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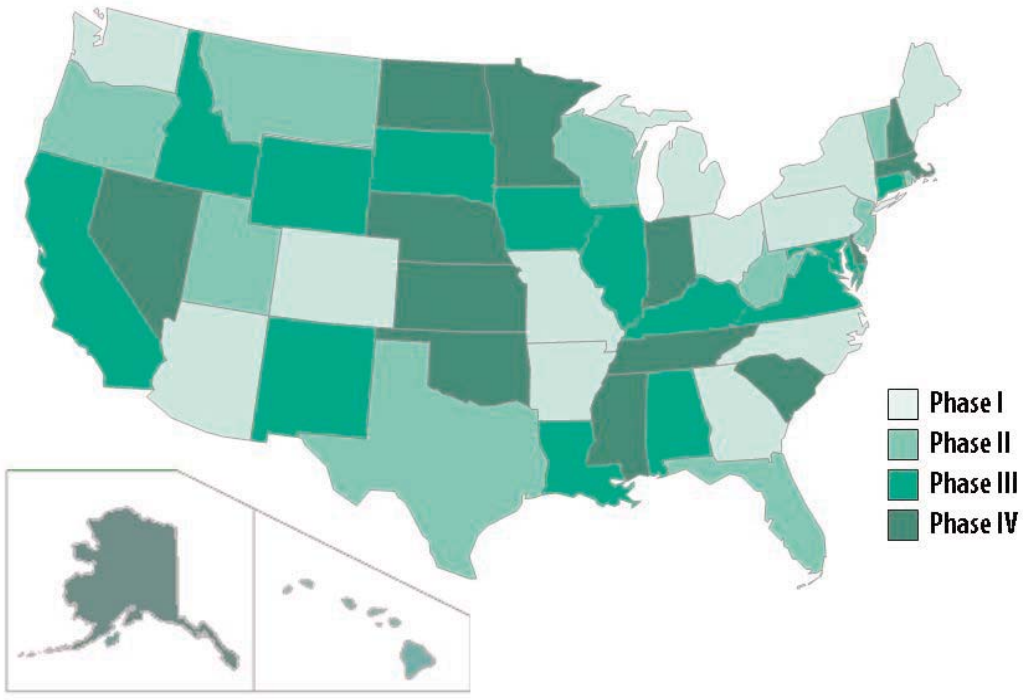
State Wetland Program Evaluation: Phase IV



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Introduction

Overview

Wetlands in the United States are regulated and protected through a variety of federal, state, and local laws and regulations, as well as through the actions and initiatives of governmental agencies, nongovernmental organizations, universities and schools, and citizens. The efforts of these many groups are often intended to complement each other and many rely upon planning and science in their design and implementation. Other approaches to wetland protection are the result of circumstance and incremental program development that have evolved organically over time.

State wetland programs are no exception. The principle regulatory authority governing the protection of wetlands at the federal level lies with the Clean Water Act (CWA) §404 Program. Section 404 establishes a regulatory and permitting regime, administered jointly by the U.S. Army Corps of Engineers and U.S. Environmental Protection Agency, for dredging and for discharges of fill material into "waters of the United States."[1] Under the Clean Water Act, states have the authority to enact their own regulatory (and non-regulatory) programs for wetlands and can adopt more stringent limitations than those established under the federal program.[2]

States take a variety of approaches to wetland regulation and protection. Some utilize a water quality-based approach to wetlands regulation, relying on CWA §401, which authorizes states to determine whether activities permitted by the federal government are in accordance with state water quality laws and regulations. Other states have enacted regulations establishing resource- or habitat-focused permitting regimes in addition to §401 water quality certification. Still others do not have well-developed regulatory programs, instead focusing on restoration, education and outreach, and other non-regulatory measures to protect and restore wetlands in their states. A multitude of reasons explain the differences we see among state wetland programs—history, geography, economics, politics, general attitudes toward aquatic resources, as well as state agency funding, resources, and enforcement activity.

State wetland program study

This report represents the fourth phase of a multi-phased study designed to describe and analyze seven "core" components of state wetland programs. The U.S. Environmental Protection Agency (EPA) has identified six core elements of a comprehensive state and tribal wetlands program: regulation (state laws, regulations,

1. The term "waters of the United States" is defined as "[a]ll waters which are currently used, or 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; [a]ll interstate waters including interstate wetlands; [a]ll other waters such as intrastate lakes, rivers, streams (including intermittent streams), mudflats, sandflats, wetlands, sloughs, prairie potholes, wet meadows, playa lakes, or natural ponds, the use, degradation or destruction of which could affect interstate or foreign commerce...; [a]ll impoundments of waters otherwise defined as waters of the United States under the definition; [t]ributaries of waters...; [t]he territorial seas; [w]etlands adjacent to waters (other than waters that are themselves wetlands)..." "Waters of the U.S. do not include "[w]aste treatment systems, including treatment ponds or lagoons...or prior converted cropland." *See* 33 C.F.R. § 328.3(a).
2. 33 U.S.C. § 1251 *et seq.*; 40 C.F.R. §§ 104-149.

and programs), monitoring and assessment, restoration programs and activities, water quality standards, public-private partnerships, and coordination among state and federal agencies. In addition to these six core elements, ELI's study also examines state outreach and education activities, which the EPA deems as "inherent components of water resource programs."[3]

Study phases. In the first phase of the study, ELI examined a cross-section of states representing various approaches to wetland protection and regulation, as well as geographic diversity. The study examined state-level programs and activities in twelve states: Arizona, Arkansas, Colorado, Georgia, Maine, Michigan, Missouri, New York, North Carolina, Ohio, Pennsylvania, and Washington. The Phase I report, *State Wetland Program Evaluation: Phase I*, was published in 2005 and is available for free download on ELI's website at: http://www.elistore.org/reports_detail.asp?ID=11079.[4]

In Phase II, ELI examined an additional 12 states: Florida, Hawaii, Montana, Nebraska, New Jersey, Oregon, Rhode Island, Texas, Utah, Vermont, West Virginia, and Wisconsin. *State Wetland Program Evaluation: Phase II*, published in 2006, is available for free download on ELI's website at: http://www.elistore.org/reports_detail.asp?ID=11152.[5]

Phase III examined another 13 states: Alabama, California, Connecticut, Idaho, Iowa, Illinois, Kentucky, Louisiana, Maryland, New Mexico, South Dakota, Virginia, and Wyoming. *State Wetland Program Evaluation: Phase III*, published in 2007, is available for free download on ELI's website at: http://www.elistore.org/reports_detail.asp?ID=11215.[6]

In this fourth and final phase of the study, ELI examines the 13 remaining states: Alaska, Delaware, Indiana, Kansas, Massachusetts, Minnesota, Mississippi, Nevada, New Hampshire, North Dakota, Oklahoma, South Carolina, and Tennessee. [7]

ELI anticipates releasing a 50-state roll-up report that will update data collected in previous phases, summarize findings in all 50 states, and provide comparative analysis.

Methodology

In order to allow for the evaluation of state wetland programs in a uniform manner, ELI developed a methodology and format for gathering and organizing information on the core elements of each state program. This

3. U.S. Environmental Protection Agency, *Core Elements of Comprehensive State and Tribal Wetlands Programs*, *at* http://www.epa.gov/owow/wetlands/initiative/fy02elements.html (last revised Feb. 22, 2006).

4. The information contained in the Phase I report was obtained primarily through legal and policy research and personal interviews conducted from November 2003 to November 2004.

5. The information contained in the Phase II report was obtained primarily through legal and policy research and personal interviews conducted from March 2005 to March 2006.

