory programs are always subject to change due to normal program modification and through budget cuts.
Arkansas	No information	No information	No information	State wetland/riparian legislation and state non-regulatory programs have not changed.
California	No information	1990 1 - 2	No information	A number of wetlands related initiatives has been proposed in the legislature and administration is formulating relevant policies.
Colorado	No information	No information	No information	State wetland/riparian legislation and state non-regulatory programs has not changed.
Connecticut	1990 ≈100 1986 ≈10	1990 1 - 2 1989 1 - 2	No information	State wetland/riparian legislation have been amended in 1974, 1978, 1981, 1987, and 1990.
Delaware	No information	No information	No information	No information
Florida	No information	No information	No information	No information
Georgia	No information	No information	The Lake Alma wetland controversy (EPA denied the Corps permit) was in court for about 20 years.	Non-regulatory programs have recently been adopted so there have been no changes to them.
Hawaii	No information	No information	No information	No information
Idaho	No regulatory programs in existence.	Same	Same	State non-regulatory programs are subject to change through updates and revisions of the State Agriculture Water Quality Program.
Illinois	No information	No information	No information	No information
Indiana	1990 --- 1989 --- 1988 --- 1987 ---	1990 0 1989 1 1988 0 1987 0	1990 --- 1989 --- 1988 --- 1987 ---	No amendments of state wetlands legislation have occurred.
Iowa	1990 --- 1989 --- 1988 --- 1987 ---	1990 1 1989 0 1988 0 1987 0	1990 --- 1989 --- 1988 --- 1987 ---	Legislation for Section 401 has not been amended, but legislation for antidegradation/mitigation has been amended in April 1990.

State	Local Legal Challenge	State Legal Challenge	Federal Legal Challenge	State Program Subject to Changing
Kansas	None	None	None	No amendments of state wetland/riparian legislation, since legislation was just passed in 1987 establishing a Wetland Protection Program. State non-regulatory programs are subject to change.
Kentucky	1990 --- 1989 --- 1988 --- 1987 --- 1986 ---	1990 0 1989 1 1988 0 1987 0 1986 0	1990 0 1989 1 1988 1 1987 0 1986 0	No state wetland/riparian program. State non-regulatory programs are not subject to change.
Louisiana	No information	No information	No information	No information
Maine	No information	No information	No information	No information
Maryland	No information	Wetland Permit Program 1991 31 401 Program None	No information	State wetland/riparian legislation has been amended. State non-regulatory programs are subject to change to periodic regulatory changes and/or statutory amendments.
Massachusetts	No information	No information	No information	No information
Michigan	No information	No information	No information	No amendments since passage of Goemaere-Anderson Wetland Protection Act in 1979.
Minnesota	No information	No information	No information	State wetland/riparian legislation has been amended. State non-regulatory programs are subject to change.
Mississippi	1990 --- 1989 --- 1988 --- 1987 --- 1986 ---	1990 0 1989 0 1988 0 1987 0 1986 0	1990 1 1089 0 1988 0 1987 0 1986 1	State wetland/riparian legislation has not been amended.
Missouri	1990 --- 1989 --- 1988 --- 1987 --- 1986 ---	1990 0 1989 0 1988 1 1987 0 1986 1	1990 --- 1989 --- 1988 --- 1987 --- 1986 ---	State wetland/riparian legislation has not been amended. State non-regulatory programs have not changed since early 1980s.
Montana	1990 0 1989 0 1988 0 1987 0 1986 0	1990 0 1989 0 1988 0 1987 0 1986 0	1990 0 1989 0 1988 0 1987 0 1986 0	State wetland/riparian legislation has not been amended. State non-regulatory programs are subject to change through program modification adopted by DHES under the non-point source program.
Nebraska	No information	1990 0 1989 0 1988 0 1987 0 1986 0	No information	State wetland/riparian legislation has not been amended. State non-regulatory programs are subject to change.