6. The information contained in the Phase III report was obtained primarily through legal and policy research and personal interviews conducted from October 2005 to December 2006.

7. The information obtained for this report was obtained primarily through legal and policy research and personal interviews conducted from November 2006 to August 2007.

methodology allowed the data collected from each state to be as comparable as possible and was utilized during each phase of the study.[8] For each state, ELI conducted a detailed legal review of the state statutes and regulations that establish and direct the state programs. ELI policy staff conducted additional research using secondary sources and the Internet. Finally, ELI staff conducted phone interviews with program administrators and other relevant individuals where necessary. State agency staff reviewed each state summary prior to its inclusion in this report.

8. Some state-level wetland activities were not included among the issues covered because they are common to all states. For example, every state's transportation authority operates as a regulated party, applying for permits under CWA §401/§404 and conducting mitigation. Also, most states' park or forest agencies manage some lands with wetlands located on them. Most of the fifty states operate National Pollutant Discharge Elimination System permit programs that regulate point source discharges into waters of the United States, which may include wetlands. These types of state-level regulatory or management activities were generally not included in the research gathered by ELI. Instead, this study examines the distinguishing features and trends among state wetland activities and programs.

Summary Discussion of Core Elements

ELI's study examines 50 distinct state wetland programs. Although these programs represent a diversity of approaches and conditions, ELI does not attempt to draw inferences that apply to all 50 states. However, numerous observations can be made about each of the state programs, as well as their core elements.

It should be noted that, in this discussion, statements made about Phase I, II, and III states are based on information collected between 2003 and 2006. With support from the U.S. Environmental Protection Agency, ELI plans to update information collected on these states and release a 50-state roll-up report that will summarize findings in all 50 states and provide comparative analysis.

I. State Laws, Regulations, and Programs

Wetland definitions and delineation

All 50 states include wetlands—explicitly or implicitly—in their definitions of "state waters." Although several states do not specifically identify "wetlands," "marshes," or other wetland classes in their definitions for state waters, they do include broad definitions of surface waters, groundwaters, and/or bodies of water that may include wetlands. For example, Hawaii defines "waters of the state" to include "any and all water on or beneath the surface of the ground, including natural or artificial watercourses, lakes, ponds, or diffused surface water and water percolating, standing, or flowing beneath the surface of the ground."[1] In some states, regulations or judicial decisions clarify that wetlands are included. In Colorado, wetlands are not explicitly referenced in the definition for state waters, but separate regulations clarify that "the existing definition of 'state waters' is broad enough to include wetlands."[2] In North Carolina and Washington, the states' definitions of "waters" do not explicitly include wetlands, but court decisions in both states have ruled that wetlands must be included.[3]

Most states have also adopted one or several definitions of wetlands. Many states' definitions echo that of the Clean Water Act (CWA).[4] Definitions may define wetland classes, types, and/or jurisdictional boundaries. For example, North Carolina has adopted provisions specifically for the protection of isolated wetlands and provides an "isolated wetlands" definition in addition to the state's definition for "wetlands."[5]

1. Haw. Rev. St. Ann. § 174C-3.
2. 5 Colo. Code Regs. § 1002-31.27.
3. *See Building Industries Associates of Washington v. City of Lacey*, No. 91-2-02895-5. (Thurston County Super. Ct. 1993) and *See North Carolina Home Builders Association v. Environmental Management Commission*, 573 S.E.2d 732 (N.C. Ct. App. 2002).
4. The federal definition of "wetlands" is "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 C.F.R. § 328.3(b).
5. N.C. Admin. Code 02H.1300.

Most states rely on the delineation methodology outlined in the U.S. Army Corps of Engineers' 1987 *Wetlands Delineation Manual*,[6] although some states use other state and/or federal delineation manuals that either supersede or supplement the 1987 Corps *Manual*. For example, New York State uses its 1995 *Freshwater Delineation Manual*, which emphasizes, but is not limited to, vegetation criteria. The state's delineation techniques parallel those offered in the Corps' manual, and soil and hydrological classifications can be used if needed.[7] Generally, criteria are similarly stringent, but the amount of documentation required by New York State is less rigorous than that required by the Corps.[8]

Wetland-related laws and regulations

States utilize a variety of regulatory tools to protect wetlands. Many states rely on water quality regulations and CWA §401 (See *Box A*). Two states, Michigan and New Jersey, have assumed the CWA §404 program. Other states have enacted laws establishing resource-based permitting programs for wetlands. Still others have adopted laws requiring local governments to regulate and protect wetlands. Multiple states have enacted different types of laws in combination, creating a more comprehensive approach to wetland protection.

State water quality programs. Many states rely primarily on water quality laws to regulate wetlands as "waters of the state." In Alabama, Arizona, Arkansas, Colorado, Hawaii, Idaho, Iowa, Kansas, Kentucky, Montana, Missouri, Nebraska, Nevada, New Mexico, North Dakota, Oklahoma, South Dakota, Texas, Utah, West Virginia, and Wyoming, §401 water quality certification is the sole mechanism by which wetlands are regulated at the state level. Several states rely on §401 certification to protect wetlands in addition to state laws that protect wetlands in specific regions or that fall outside federal jurisdiction. For example, Wisconsin issues §401 water quality certification for federal activities that result in discharges to waters of the U.S. and has also enacted legislation regulating "isolated wetlands" that fall outside federal jurisdiction.[9]

Assumption of CWA §404. To date, Michigan and New Jersey are the only two states in the nation that have assumed authority to administer dredge and fill permits under CWA §404.

Aquatic resource permitting programs. Several states have established permitting regimes focused on wetlands and aquatic resources. For example, Florida's Environmental Resource Permit Program[10] effectively regulates all alterations to the landscape, including all tidal and freshwater wetlands and other surface waters (including isolated wetlands) and uplands. The program addresses dredging and filling in wetlands and other surface waters, as well as stormwater treatment and attenuation and flooding of other properties, including flows resulting from alterations of uplands.[11] In California, Connecticut, Delaware, Georgia, Louisiana,

6. U.S. Army Corps of Engineers, Wetlands Research Program Technical Report Y-87-1, Corps of Engineers Wetlands Delineation Manual (1987), *available at* http://el.erdc.usace.army.mil/elpubs/pdf/wlman87.pdf.

7. New York State Department of Environmental Conservation, Freshwater Wetlands Delineation Manual *(1995)*, *available at* http://www.dec.state.ny.us/website/dfwmr/habitat/wdelman.pdf.

8. Personal communication with Patricia Riexinger, N.Y. Dep't of Envtl. Conservation (Nov. 12, 2003).

9. S.B. 1, 2001 Gen. Assem., Spec. Sess. (Wis. 2001).

10. Fl. Stat. Ann. § 373, Part IV.

11. Florida's panhandle operates under a wetland resource permit program that regulates dredging and filling in waters of the state. The rules applicable to the panhandle program are currently "grandfathered" until the year 2010, when they will be replaced by the Environmental

Box A.
Clean Water Act § 401 Water Quality Certification.