Table 8 Changing Conditions

State	Local Legal Challenge	State Legal Challenge	Federal Legal Challenge	State Program Subject to Changing
				T 8-3
Nevada	No information	No information	1990 2	State wetland/riparian legislation has not been amended. State non-regulatory programs do not exist in state.
New Hampshire	No information	1990 ~20	No information	State wetland/riparian legislation has been amended by providing a stronger enforcement policy in 1988 and increasing fees in 1990.
New Jersey	No information	No information	No information	No information
New Mexico	None	None	None	No information
New York	No information	No information	No information	No information
North Carolina	No information	No information	No information	No information
North Dakota	No information	None	No information	No information
Ohio	No information	No information	No information	No information
Oklahoma	None	None	None	State wetland/riparian legislation has not been amended. A state interagency committee is in the process of developing formal non-regulatory programs.
Oregon	No information	No information	No information	State wetland/riparian legislation has been amended in 1989.
Pennsylvania	No information	No information	No information	Proposed rulemaking (regulation amendments begun in 1990) are in the final review process. Additionally, the Pa State Legislature has a pending wetlands enactment (Senate Bill 936).
Rhode Island	Participation in legal review of wetland alterations is increasing by municipalities. A new administrative adjudication division has provided quicker appeals of wetland denials at the state level. Court appeals are on the increase.			No anticipated changes in state legislation, however, revisions to existing 10 year old regulations are ongoing for adoption in 1991.
South Carolina	Not applicable	Information is not readily available but about 2-3 per year.	No information	No state wetland/riparian programs exist in state.
South Dakota	No information	No information	No information	No information
Tennessee	None	1990 0 1989 0 1988 0 1987 0 1986 1	No information	State wetland/riparian legislation has not been amended. State non-regulatory programs are not subject to change.
Texas	No information	No information	No information	Legislature adopted a state definition of wetlands (SB 1206) in 1989.
Utah	No information	No information	No information	No information

Table 8 Changing Conditions

State	Local Legal Challenge	State Legal Challenge	Federal Legal Challenge	State Program Subject to Changing
Vermont	No information	No information	No information	No information
Virginia	No information	No information	No information	No information
Washington	No information	No information	No information	Water quality standards are being revised to include wetlands standards and WDOE's procedures under SEPA are being revised to determine how wetlands will be regulated when WDOE has jurisdiction.
West Virginia	None	No information	No information	State wetlands legislation has not been amended.
Wisconsin	No information	No information	No information	State wetlands legislation has not been amended in the last two years.
Wyoming	None	None	None	Wyoming Wetlands Act was passed in February 1991. State non-regulatory programs are subject to change through the Wyoming continuing planning process.

Table 9. Summary of Responses from State Officials

Types of Responses	Number of Responses
Written questionnaire and other materials	37
Written questionnaire only	5
Telephone questionnaire only	1
Written materials only	3
Letter response only	1
No response	3
Total	50

Table 10. Summary of Responses by State

State	Written Questionnaire	Material	Telephone Survey	Letter
Alabama	X	X		
Alaska	X	X		
Arizona	X	X		
Arkansas	X	X		
California		X		X
Colorado	X	X		
Connecticut	X	X		
Delaware				
Florida	X	X		
Georgia	X	X		X
Hawaii	X	X		
Idaho	X	X		
Illinois	X	X		
Indiana	X			
Iowa	X	X		
Kansas	X	X		
Kentucky	X	X		
Louisiana	X			
Maine		X	X	
Maryland	X	X		
Massachusetts	X	X		
Michigan	X	X		
Minnesota	X	X		
Mississippi	X	X		
Missouri	X	X		
Montana	X	X		
Nebraska	X	X		
Nevada	X	X		
New Hampshire	X	X		
New Jersey				
New Mexico	X	X		
New York	X	X		
North Carolina	X			
North Dakota	X	X		
Ohio	X	X		
Oklahoma	X			
Oregon	X			
Pennsylvania	X	X		
Rhode Island	X	X		
South Carolina	X	X		
South Dakota				X
Tennessee	X	X		
Texas	X	X		
Utah				
Vermont		X		X
Virginia		X		X
Washington	X	X		
West Virginia	X	X		
Wisconsin	X	X		
Wyoming	X	X		
TOTAL	42	41	1	5

States in **bold** did not respond.

APPENDIX A

QUESTIONNAIRE

Appendix A

Questionnaire

STATE AND FEDERAL AGENCY
QUESTIONNAIRE ABOUT EXISTING
WETLAND AND RIPARIAN PROGRAMS

Date _____
Name of Respondent _____
Agency _____
Title _____
Address _____
City/State/Zip Code _____
Telephone Number _____
Fax Number _____

Would you like to receive a copy of our research? [ ] Yes [ ] No

The purpose of this questionnaire, conducted cooperatively by the Arizona State University Department of Planning and Arizona Department of Environmental Quality is to ascertain what existing activities, regulations, and laws are involved with your local, state, and federal wetland and riparian programs. This information will be used in the development of wetland and riparian programs in Arizona. If you have any questions regarding this process please contact: Frederick Steiner, Department of Planning Chair; Edward "Ted" Cook, Assistant Professor; or Scott Pieart, Research Assistant at (602) 965-7167.

I. PROGRAM PURPOSES AND GOALS

1. Has your state (or states in your region) enacted wetland and/or riparian protection regulatory or non-regulatory programs? [ ] Yes [ ] No.

   If yes, please indicated the type of program(s):
   [ ] Regulatory
   [ ] Non-regulatory
   [ ] Both

   If yes, is the program a result of a state statute, executive order, or administrative policies?

   Please provide the appropriate legal citation.

Does the program(s) include the following? If so, please check the appropriate boxes and indicate who has the administrative responsibility.

[ ] Goal statement
Administrative responsibility_____

[ ] Mandatory standards with enforcement provisions
Administrative responsibility_____

[ ] Mandatory standards without enforcement provisions
Administrative responsibility_____

[ ] Education
Administrative responsibility_____

[ ] Acquisition
Administrative responsibility_____

[ ] Monitoring and evaluation
Administrative responsibility_____

[ ] Funding
Administrative responsibility_____

2. Indicate the wetlands and riparian programs that exist in your state (or states in region) and those for which you are responsible. Please check the appropriate boxes and indicate states.

Regulatory:

Exist in State(s)	Personal Responsibility	Programs
[ ]	[ ]	401
[ ]	[ ]	404 State
[ ]	[ ]	404 Federal
[ ]	[ ]	State river and streams protection program
[ ]	[ ]	State wetlands and riparian protection water quality standards
[ ]	[ ]	Flood plains
[ ]	[ ]	Natural areas
[ ]	[ ]	Other (Please identify) _____

Non-regulatory:

Exist in State(s)	Personal Responsibility	Programs
[ ]	[ ]	Executive order
[ ]	[ ]	Tax incentives
[ ]	[ ]	Easements
[ ]	[ ]	Recognition program
[ ]	[ ]	Intergovernmental coordination
[ ]	[ ]	Technical assistance / education / outreach
[ ]	[ ]	Other (Please identify) _____

3. Is there a state dredge and fill, streamside protection or streambed alteration permit program?
[ ] Yes [ ] No

4. Is there a Clean Water Act, Section 404 permit program in which the state participates?
[ ] Yes [ ] No

What are the goals?

Who in the state is involved?

5. Is there a Clean Water Act, Section 401 program in which the state participates?
[ ] Yes [ ] No
Goals?

Who in the state is involved?

6. Is there a coastal zone management program in which the state participates?
[ ] Yes [ ] No

Goals?

Who in the state is involved?

II. DEFINITIONS AND INVENTORIES

1. Does your state make a distinction between wetlands and riparian areas?
[ ] Yes [ ] No If yes, please explain.

If no, are riparian areas considered to be wetlands? [ ] Yes [ ] No

2. Is there a state definition for wetlands and/or riparian areas? [ ] Yes [ ] No

   Is it a working definition? [ ] Yes [ ] No
   Is it a official definition? [ ] Yes [ ] No

   Are they included in the definition of "waters of the state"? [ ] Yes [ ] No

3. Do state water quality standards apply to and protect wetland and riparian areas?
   [ ] Yes [ ] No

   If no, please go to question II. 4.
   If yes, please answer the following questions:

   - Does the state have regulatory language that explicitly or implicitly limits the applicability of water quality standards over wetlands? [ ] Yes [ ] No

   - Does the state apply the antidegradation policy for wetland and/or riparian protection? [ ] Yes [ ] No If yes, please explain how?

   - Are there state wetland and riparian standards? [ ] Yes [ ] No

   - Are protected uses designated for wetlands? [ ] Yes [ ] No
     If yes, in what areas (laws, regulations, permit programs)?

   - How do the existing designated uses protect wetland and/or riparian areas?