Clean Water Act §401(a)(1) states that:

> *"Any applicant for a Federal license or permit to conduct any activity including, but not limited to, the construction or operation of facilities, which may result in any discharge into the navigable waters, shall provide the licensing or permitting agency a certification from the State in which the discharge originates or will originate, or, if appropriate, from the interstate water pollution control agency having jurisdiction over the navigable waters at the point where the discharge originates or will originate, that any such discharge will comply with the applicable provisions . . . In the case of any such activity for which there is not an applicable effluent limitation or other limitation . . . the State shall so certify. . . No license or permit shall be granted until the certification required by this section has been obtained or has been waived . . . No license or permit shall be granted if certification has been denied by the State, interstate agency, or the Administrator, as the case may be."*

Some states rely on §401 water quality certification as a regulatory mechanism for the management and protection of wetlands. The basic elements of water quality standards (WQS), including designated uses, criteria, and an antidegradation policy, provide a legal basis for protecting wetland resources through state water quality management programs. Prior to the 1990s, state water quality standards were typically only applied to waters such as rivers, lakes, estuaries, and oceans and were applied tangentially, if at all, to wetlands. Today, standards can play a critical role in state water quality certification by providing the basis for approving, conditioning or denying federal permits and licenses and by providing a benchmark against which to assess the many activities that impact wetlands.[1]

[1] U.S. Environmental Protection Agency, *National Guidance: Water Quality Standards for Wetlands,* at http://www.epa.gov/owow/wetlands/regs/quality.html (July 1990).

Michigan, Mississippi, North Carolina, Rhode Island, South Carolina, and Virginia, state permitting programs have been established for coastal wetlands.[12] North Carolina and New Hampshire also implement buffer protection rules.[13]

Local authority. Some states have established laws requiring local governments to adopt ordinances that provide wetland regulation and protection and/or incorporate planning criteria into their minimum standards.[14] Although administered locally, state resource agencies in these states (Connecticut, Georgia, Maine, Massachusetts, Oregon, Washington, and Wisconsin) are charged with providing guidance and technical

Resource Permit program. *See:* Fl. Stat. Ann. § 373.4145.

12. State permitting programs for coastal resources are authorized in California, Connecticut, Delaware, Georgia, Louisiana, Michigan, Mississippi, North Carolina, Rhode Island, South Carolina, and Virginia under Cal. Pub. Res. Code § 30600(a), Conn. Gen. Stat. § 22a-28 *et seq*., Del.Code Ann. tit. 7, § 6601, Ga. Code Ann. § 12-5-280, La. Rev. Stat. Ann. § 49: 214.21 *et seq.*, Mich. Comp. Laws §§ 324.32301 - 324.32315, Miss. Code Ann. §§ 49-27-1, 49-27-71, N.C. Gen. Stat. § 113A-100, R.I. Gen. Law § 46-23 *et seq.*, S.C. Code Ann. § 48-39-10(G), and Va. Code Ann. §§ 28.2-1300 -1320, respectively. Rhode Island has also adopted regulations that address "freshwater wetlands in the vicinity of the coast. *See:* R.I. Gen. Law § 46-23-6.E.

13. N.C. Admin. Code tit.15A, r. 02B.0233, 02B.0259; N.H. Rev. Stat. Ann. § 483-B:4.

14. This does not include states, such as New York or Virginia, that allow local governments to assume authority under state wetland laws.

assistance to local governments. For example, in Maine and Washington, planning laws that focus on shoreland areas require local governments to implement planning ordinances that protect coastal resources, including wetlands.[15] The Maine Department of Environmental Protection and Washington Department of Ecology, respectively, provide guidance and oversight to local agencies, as well as other administrative and regulatory assistance.

Other wetland-related authorities. Various states have adopted other types of legislation aimed at wetland protection. For example, the Arkansas Private Wetland and Riparian Zone Creation and Restoration Incentive Act was designed to target private landowners by providing tax credits for the restoration or creation of wetlands and riparian zones.[16] The Wyoming Wetlands Act is a notification program for draining wetlands over five acres.[17]

Many states have also adopted rules outlining best management practices pertaining to wetlands, coastal conservation provisions, and/or protection measures for specific wetland resources in the state. California's Suisan Marsh Preservation Act protects the Suisan Marsh, the largest wetland system in California comprising 10 percent of the state's wetlands.[18]

Others have laws and regulations that indirectly affect wetlands. Washington has adopted a forest-focused law[19] and a water resource-focused law,[20] both of which indirectly involve wetland protection. In Illinois, the Rivers, Lakes, and Streams Act provides the Illinois Department of Natural Resources with peripheral authority to regulate construction activities in floodplains.[21]

§401 certification

The number of §401 certifications issued annually varies greatly from state to state, from dozens to thousands. All states that issue §401 water quality certifications reported a low rate of certification denial. Permit review staff often stated that they work closely with applicants prior to application submission or during the application review process, providing guidance on requisite state standards, alternative locations, project designs, and mitigation strategies. Certifications are also often issued with modifications or conditions, such as mitigation or stormwater management requirements.

Organization of state agencies

The majority of states studied administer wetland regulatory programs and non-regulatory activities through two or more state agencies, although a significant number relies on a single agency for all state-level wetland activities. In Arizona, Connecticut, Delaware, Georgia, Indiana, Michigan, Montana, New Mexico, North

15. *See:* Me. Rev. Stat. Ann. tit. 38, §§ 435-449 and Wash. Rev. Code § 90.58.
16. Arkansas Private Wetland and Riparian Zone Creation and Restoration Incentive Act, Ark. Code Ann. §§ 26-51-1501.
17. Wyo. Stat. § 35-11-308 *et seq*.
18. Cal. Pub. Res. Code §§ 29000-29612.
19. Wash. Rev. Code § 76.09; Wash. Admin. Code § 222.
20. Wash. Rev. Code § 77.55; Wash. Admin. Code § 220-110.
21. Illinois Department of Natural Resources, *Rivers, Lakes, and Streams Act, at* http://dnr.state.il.us/wetlands/Ch4f.htm (last visited July 18, 2007).

Carolina, Pennsylvania, South Carolina, Vermont, Wisconsin, and Wyoming—states with widely varying economies, ecologies, and wetland program sizes and approaches—state-level wetland-related activities are administered by one main environmental agency, although programs are often operated by multiple divisions within the single agency.

Another common organization of state activities involves two state resource agencies—one that administers state laws and regulations and one that oversees non-regulatory activities, such as restoration initiatives and landowner stewardship programs. Other state agencies organize by jurisdiction, rather than by type of activity. For example, Maine divides regulation among "organized" and "unorganized" or "de-organized" areas of the state (Maine Department of Environmental Protection and Maine Land Use Regulation Commission, respectively).

Regulatory programs may also be administered jointly at the state and regional level. In Florida, the Department of Environmental Protection and four of five regional Water Management Districts[22] implement the state's environmental resource permitting program. California's State Water Resources Control Board and nine Regional Water Quality Control Boards together constitute the state Water Board entities responsible for regulating wetlands.

For many states, wetland-related activities are conducted by multiple state agencies. For example, in Washington, the Department of Ecology is the foremost wetland agency in the state, administering the §401 program and providing guidance and technical assistance to local governments and the regulated community. However, Washington's Departments of Fish and Wildlife; Natural Resources; and Community, Trade, and Economic Development also conduct wetland-related activities through various state statutes.

In most cases, wetland-related activities are an integral part of larger state programs, thus making it difficult to estimate the specific amount of funding or resources devoted to wetland programs. Estimated annual budgets ranged from $75,000 for the Arizona Department of Environmental Quality's §401 program to as much as $630 million for California's water quality boards. Similarly, the number of full-time equivalents (FTEs) dedicated to wetland activities varies from state to state, agency to agency, and program to program. The State of Colorado employs 1⅓ FTEs for wetland activities conducted in the Colorado Department of Public Health and Environment and the Colorado Department of Natural Resources. In contrast, California employs more than 1,500 staff statewide to administer the state's water quality control law.

22. The five regional WMDs are: Northwest Florida, Saint John's River, South Florida, Southwest Florida, and Suwanee River. The Florida Department of Environmental Protection administers the wetland permitting program in the Northwest Florida WMD, covering the "panhandle" region in the northwest portion of the state.