   - Are they effective for protection? [ ] Yes [ ] No

   - Is there a state "unique" or "outstanding waters" program? [ ] Yes [ ] No

   - Are there biological criteria within standards that apply to wetland and riparian areas?
     [ ] Yes [ ] No

   - Are there narrative or numeric standards established for wetland and /or riparian areas or a given use designation? [ ] Yes [ ] No

4. Has a statewide wetlands and riparian inventory been conducted?
[ ] Yes [ ] No

If yes,who updates the inventory and how often is it updated?

5. Are there Best Management Practices established for activities in wetland and/or riparian areas? [ ] Yes [ ] No
If yes, by whom and how are they implemented?

6. Regarding Section 404, how are jurisdictional delineations determined for wetlands and ordinary high water? Is there enough leverage to obtain goals of the Clean Water Act?

7. Regarding 401, what kinds of activities are certified by the state? What is the penalty for not meeting certification conditions?

III. IMPLEMENTATION PROCESSES AND TOOLS

1. Describe the state (or regional) Section 404 regulatory or non-regulatory program.

- Who has primacy, the U.S. Army Corps of Engineers or state?
  Has your state explored primacy? [ ] Yes [ ] No

- Describe how the process works (please provide a copy of a flow chart, if possible).

- What is the level of regulated public understanding and acceptance of 404 permit process?

- How much of riparian area is regulated by 404 process?

- How are 404 permits tracked?

- Are there general permits (regional) in state?

- What are the public notification requirements? Who gets notified of proposed permit?

- What information does the applicant get on the program prior to applying for a permit (checklists, alternative analyses, preapplication meeting)?

- What type of monitoring mechanisms are in place to evaluate compliance? Specify who will monitor, how often and who will report on and review the results?

- Who enforces? Are there state agencies involved in federal 404 enforcement?

- What type of penalties can be imposed? What are some of the most common violations that occur?

Have there been any penalties in the last 5 years? [ ] Yes [ ] No
If yes, the number and amount of money and/or acres of restoration:

- 1990 _____
- 1989 _____
- 1988 _____
- 1987 _____
- 1986 _____

2. State dredge and fill, streambed alteration, and wetland/riparian programs:
   - How does Section 404 and state programs mesh? Are there dual permits?

   - Are the above programs more stringent than Section 404? How?

   - Which is more effective in resource protection? Why?

- Are multiple state agencies involved? If so, which ones?

3. What types of mitigation procedures are used in either Section 404 or state programs (pre-construction bonding, mitigation banking, re-creation of wetlands, native vs. non-native provision, on site vs. off site, mitigation ratio guidelines)?

- What is the method for determining size, location, values and functions for mitigation? Is monitoring of mitigation required? If so, how long?

- Is there specific content of mitigation proposal required? Does the mitigation proposal include the following (please check):

[ ] A clear statement of the objectives of the mitigation.

[ ] Assessment of the wetlands values and functions that will be lost and that will be replaced.

[ ] Statement of the location, elevation, hydrology, soils, and vegetation of the new site.

[ ] A description of what will be planted where and when.

[ ] A monitoring and maintenance plan.

[ ] A contingency plan.

[ ] A schedule of completion.

[ ] A guarantee of work as planned and approved.

4. Is there a wetlands or riparian corridor acquisition program (land trades, land purchases, conservation easements, tax incentives)? [ ] Yes [ ] No

5. Section 401 certification:

- What federal activities are certified by the state?

- How does the certification program work in the state? Who does what? Please provide a flow chart.

- Are there printed state rules or regulations that govern 401 certification?

- What information is required of a permit/project applicant in order to be certified?

- What are the certification criteria?

- What are the water quality standards for certification? How is the antidegradation policy used in certification?

- Do you evaluate long-term, short-term, upstream and downstream water quality impacts from construction and future project operation for certification?

- Are stream-impact models used to predict project impact? Describe briefly or give examples.

- Who monitors and enforces 401 certification conditions in the Section 404 permit or special conditions? What are the penalties that have been imposed?

- Do U.S. Army Corps of Engineers permits reflect all certification conditions requested by the state?

- What are typical conditions of 401 certification? Describe briefly or give examples.

- Do U.S. Army Corps of Engineers issue permits without or before certification is granted?

IV.COMMITMENT AND SKILL OF CRITICAL IMPLEMENTING OFFICIALS

1. Do the 404 permits reflect all state and other resource agency concerns? Do state 401 certification conditions get incorporated into the permit? Are endangered species concerns addressed? Is only the most practicable and environmentally acceptable alternative approved?