General permits

Most states examined conduct regular reviews of the U.S. Army Corps of Engineers' nationwide permits (NWPs). States also provide comment on Corps regional NWP conditions, and many issue conditions or denials of water quality certification for NWPs. Few states waive review altogether.[23]

In Michigan and New Jersey, although the states have assumed authority to administer dredge and fill permits under CWA §404, the Corps retains jurisdiction of traditionally navigable waters. NWPs are still applicable in these areas. The states have also issued general permits for their assumed 404 programs. Analogous to the federal NWPs, general permits in Michigan and New Jersey allow the state agencies to evaluate applications on an expedited basis. For the most part, general permit categories are similar to those found in the Corps' NWPs.

States that operate permitting programs often have created general permits. For example, Virginia has issued four general permits under its Water Protection Permit Program for activities considered to have minimal impact to human health and the environment.[24]

Connecticut, Maine, Maryland, Massachusetts, Minnesota, New Hampshire, Pennsylvania, Rhode Island, Vermont, and Wisconsin operate under a statewide programmatic general permit (SPGP) and therefore do not have applicable NWPs. The SPGPs expedite the Corps' review of certain activities that are subject to federal jurisdiction, but do not preclude permit applications required under state regulations.

Delaware, Florida, Hawaii, Louisiana, Oregon Virginia, and Wyoming also have SPGPs, although they cover limited sets of activities and/or defined geographic areas within the state. These SPGPs do not preclude the application of NWPs for these states.

Mitigation

Mitigation regulations vary greatly from state to state. Many states have not adopted mitigation provisions beyond what is required under CWA §404, often deferring to the Corps for compensatory mitigation issues. However, some of these states have developed, on their own or in coordination with federal agencies, mitigation guidance on replacement ratios, site/kind preferences, mitigation banking, and in-lieu-fee mitigation. For example, Kentucky's *Wetland Compensatory Mitigation and Monitoring Plan Guidelines*, jointly prepared by the Louisville Corps District, U.S. Fish and Wildlife Service, U.S. Environmental Protection Agency, Kentucky Division of Water (KDOW), and Kentucky Department of Fish and Wildlife Resources, assists applicants with the creation of mitigation and monitoring plans for projects requiring a §404 permit and §401 certification.[25] Although no specific wetlands mitigation goals are established in the document, it contains guidelines for development site description, mitigation site description, success criteria and performance standards for the

23. ELI's study generally examined action on the 2002 NWPs; most states' actions on the 2007 NWPs were not examined within the reporting period.

24. 9 Va. Admin. Code §§ 25-660, 25-670, 25-680, 25-690.

25. Ky. Div. of Water, Wetland Compensatory Mitigation and Monitoring Plan Guidelines for Kentucky, *available at* http://www.water.ky.gov/NR/rdonlyres/BC3F4926-1327-4965-A50C-2B1FCE01FDE5/0/Wetland_guide.pdf (last visited July 25, 2007).

mitigation site, monitoring details, permanent protection plan, and contingency plans. When applying for a water quality certification through KDOW, an applicant must follow the Kentucky Guidelines for wetland-related impacts involving greater than one acre.

Many states' wetland permit laws include mitigation requirements. These mitigation provisions typically establish a "no net loss" goal, include ratio requirements and site/kind preferences, and may provide language on banking and in-lieu-fee options.

A minority of state resource agencies have established their own mitigation banks[26] or in-lieu fee programs. For example, North Carolina's Ecosystem Enhancement Program provides a programmatic approach to the state's mitigation needs, seeking to increase regulatory efficiency and ecological effectiveness by providing a unified, watershed-based approach for all of the state's aquatic resources planning and mitigation activities. The program consolidates and streamlines state mitigation programs, including the numerous mitigation operations performed by the North Carolina Department of Transportation.[27] Most states participate in Mitigation Banking Review Teams to some degree.

Separate standards and procedures for stream mitigation are uncommon among states. Kansas, Kentucky, Maine, Maryland, Missouri, North Carolina, Pennsylvania, Tennessee, and Virginia have adopted regulations or developed guidelines specifying criteria for stream mitigation.

Compliance and enforcement

For the majority of states, wetland-related enforcement falls primarily under the state's water quality provisions. Such is the case in Alabama, Alaska, Arizona, Arkansas, California, Colorado, Georgia, Hawaii, Idaho, Iowa, Kansas, Kentucky, Louisiana, Mississippi, Missouri, Montana, Nebraska, Nevada, New Mexico, North Carolina, North Dakota, Ohio, Oklahoma, South Carolina, South Dakota, Tennessee, Texas, Utah, Washington, West Virginia, and Wyoming. Enforcement tools vary from state to state and may include compliance orders, injunctions, and civil and criminal penalties/prosecution. Many of these states, however, defer to the U.S. Army Corps of Engineers and/or U.S. Environmental Protection Agency to pursue wetland-related enforcement under CWA §404.

For the remaining states, enforcement provisions are outlined in the states' other wetland-related laws and regulations. Again, typical enforcement mechanisms include civil and criminal penalties/prosecution, abatement orders, and injunctions. Enforcement actions are rarely pursued at elevated levels.

26. More commonly, state transportation agencies have established mitigation banks to compensate for impacts resulting from road construction projects. Because state transportation agencies generally operate as a regulated party, ELI did not review their banking activities closely for this study. *For more information of this kind, see instead:* Environmental Law Institute, 2005 Status Report on Compensatory Mitigation in the United States (2006), *available at:* http://www2.eli.org/wmb/index.htm; and Environmental Law Institute, Banks and Fees: The Status of Off-Site Wetland Mitigation in the United States (2001), *available at:* http://www2.eli.org/wmb/index.htm.

27. North Carolina Department of Environment and Natural Resources, *Wetlands Restoration Program: 2003 Annual Report (2003*), *available at* http://www.nceep.net/news/annualreport/2003/03WRPAnnual.pdf.

Tracking systems

Most states maintain systems to track permits and/or certifications to some degree; some states may also include data related to enforcement, mitigation, restoration, monitoring, and/or assessment. A few states have developed, or are currently developing, more comprehensive tracking systems. For example, Arkansas' Wetland Information Management System uses GIS and includes a variety of data fields such as mitigation (based on proposed actions only), individual wetland planning areas, eco-regions and watersheds, congressional districts, counties, §404 permits, acreages, and conservation programs.[28]

II. Water Quality Standards

Seven states have adopted wetland-specific water quality standards: Colorado, Hawaii, Minnesota, Nebraska, North Carolina, Ohio, and Wisconsin. Several states have adopted wetland-specific anti-degradation policies and designated uses. For example, Wyoming rules state, "Point or non-point pollution shall not cause the destruction, damage or impairment of naturally occurring wetlands except when mitigated through an authorized wetlands mitigation process."[29] Most states, however, have not adopted water quality criteria, anti-degradation policies, or designated uses specific to wetlands, although surface water quality standards, uses, and antidegradation policies do apply to wetlands included in state-defined waters.

III. Monitoring and Assessment

Few of the states examined maintain a formal monitoring and assessment program for wetlands, although many have developed and/or adopted one or more wetland assessment methodologies, while others are currently in the development phase. For example, Montana has landscape-level and rapid assessments and is developing a bioassessment focused on vegetation, birds, and amphibians. In the future, Montana hopes to develop a strategy to integrate the assessment of wetlands with stream and landscape assessments to focus on overall watershed health. Beginning in 2006, the state will use assessments in watersheds to identify sites for wetland protection and restoration. The main purposes of the strategy will be local watershed management, identification of wetland restoration priorities, and general ambient assessment.[30]

IV. Restoration and Partnerships

Most states conduct restoration-related activities to some extent, although most states do not have a formal wetland restoration program outside of federal programs (e.g., Natural Resources Conservation Service's Wetland Reserve Program or programs related to the North American Waterfowl Management Plan).

28. Personal Communication with Ken Brazil, Ark. Natural Res. Comm'n (Apr. 26, 2004).
29. Ch. 1 of Wyoming Water Quality Rules and Regulations § 12.
30. Personal Communication with Randy Apfelbeck, Mont. Dep't of Envtl. Quality (Mar. 9, 2005).

One example is Wisconsin's wetland restoration program, which is funded by waterfowl stamp revenues. State, federal, and conservation groups within the state are eligible for funding to conduct restoration. The program allocates funds according to criteria based on wildlife priorities identified in the *Upper Mississippi River and Great Lakes Region Joint Venture—Wisconsin Plan*. The plan states its goal to be the involvement of "state and federal agencies and private organizations in a broad-based, unified effort to increase populations of waterfowl and other wildlife species by preserving, restoring, and enhancing wetland and upland habitat..." The plan outlines multiple, concrete objectives designed to achieve this goal, including increasing bird populations and additional habitat—specifically, "a minimum of 55,500 additional acres of habitat (3,700 acres per year) in perpetuity with a 3:1 upland to wetland ratio" and "177,350 acres of habitat on public (4,340 acres per year) and private (7,500 acres per year) lands by the year 2005."[31] As of 2005, the program has accomplished more than 70 percent of the goal.[32]

Several states operate landowner stewardship programs. For example, Arkansas' Wetland and Riparian Zones Tax Credit Program provides tax credits to private landowners for the restoration or creation of wetlands and riparian zones.[33]

V. Education and Outreach

Most states conduct some level of wetland-related education and outreach. However, only six states (California, Delaware, Indiana, Massachusetts, Montana and Wisconsin) have created a formal, wetland-specific education/outreach plan or program. For example, Montana's wetland outreach and education program includes: public service television and radio spots about the importance and value of wetlands; targeted outreach material for landowners, local government planning officials, wetland pond owners, developers, and the regulated community; and numerous community meetings addressing local wetland issues. The state has also partnered with local governments experiencing rapid growth and land use change to conduct wetland mapping and classification, as well as capacity building so that local governments can better manage and protect local wetland resources. In addition, the Montana Watercourse is a statewide education and outreach program that provides information, tools, and resources on water resources, including wetlands.

Many states operate broader environmental education programs and activities, of which wetlands may be a component. For example, the Alabama Department of Conservation and Natural Resources partners with Alabama Wildlife Federation, Alabama Power, Alabama Cooperative Extension System, National Wildlife Federation, Georgia Wildlife Federation, Alabama Forestry Commission, and Oregon State University Extension Service to run the Alabama Outdoor Classroom program. The program helps educators and com-

31. Wisconsin Department of Natural Resources, Upper Mississippi River Great Lakes Region Joint Venture, Wisconsin Plan (1992) (on file with author).

32. Personal Communication with Michele Cipiti, Wisconsin Department of Natural Resources (Nov. 28, 2005).

33. Ark. Code Ann. § 26-51-1501.

munities establish wildlife habitat and outdoor classrooms on their school grounds. Of the ten schools with certified outdoor classrooms, half include a wetland component.[34]

Numerous states have not adopted strategic environmental education strategies or formal programs, but do conduct various wetland-related education and outreach activities, such as: giving wetland-related presentations to scientific/professional meetings, contractors and developers, schools, conservation groups, and others; producing materials aimed at promoting stewardship among local governments and landowners, K-12 students and teachers, and the general public; displaying wetland materials at events; creating curricula for K-12 students and teachers; offering training programs for the regulated community and the general public; and sponsoring and organizing Project WET (Water Education for Teachers) and Project WILD workshops, which offer interdisciplinary environmental education training for educators and include lessons on aquatic habitat and wildlife.

VI. Coordination among State and Federal Agencies

Each state coordinates to some extent with other state and federal agencies on various issues, typically involving pending permit applications and project reviews or federal conservation and agricultural programs. Most states hold regular meetings among state and federal agency staff to discuss wetland-related issues and projects within the state, and many state agencies have adopted intrastate memoranda of agreement involving wetland practices and/or regulation within the state. A few states have also created interagency councils to guide statewide wetland protection and conservation efforts for the state. For example, Arkansas' Multi-Agency Wetland Planning Team (MAWPT) includes six state agencies that work in partnership to determine what paths to take towards wetland conservation efforts in the state. Under the MAWPT, numerous initiatives have been launched to help state agencies make better planning and management decisions about wetlands.[35]

34. Alabama Wildlife Federation, *Welcome to the Alabama Outdoor Classroom Program*, *at* http://www.alabamawildlife.org/conservation_education/classrooms.asp (last accessed July 3, 2006).
35. Elizabeth O. Murray & Ken Brazil, *For Arkansas, Protection Begins with Multi-Agency Planning*, 25:3 National Wetlands Newsletter, at 1 (2003).

Conclusion and Plans for 50-State Roll-up

State-level wetland regulation and conservation programs are extremely diverse due to a variety of circumstances—history, geography, economics, politics, general attitudes toward wetland resources, as well as state agency funding, resources, and enforcement activity. All of these factors contribute to the unique nature of the programs observed in each of the 50 states. Although some of the state approaches to wetland protection are the result of well-planned efforts to construct a comprehensive program, others are the result of incremental program development activities that have evolved organically over time.

The 50 states represent a diversity of approaches to wetland protection, and numerous observations can be made about each of the states and the core elements of their wetland programs.[1] In 2007, ELI will complete a "roll-up" report of all 50 state programs that will update data collected in previous phases, examine the status of and trends among state wetland programs, and present model program approaches for each of the core elements.

1. *State Wetland Program Evaluation: Phase I*, published in 2005, is available for free download on ELI's website at: http://www.elistore.org/reports_detail.asp?ID=11079. *State Wetland Program Evaluation: Phase II*, published in 2006, is available for free download on ELI's website at: http://www.elistore.org/reports_detail.asp?ID=11152. *State Wetland Program Evaluation: Phase III*, published in 2007, is available for free download on ELI's website at: http://www.elistore.org/reports_detail.asp?ID=11215.

Appendix: Phase IV State Wetland Program Summaries

Alaska

Delaware

Indiana

Kansas

Massachusetts

Minnesota

Mississippi

Nevada

New Hampshire

North Dakota

Oklahoma

South Carolina

Tennessee

* *State Wetland Program Evaluation: Phase I*, published in 2005, includes individual summaries for Arizona, Arkansas, Colorado, Georgia, Maine, Michigan, Missouri, New York, North Carolina, Ohio, Pennsylvania, and Washington. The report is available for free download on ELI's website at: http://www.elistore.org/reports_detail.asp?ID=11079.

** *State Wetland Program Evaluation: Phase II*, published in 2006, includes individual summaries for Florida, Hawaii, Montana, Nebraska, New Jersey, Oregon, Rhode Island, Texas, Utah, Vermont, West Virginia, and Wisconsin. The report is available for free download on ELI's website at: http://www.elistore.org/reports_detail.asp?ID=11152.

*** *State Wetland Program Evaluation: Phase III*, published in 2007, includes individual summaries for Alabama, California, Connecticut, Idaho, Iowa, Illinois, Kentucky, Louisiana, Maryland, New Mexico, South Dakota, Virginia, and Wyoming. The report is available for free download on ELI's website at: http://www.elistore.org/reports_detail.asp?ID=11215.