2. Is the non-regulatory program promoted by state agencies with brochures, seminars or any other means? What is the response of the community?

3. Number of 404 or wetland and streambed alteration permits and 401 certification issued per calender year? (If no easy summary, please estimate). Please indicate to which type of permit you are referring.

	Permits Applied	Permits Issued	Conditional Permits	Permits Denied	401 Certification
1990					
1989					
1988					
1987					
1986					

4. How rigorous and timely is 404 permit enforcement? Has enforcement been an effective tool?

5. Are 404 permit conditions monitored? [ ] Yes [ ] No
If yes, by whom?

6. Are 401 certification conditions monitored? [ ] Yes [ ] No
If yes, by whom?

7. Number of people who are involved with the wetland and/or riparian Section 401 and 404 programs?

State Wetland/Riparian	401	404
• Clerical _____	• Clerical _____	• Clerical _____
• Administrative _____	• Administrative _____	• Administrative _____
• Field (technical) _____	• Field (technical) _____	• Field (technical) _____

8. What is the annual operational budget for the state wetland and/or riparian programs, Section 401, and /or 404?

Wetland/Riparian	401	404
• 1991 _____	• 1991 _____	• 1991 _____
• 1990 _____	• 1990 _____	• 1990 _____
• 1989 _____	• 1989 _____	• 1989 _____
• 1988 _____	• 1988 _____	• 1988 _____
• 1987 _____	• 1987 _____	• 1987 _____
• 1986 _____	• 1986 _____	• 1986 _____

Are funds adequate? [ ] Yes [ ] No

9. Are these programs meeting the stated goals for :

State wetland and riparian programs?	[ ] Yes [ ] No
State non-regulatory programs?	[ ] Yes [ ] No
Federal 404 permitting?	[ ] Yes [ ] No
State 401 certification?	[ ] Yes [ ] No

V. CONTINUED SUPPORT FROM KEY POLITICAL LEADERS AND CONSTITUENCY GROUPS

1. Do you work with any groups, societies, institutions and associations to help promote and enhance local, state, and federal wetland and riparian protection? Do you promote the education and research of wetland and riparian areas?

2. How often do you meet with key political leaders to help gain their support? Are politicians supportive of state and federal program.?

3. Do any constituency groups monitor the protection of wetland and/or riparian areas? [ ] Yes [ ] No If yes, which groups.

4. Do any public interest groups or citizen groups regularly review and comment on 404 applications? [ ] Yes [ ] No If yes, which groups.

5. Do any public interest groups or citizen groups regularly review and comment on 401 applications?

6. Are there Indian lands in your state? [ ] Yes [ ] No
How do they handle Section 404 permitting and Section 401 certification?

Are there any interfaces/agreements between your agency and the Indian communities? [ ] Yes [ ] No If yes, please explain.

VI. ADAPTABILITY TO CHANGING CONDITIONS

1. How many times has the local, state, and federal agency been challenged in court in regards to wetlands and/or riparian areas? Number of cases?

Local	State	Federal
• 1990 _____	• 1990 _____	• 1990 _____
• 1989 _____	• 1989 _____	• 1989 _____
• 1988 _____	• 1988 _____	• 1988 _____
• 1987 _____	• 1987 _____	• 1987 _____
• 1986 _____	• 1986 _____	• 1986 _____

2. Has state wetland and/or riparian legislation been amended? [ ] Yes [ ] No
If yes, when did this occur?

3. Are there problems with Section 401 or 404 in your area? [ ] Yes [ ] No
If yes, please describe.

4. Is the state non-regulatory program subjected to change? [ ] Yes [ ] No
If yes, how?

Thank you for your cooperation. Would you please send the following documents:

1. Copy of the wetland and/or riparian area protection legislation, streambed alteration, streamside protection, statutes, administrative orders, and permit forms.
2. Copy of definition of waters of the state.
3. Copy of the state wetland and/or riparian water quality standards.
4. Copy of any other state wetland and/or riparian protection programs (wild and scenic rivers, critical areas, unique waters, heritage program, natural areas and greenbelts), brochures and statutes.
5. Copy of wetland and/or riparian best management practices.
6. 319 (h) Assessment: hydrological/habitat modification Section and 305 (b) Report (1990)
7. Copy of flow chart and brochure explaining the 404 process.
8. Copy of memoranda of agreement (MOA) between federal, state, and local government agencies regarding 404 or state wetland and stream laws.
9. Copy of checklists of information required by U.S. Army Corps of Engineers or state for permit application.
10. Copy of headwater list delineation.
11. Copy of methodology and policies for ordinary high water.
12. Copy of methodology in determining size, location, values and functions for wetland and riparian area mitigation.
13. Copy of mitigation policies and guidelines.
14. Copy of 404 permit tracking procedures.
15. Copy of the flow chart, guidelines, and brochure for the 401 certification program.
16. Copy of examples of 401 certification conditions/approvals or denials.
17. Copy of the information that is required of a permit/project applicant in order to be certified.

APPENDIX B

WETLAND AND RIPARIAN CONTACTS

Appendix B

Wetland and Riparian Contacts

Federal Contacts

U.S. Army Corps of Engineers

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Environmental Law and Regulatory Programs
20 Massachusetts Avenue N.W.
Washington, D.C. 20314-1000
(202) 272-0035

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U.S. Custom House
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U.S. Environmental Protection Agency

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Environmental Protection Agency
Wetlands Strategies Team (A-104F)
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(202) 382-5045

Lori Williams
Environmental Protection Agency
Wetlands Strategies Team (A-104F)
401 M Street, SW
Washington, D.C. 20460
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U.S. Soil Conservation Service

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Soil Conservation Service
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Randy Gray
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Wetland and Riparian Contacts

U.S. Fish and Wildlife Service

Mary Bates
National Wetlands Inventory
4401 North Fairfax
Arlington, Virginia 22003
(703) 358-2201

State Contacts

Alabama
Blake Roper
Chief Coastal/Air Unit
Alabama Department of Environmental Management
2204 Perimeter Road
Mobile, Alabama 36615
(205) 479-2336
(205) 479-2593 [FAX]

Alaska
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Alaska Department of Environmental Conservation (ADEC)
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Arkansas
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Program Coordinator Section Manager
Arkansas Department of Pollution Control & Ecology
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Little Rock, Arkansas 72219-8913
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(501) 562-4632 [FAX]

Arizona
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Department of Environmental Quality
Point Source and Monitoring Unit
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Su Monroe
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Wetland and Riparian Contacts

California
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State Water Resources Control Board
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Oscar Balaguer
Wetland Coordinator
State Water Resources Control Board
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(916) 322-0684

Stan Martinson
California Water Resources Control Board
Division of Water
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Colorado
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(303) 331-4757
(303) 322-9076 [FAX]

Gregory Parsons
Water Quality Control Division
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Connecticut
Douglas Cooper
Supervising Environmental Analyst
Connecticut Department of Environmental Protection
Inland Water Resources Management Division
State Office Building, Room 207
Hartford, Connecticut 06106
(203) 566-7280
(203) 566-5587 [FAX]

Delaware
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Department of Natural Resources and Environmental Control
Water Resources - Wetlands and Aquatic
89 Kings Highway
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Dover, Delaware 19903
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Wetland and Riparian Contacts

Delaware
Margaret "Peggy" Emslie
Environmental Scientist
Wetlands and Aquatic Protection Branch
Department of Natural Resources and Environmental Control
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Dover, Delaware 19903
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(302) 739-3491 [FAX]

Florida
Janet Llewellyn, Chief, Bureau of Wetland Resource Management
Florida Department of Environmental Regulation
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Kansas
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Wetland and Riparian Contacts

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Charles Cover
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Maryland Water Resources Administration
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APPENDIX C

LIST OF DOCUMENTS COLLECTED FROM STATE AGENCIES

Appendix C

List of Documents Collected from State Agencies

Alabama

- Memorandum of Agreement between Alabama Department of Environmental Management and the Corps of Engineers Relating to Section 404 and Section 10 permits.
- Alabama Department of Environmental Management. Water Division - Coastal Program (Division 335-8). Effective August 14, 1979, Amended October 7, 1988.

Alaska

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Arkansas

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- Data Compilation for 404 Permits.
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California

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Colorado

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Connecticut

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Florida

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Idaho

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- Idaho Priorities for Wetland Protection Summary of the Idaho Natural Heritage Program. From "1990 Centennial Edition Idaho Outdoor Recreation Plan," Idaho Parks and Recreation.