Alaska

I. Overview

Wetlands cover approximately 170 million acres of Alaska (about 43 percent), which is more than the existing acreage of wetlands in the rest of the United States. Most of the state's freshwater wetlands (around 100 million acres) are peatlands; however, the state also has marshes, bogs, fens, tundra, and meadows.[1] Coastal wetlands are found along Alaska's 44,000 miles of coastline. Alaska's population is relatively small and one-third of Alaskans live in Anchorage;[2] thus, many wetlands remain undisturbed. Alaska has lost about 200,000 acres of wetlands.[3] Wetlands are owned and managed by various state, federal, and local agencies. The state relies on §401 water quality certification under the Clean Water Act for regulating wetlands statewide; however, the U.S. Army Corps of Engineers (Corps) plays the major role in regulating wetlands in the state. Additionally, several local governments regulate wetlands within their jurisdictions.

II. Regulatory Programs

Wetland definitions and delineation

The State of Alaska defines "waters" as:

> [l]akes, bays, sounds, ponds, impounding reservoirs, springs, wells, rivers, streams, creeks, estuaries, marshes, inlets, straits, passages, canals, the Pacific Ocean, the Gulf of Alaska, Bering Sea, and Artic Ocean, in the territorial limits of the state, and all other bodies of surface or underground water, natural or artificial, public or private, inland or coastal, fresh or salt, which are wholly or partially in or bordering the state or under the jurisdiction of the state.[4]

The Alaska Department of Natural Resources (ADNR) defines freshwater wetlands in its regulations for the Coastal Management Program (CMP) as "environments characterized by rooted vegetation that is partially submerged either continuously or periodically by surface freshwater with less than 0.5 parts per thousand salt content and not exceeding three meters in depth."[5] Saltwater wetlands are defined as "coastal areas along sheltered shorelines characterized by halophilic hydrophytes and macro algae extending from extreme low tide to an area above extreme high tide that is influenced by sea spray or tidally induced water table changes."[6]

1. Association of State Wetland Managers, State Wetland Programs: Alaska, *available at* http://www.aswm.org/swp/ak9.pdf (last visited June 25,2007).
2. U.S. Environmental Protection Agency, Alaska Wetlands Initiative: Summary Report, *available at* http://www.epa.gov/owow/wetlands/facts/fact9.html (last updated Feb. 22, 2006).
3. *Id.*
4. Alaska Stat. § 46.03.900(37).
5. Alaska Admin. Code tit. 11, § 112.990(13).
6. Alaska Admin. Code tit. 11, § 112.990(25).

In Alaska, the U.S. Army Corps of Engineers (Corps) may conduct delineations or will enter into contracts for delineations to be carried out by a Corps-approved consultant.[7] In most cases, however, the applicant contracts out the delineation. The 2006 regionalization of the Corps' 1987 *Wetlands Delineation Manual*[8] in Alaska is the first in the country.[9]

Wetland-related law and regulation

Alaska uses §401 water quality certification as its primary mechanism to regulate wetlands at the state level.

§401 water quality certification. All federal activities, such as §404 dredge and fill permits, which will result in discharge into waters of the U.S. require a §401 water quality certification from the Alaska Department of Environmental Conservation (ADEC). The Corps' public notification for §404 permit applications includes a request for a §401 certification.[10] This notice also serves as a joint public notice between the Corps, ADEC, and the CMP, which issues coastal consistency determinations for §404 permits for projects in the coastal zone.[11] Approximately 70 percent of all §401 certifications relate to wetlands.[12] In fiscal year (FY) 2006, the ADEC issued 183 certifications, waived 15 certifications, and did not deny any applications. The ADEC primarily uses qualitative assessment and best professional judgment when making certification decisions.[13]

Fish Habitat Permits. The state requires the ADNR Office of Habitat Management and Permitting (OHMP) to identify "various rivers, lakes, and streams or parts of them that are important for the spawning, rearing, or migration of anadromous fish."[14] The office maintains a record of these areas in its "Catalog of Waters Important for the Spawning Rearing or Migration of Anadromous Fishes."[15] Any activity that may impact this anadromous fish habitat, such as a hydraulic project, diversion, or change to the flow or bed of the river, lake, or stream, must be approved and permitted by the department.[16] Anadromous fish habitat may include some types of wetlands such as sloughs and backwater wetlands, and projects in these wetlands will require a Fish Habitat Permit.[17] However, less than ten percent of issued permits relate to wetlands.[18]

7. Personal communication with Jim Powell, Alaska Dep't of Conservation (Mar. 9, 2007).

8. U.S. Army Corps of Engineers, Wetlands Research Program Technical ReportY-87-1, Corps of Engineers Wetlands Delineation Manual (1987), *available at* http://www.mvn.usace.army.mil/ops/regulatory/wlman87.pdf.

9. Powell, *supra* note 7.

10. Personal Communication with Mel Langdon, Alaska Dep't of Envtl Conservation (Jan. 26, 2007).

11. Coastal zone is defined as "the coastal water including land within and under that water, and adjacent shoreland, including the water within and under that shoreland, within the boundaries approved by the former Alaska Coastal Policy Council and by the United States Secretary of Commerce under 16 U.S.C. 1451 - 1465 (Coastal Zone Management Act of 1972, as amended); "coastal zone" includes areas added as a result of any boundary changes approved by the department and by the United States Secretary of Commerce under 16 U.S.C. 1451 – 1465..." *See* Alaska Stat. § 46.40.210(4).

12. Langdon, *supra* note 10.

13. *Id.*

14. Alaska Stat. § 41.14.870(a).

15. Alaska Department of Natural Resources – Office of Habitat Management and Permitting, *Fish Habitat (Title 41) Permits*, *at* http://www.dnr.state.ak.us/habitat/FHpermits.htm (last updated June 26, 2007).

16. Alaska Stat. § 41.14.870(b).

17. Personal Communication with Jackie Timothy, Alaska Dep't of Natural Res. (Jan. 23, 2007).

18. Personal Communication with Stewart Seaberg, Alaska Dep't of Natural Res. (Feb. 16, 2007).

Organization of state agencies

Alaska Department of Environmental Conservation. The ADEC is responsible for regulating and managing the state's air quality, environmental health, oil spills, and water. The department's Division of Water is responsible for protecting the state's water quality, which includes issuing §401 water quality certifications and developing water quality standards (WQS), designated uses, and the antidegradation policy for the state's waters. ADEC offices are located in Anchorage, Juneau, Fairbanks, Kenai, Sitka, and Kodiak. Two staff members are dedicated to the §401 program and are located in the Juneau and Anchorage offices. These employees attend the Corps' pre-application meetings, review applications, and occasionally conduct site visits and inspections; however, they do not carry out enforcement activities. The program's annual budget is $195,000, of which approximately 13 percent is derived from fees and the remainder from state general funds and U.S. Environmental Protection Agency (EPA) grants.[19]

Alaska Department of Natural Resources. The OHMP administers the Fish Habitat Permit Program. Staff biologists in the OHMP conduct research and surveys, work with permit applicants to ensure that project plans will not harm fish habitat,[20] conduct monitoring and enforcement for permitted projects, and provide technical assistance to land owners.[21] Biologists also provide comments on wetland-related projects subject to review by the ADNR's CMP for coastal consistency.[22] Twenty-five staff members are dedicated to the Fish Habitat Permitting Program. However, it is difficult to estimate the percent of time staff spend on wetland-related activities, because less than 10 percent of Fish Habitat Permits relate to wetlands and employees work on numerous tasks. The OHMP's budget is approximately two million dollars of which over 50 percent is derived from state general funds, while the remainder comes from a variety of sources including federal funding.[23]