List of Documents Collected from State Agencies

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- General Information and Instructions for Completion of Joint Application for Permit.
- Draft Idaho Water Resource Board Comprehensive State Water Plan Rules and Regulations.
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- Copy of 401 Certification Approvals/Conditions.
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Indiana

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Iowa

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Kentucky

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- Introduction to Checklist.
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Louisiana

- No Information

Maine

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- Chapter 305 - Natural Resources Protection Act Permit by Rule Standards. Effective February 15, 1989.
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Maryland

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- Simple Guidelines to Help You Receive Your State Wetlands License.
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- The Maryland Coastal Zone Management Program's Goal and Objectives.
- Copy of Water Quality Certification.
- Joint Permit Application. Instruction Booklet for the State of Maryland and the U.S. Army Corps of Engineers. January 1988.
- Information collected but not from a Maryland official:
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Massachusetts

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- Certification for Dredging, Dredged Material Disposal and Filling in Waters - 314 CMR 9.00.
- Application Completeness Checklist for Water Pollution Control.
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- Copy of Water Quality Certification Approvals/Conditions and Denials.
- Application for Water Quality Certification for Excavating/Filling in Waters and Wetlands.
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Michigan

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Mississippi

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- Copy of Typical U.S. Army Corps of Engineers Review Process for 404 Dredge and Fill Permit Request.
- Mississippi Water Quality Report 1990.
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- Missouri Water Quality Report 1990.
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- Montana's Riparian Areas, A Guide to Streamside Management and Assistance for Landowners.
- Aquatic Ecosystem Protections - Chapter 7.
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  * Possible Actions to Aid in Riparian Recovery by Riparian Education Committee.
  * Sources of Funding to Aid in Riparian Recovery.
  * Technical Notes: Techniques of Tree and Shrubs Propagation by Hardwood Stem Cuttings by Soil Conservation Service.
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- Nebraska Department of Environmental Control Title 120 - Procedures Pursuant to Section 401 of the Federal Clean Water Act, 33 U.S.C. Section 1251 et seq., For Certification by the Department of Activities Requiring a Federal License or Permit which may result in a Discharge. Effective October 29, 1986.
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- Nevada Water Quality Assessment [305 (b)] Report. April 1990.
- (319) Nonpoint Source Pollution Assessment Report. October, 1989.
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- Summary of New Hampshire Wetlands Program.
- Fill and Dredge in Wetlands - Chapter 482-A (482-A:1 through 482-A:27).
- Wetlands Board Application.
- Proposed Rules (January 29, 1991) - Delineation and Classification of Wetlands.
- Data Compilation for Wetlands Board Files.
- Data Compilation for Wetlands Bureau Applications/Complaints.
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- New Hampshire Rivers Management and Protection Program, as compiled from NH RSA Chapter 483 and HB 1432-FN 1990.
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  - * Waking Up to the Value of Our Wetlands by Thomas H. Kean.
  - * Freshwater Wetlands Protection Act Guidance How to Obtain a Letter of Interpretation, July 1989.
  - * National Wetlands Newsletter, Volume 11, No. 4, July-August 1989.
  - * Freshwater Wetlands Protection Act - N.J.S.A. 13:9B-1 et seq. (Printed as public information only, for official version, refer to P.L. 1987, c. 156).
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  - * Freshwater Wetlands Permit Application FW-1.
  - * Freshwater Wetlands Protection Act Rules (N.J.A.C. 7:7A), as amended to July 17, 1989.
  - * Checklist for Administrative Completeness.
  - * Stream Encroachment Application Engineering Data Sheet.
  - * Pre-application Conference Checklist.
  - * Rules and Regulations Governing Flood Hazard Area (Regulations N.J.A.C. 7:13-1.1 et. seq.) for Stream Encroachment Permits, includes all amendments through February 4, 1985.
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- Applicant's Guide to State Environmental Quality Review Act (SEQR) (Brochure).
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- Citizen's Guide to SEQR (Brochure).
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- North Dakota Rivers Study, December 1987.
- The Status of Water Quality in the State of North Dakota 1988-1989. The 1990 Report to the Congress of the United States.
- Drainage Rules - November 1989.

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- Hydrologic/Habitat Modification.
- 401 Regulations and Permit Procedures.
- Public Water Supply/401 Water Quality Certification Coordination Worksheet.
- Executive Order 90-68. October 25, 1990.
- 401 Certification Processing Worksheet.
- 401 Certification Review Worksheet.
- Copy of 401 Certification Approvals/Conditions.
- Ohio Stream Management Guide 1986.

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- Information collected but not from an Oregon official:
  * Backgrounder - Oregon's Watershed Enhancement Program Revitalizing Oregon's Streams and Watersheds.
  * Oregon's Watershed Enhancement Program.
  * Senate Bill 23 - Relating to Watershed Enhancement.
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  * Watershed Enhancement A Guide to Improving Your Urban Watershed.
  * State Assumption of the Federal 404 Permit Process Division of State Lands.
  * Section 404 Assumption: The Oregon Experience (Western Natural Resource Litigation Digest, Commentary, Winter 1984) by Ed Zajone.
  * Removal - Fill Law ORS 54d1.620, Revised Fee Schedule, Effective Date: October 3, 1989.
  * Joint Application for Permit, Sample Drawings, Application Checklist, and Helpful Information.
  * Administrative Rules for Oregon's Removal - Fill Permit Program, April 1986.
  * Wetland Inventory and Wetland Conservation Plans - ORS 196.668 through 196.692, Effective Date: September 1989.
  * Removal - Fill Law (ORS 196.800 through 196.990) and Removal and Filling in Scenic Waterways (ORS 390.805 through 390.925).
  * Oregon Mitigation Bank Act of 1987 - ORS 196.600 through 196.665.
  * Estuarine Mitigation, The Oregon Process.
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  * The McKenzie River Water Quality and Recreation Initiative.
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- 'DER Inside' (pamphlet explains programs and activities of PDER).
- Pennsylvania Scenic Rivers Program (Brochure).

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- Pennsylvania Natural Diversity Inventory.
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  2. Urban Wetlands: Generously Gifting Our Cities.
  3. Clues to Wetland Identification: Questions for Developer, Contractors, Surveyors, Farmers, and Land Owners.
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  7. An Introduction to Wetlands.
- Joint Application Booklet.
- Pennsylvania Wetlands 1991, Focusing on the Issues Rights of Landowners by Gregory Edwards, The Nature Conservancy.
- Informational handout about rules, regulations, legislation, etc.
- A User's Guide to DER Permits.
- Information collected but not from a Pennsylvania official:
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- Rhode Island General Laws of 1956 Title 46-Chapter 12 (Water Pollution) As Amended by PL289, 1986.
- State of Rhode Island and Providence Plantations Fresh Water Wetlands Act.
- State of Rhode Island Department of Environmental Management Rules and Regulations Governing the Enforcement of the Fresh Water Wetlands Act. March 1981.
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- Regulations for the Rhode Island Pollutant Discharge Elimination System.
- Water Quality Regulations for Water Pollution Control.

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- Report of the Governor's Freshwater Wetlands Forum. January 17, 1990.
- Flow Chart - 401 Water Quality Certification.
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- A Guide to the State of Tennessee and Federal Permits Required for Work Within Streams and Wetlands. April 10, 1990.
- Executive Order No. 65, An Order Providing for Protection of Wetlands. April, 1985.
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- 3rd Draft Federal and State Permitting Process.
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- Draft VR 680-15-02 Virginia Water Protection Permit Regulation.

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- At Home with Wetlands, A Landowner's Guide. August 1990.
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- Federal Water Pollution Control Act -- Establishment of Implementation Procedures of Application for Certification - Chapter 173-225 WAC.
- Flow Chart for Corps Permit Process.
- Wetland Mitigation Banking.
- Existing Regulations Affecting Activities in Wetlands.
- Executive Order - EO 89-10 - Protection of Wetlands.
- Report Recommendations for Compensatory Wetlands Mitigation Plans.
- Information Paper - U.S. Army Corps of Engineers, Seattle District Permit Requirements for Wetland Fill Projects.
- Standard Operating Procedures.
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- Definition of Water Resources, Water Pollution Control Act (section 20-5A-2).
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- Requirements governing Water Quality Standards, 1990.
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- Different Wetland Maps for Different Jobs (DNR - 2/91).
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  - * Wisconsin's Water Regulation Programs work for You.
  - * Public or Private? I Navigability.
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