The CMP is responsible for reviewing and concurring with or objecting to federal coastal consistency determinations[24] and coordinating permit review for projects located in the coastal zone.[25] It also oversees, reviews, and approves coastal resource district plans that govern use of coastal resources in coastal districts.[26] Plans include enforceable policies[27] for coastal resources, including wetlands[28] and special area management

19. Langdon, *srpra* note 10.
20. Alaska Department of Natural Resources – Office of Habitat Management and Permitting, *About the Office of Habitat Management and Permitting*, *at* http://www.dnr.state.ak.us/habitat/overview.htm (last updated June 26, 2007).
21. Seaberg, *supra* note 18.
22. Timothy, *supra* note 17.
23. Seaberg, *supra* note 18.
24. Alaska Admin. Code tit. 11, §§ 110.300, 110.400.
25. Personal Communication with Gina Shirey-Potts, Alaska Dep't of Natural Res. (Feb. 7, 2007).
26. To ensure coastal resources were protected, the state divided the coast into "coastal resource districts." If a city or borough includes coastline, then that municipality is considered a district. If coastline did not fall within a municipality, then a coastal resource district was established. Personal Communication with Jim Powell, Alaska Dep't of Envtl. Conservation, (Feb. 7, 2007). However, there are areas of coastline outside of a municipality or coastal resource district, such as in Southeast Alaska. Personal Communication with Gina Shirey-Potts, Alaska Dep't of Natural Res., (Mar. 1, 2007). *See also* Alaska Admin. Code tit. 11 § 110.990(10).
27. Under recently revised state laws, it is unlikely that any amended plan will have enforceable policies related to wetlands, because the state already outlines regulations regarding wetlands mitigation and local plans can not redefine standards already written in state law. Personal communication with Gina Shirey-Potts, Alaska Dep't of Natural Res (Apr. 9, 2007).
28. Alaska Stat. § 46.30.300; Personal Communication with Jim Powell, Alaska Dep't of Envtl. Conservation (Feb. 7, 2007).

plans,[29] such as for wetlands.[30] Approximately 13 CMP staff work on coastal consistency determinations in the Juneau and Anchorage offices and five staff work on coastal resource district plan-related issues. The CMP budget is derived from federal funding through the Coastal Zone Management Act and matching state funds.[31]

Nationwide permits

ADEC and CMP staff review nationwide permits (NWPs) approximately every five years. No NWPs have been denied by the ADEC; however, the department has issued conditions for all NWPs.[32] During the pre-application process for NWPs, the ADEC also can request further conditions for the permits. The CMP reviews whether or not a NWP is being accurately applied during their consistency reviews.[33] In 2007, the Corps reissued the NWPs. The ADEC issued a Certificate of Reasonable Assurance in accordance with §401 of the CWA,[34] and the CMP issued its consistency response – concurrence.[35,36]

Additionally, the Corps has delegated administrative authority to several municipalities with wetlands management plans, such as Juneau and Anchorage, after issuing Regional General Permits for specific classified wetlands in each plan.[37]

Mitigation

When issuing coastal consistency determinations, ADNR regulations require that an avoidance, minimization, and mitigation sequence be followed for projects that impact coastal resources, which include coastal wetlands.[38] However, the department may not require "no net loss" of wetlands or "monetary compensation" unless required by the federal agency issuing the permit for the project. The ADNR also must consult with the federal permitting agency to determine if that agency's mitigation requirements satisfy the state's requirements. If they do not, then the ANDR may impose further mitigation requirements.[39] The ADNR does not have

29. Alaska Admin. Code tit. 11 § 114.400.

30. Most Wetland Area Management plans are not being approved under recently revised laws because plans do not meet the new criteria, such as specific mapping requirements. Personal communication with Gina Shirey-Potts, Alaska Dep't of Natural Res. (Apr. 9, 2007). Existing Wetlands Management Plans will continue to be in effect until they sunset or until a coastal resource district has its new coastal resource management plan approved. Personal communication with Gina Shirey-Potts, Alaska Dep't of Natural Res. (Feb. 7, 2007).

31. Shirey-Potts, *supra* note 25.

32. Because each NWP has extensive conditions, they are not listed here. *See* U.S. Army Corps of Engineers Alaska District, *Current Nationwide Permits*, *at* http://www.poa.usace.army.mil/reg/currentNWPs.htm (last visited Mar. 22, 2007).

33. Personal Communication with Gina Shirey-Potts, Alaska Dep't of Natural Res. (Mar. 1, 2007).

34. Letter from James Rypkna, Alaska Dep't of Envtl Conservation, State of Alaska, Dep't of Envtl. Conservation, Certificate of Reasonable Assurance (March 29, 2007), *available at* http://www.poa.usace.army.mil/reg/NWPs/dec.pdf.

35. Letter from Joe Donohue, ACMP Project Specialist, Dep't of Natural Res., Alaska Coastal Mgmt. Program to David Casey, US Army Eng'r Dist., Alaska, Nationwide Permits Re-Issue (March 27, 2007), *available at* http://www.poa.usace.army.mil/reg/NWPs/Final_Response.pdf.

36. Regional and general conditions for the newly issued NWPs can be found online. *See* U.S. Army Corps of Engineers, *Nationwide Permits*, *at* http://www.poa.usace.army.mil/reg/NWPs.htm (last updated May 25, 2007).

37. Personal Communication with Mel Langdon, Alaska Dep't of Envtl. Conservation (Jan. 26, 2007); Personal Communication with Jim Powell, Alaska Dep't of Envtl. Conservation (Feb. 7, 2007); U.S. Army Corps of Engineers, Alaska District, *Alaska District General Permits*, http://www.poa.usace.army.mil/reg/gps.htm (last updated May 14, 2007).

38. Alaska Admin. Code tit. 11 § 112.300(b)(3).

39. Alaska Admin. Code tit. 11 § 112.900.

standards for stream mitigation; however, permit conditions often include mitigation. For actions that have a larger impact, the department often requires more mitigation such as wetland creation or culvert replacements. The ADNR works to reach consensus with all stakeholders on appropriate mitigation for activities that impact wetlands and streams.[40]

The ADEC has not adopted legislation, regulations, or policies on avoidance and minimization procedures, compensatory mitigation, mitigation banks, or in-lieu fee programs.[41]

The state has one mitigation bank, Natzuhinni Wetland Mitigation Bank, which was established by Sealaska Corporation. The bank provides credits for wetlands impacted under Corps permits.[42] Juneau is in the process of establishing a mitigation bank. The restoration site is complete, and it hopes to have the bank open in the next six to 12 months.[43] There also are four wetland and stream in-lieu fee programs run by local land trusts.[44]

A Mitigation Banking Review Team (MRBT) operates in the state, and the ADEC is a member.[45]

Tracking systems

The ADEC has a formal system for tracking §401 certifications; however, it is not available on-line. The state does not track mitigation.[46]

Compliance and enforcement

Enforcement actions under the state's water quality laws apply but are not specific to wetlands. Violations of state water quality laws may result in civil penalties of no less than $500 and no more than $100,000 for the initial violation and no more than $5,000 per day the violation continues.[47] Alaska's superior court may issue injunctions.[48] Any person in violation of water quality laws also will be responsible for any damages to fish, wildlife, and vegetation.[49] Finally, criminal penalties may be issued for violating these laws.[50]

40. Personal communication with Jackie Timothy, Alaska Dep't of Natural Res. (Feb. 21, 2007).
41. Langdon, *supra* note 10.
42. National Oceanic and Atmospheric Administration – National Marine Fisheries Service, Accomplishments of the Alaska Region's Habitat Conservation Division in Fiscal Year '06 at 4, *available at* http://www.fakr.noaa.gov/habitat/hcd2006.pdf (last visited June 25, 2007).
43. Personal Communication with Teri Camery, City and Borough of Juneau, Alaska (Feb. 27, 2007).
44. The four land trusts with in-lieu fee programs include Alaska Great Land Trust Program, Alaska Kachemak Heritage Land Trust, Alaska Southeast Alaska Land Trust, and Alaska Conservation Fund. *See* Environmental Law Institute, *Status Report on Compensatory Mitigation in the United States*, (2005) (on file at ELI offices).
45. Langdon, *supra* note 10.
46. *Id.*
47. Alaska Stat. § 46.03.760(a).
48. Alaska Stat. § 46.03.765.
49. Alaska Stat. § 46.03.780(a).
50. Alaska Stat. § 46.03.790(a).

III. Water Quality Standards

Alaska's antidegradation policy, WQS, and designated uses are not specific to wetlands. If a water body is considered an "outstanding natural resource" such as water in a wildlife refuge or has high ecological importance, then that water body must be protected and maintained.[51] Designated uses apply to all waters of the state and include uses that relate to wetlands such as propagation of fish and drinking water.[52] WQS are narrative, biological, and chemical.[53]

IV. Monitoring and Assessment

Alaska developed a hydrogeomorphic (HGM) functional assessment methodology to evaluate wetlands across the state. The effort to develop this methodology began in 1996, when the ADEC initiated field research and identification of reference sites in coordination with 11 state and federal agencies.[54] In 2000, these agencies signed a Memorandum of Understanding (MOU) to use this research and data to develop the HGM functional assessment methodology and associated guidebooks.[55] Currently, HGM guidebooks have been developed for three areas: flat wetlands on precipitation driven and discontinuous permafrost in Interior Alaska, flat/slope wetland complexes in the Cook Inlet Basin ecoregion, and riverine and river proximal wetlands in coastal southeast and south central Alaska.[56] This was one of the first HGM functional assessments developed in the U.S.[57] The HGM approach is primarily used in the state for assessing and classifying wetlands, mitigation, and restoration efforts.[58] The Corps and consultants also use the guidebooks in conjunction with §404 permitting.[59]

The ADEC has no formal monitoring program for wetlands or streams, but has a monitoring strategy for surface water quality.[60] All monitoring, data collection, and water sampling occur on an informal basis,[61] and the

51. Alaska Admin. Code tit. 18 § 70.015(a)(3).
52. Langdon, *supra* note 10.
53. *Id.*
54. Agencies include: Alaska Departments of Environmental Conservation, Fish and Game, Natural Resources, Transportation and Public Facilities; U.S. Department of Interior, U.S. Fish and Wildlife Service; U.S. Geological Survey; U.S. Army Corps of Engineers, Alaska District; U.S. Environmental Protection Agency; U.S. Department of Agriculture, Natural Resource Conservation Service; and U.S. Forest Service, Alaska Region; and U.S. Department of Transportation, Federal Highways Administration.
55. Personal Communication with Jim Powell, Alaska Dep't of Envtl. Conservation (Jan. 29, 2007); Jim Powell, Alaska Department of Environmental Conservation, Wetland Functional Assessment Guidebooks Using the Hydrogeomorphic Approach Application -Wetland Mitigation Banking, Restoration, and Large Development Projects (2006), *available at* http://www.awra.org/state/alaska/ameetings/2006am/papers/Powell_Jim.pdf.
56. Jim Powell, Alaska Department of Environmental Conservation, Wetland Functional Assessment Guidebooks Using the Hydrogeomorphic Approach Application -Wetland Mitigation Banking, Restoration, and Large Development Projects (2006), *available at* http://www.awra.org/state/alaska/ameetings/2006am/papers/Powell_Jim.pdf.
57. Personal Communication with Jim Powell, Alaska Dep't of Envtl. Conservation (Feb. 7, 2007).
58. Personal Communication with Jim Powell, Alaska Dep't of Envtl Conservation (Jan. 29, 2007).
59. Langdon, *supra* note 10.
60. *Id.*
61. Powell, *supra* note 58.

data collected during these efforts are used to develop §303(d) lists and 305(b) reports and to ensure compliance with WQS.[62] To date, the state has not initiated or supported volunteer monitoring networks for wetlands or streams.[63]

V. Restoration and Partnerships

Alaska has no formal, statewide wetlands restoration program; however, there are various wetlands restoration efforts taking place in Juneau, Anchorage, and Fairbanks through community watershed partnerships. These partnerships usually involve federal, state, and local agencies; non-profits; and citizens. The ADEC may provide some technical support to private landowners for mitigation and restoration, but this takes place infrequently.[64] The HGM functional assessment guidebooks are a major tool guiding restoration in the state.

VI. Education and Outreach

The state has not initiated wetland-specific education and outreach programs. However, ADEC does respond to the public's questions on permitting issues and the wetland HGM functional assessment.[65] The ADNR-OHMP provides technical assistance to landowners and has produced some restoration guidance materials. However, these efforts also are not specifically targeted towards wetlands education.[66]

VII. Coordination among State and Federal Agencies

The MOU to develop Alaska's HGM functional assessment guidebooks for assessing wetlands represents the largest and most significant state and federal coordination effort on wetlands in the state. The 11 agencies that signed the MOU also agreed to use the HGM functional assessment where regional guidebooks are developed and "where appropriate." The ADEC also coordinated with the Corps to regionalize its *1987 Wetland Delineation Manual*.[67] Through §401/404 pre-application meetings, the ADEC also works closely with the Corps as well as the U.S. Fish and Wildlife Service and the National Oceanic and Atmospheric Administration.[68]

At the state level, a recent revision of the state's coastal management statutes have made ADEC water quality standards the same as the CMP's land and water quality standards. Thus, policy-makers decided that any ADEC permit issued under its own rules would, by default, be consistent with the CMP rules.[69] The ADNR-

62. Langdon, *supra* note 10.
63. Powell, *supra* note 58.
64. *Id.*
65. *Id.*
66. Seaberg, *supra* note 18.
67. Powell, *supra* note 58.
68. Langdon, *supra* note 10.
69. Timothy, *supra* note 40.

OHMP reviews and makes recommendations to the Corps on all proposed activities requiring a Corps permit that will impact wetlands and anadromous fish.[70] ADEC staff also have trained Alaska's Department of Transportation employees on the HGM functional assessment.[71]

Alaska has not developed a State Wetland Conservation Plan; however, several municipalities have Wetland Management Plans in conjunction with their coastal resource district plans.[72]

VIII. Acronyms and Abbreviations

ADEC – Alaska Department of Environmental Conservation

ADNR – Alaska Department of Natural Resources

Corps – U.S. Army Corps of Engineers

EPA – U.S. Environmental Protection Agency

FTE – Full-time Equivalent

FY – Fiscal Year

HGM – Hydro-geomorphic

MBRT – Mitigation Banking Review Team

MOU – Memorandum of Understanding

NWP – Nationwide Permit

OHMP – Office of Habitat Management and Permitting

OPMP – Office of Project Management and Permitting

WQS – Water Quality Standards

70. *Id.*

71. Powell, *supra* note 58.

72. Personal communication with Mel Langdon, Alaska Dep't of Envtl. Conservation (Jan. 26, 2007). These Wetlands Management Plans will be sunsetting when revised plans are in effect or September 1, 2007, whichever is earlier. Personal communication with Gina Shirey-Potts (Mar. 1, 2007).

Delaware

I. Overview

Delaware contains approximately 225,000 acres of freshwater and 125,000 acres of tidal wetlands.[1] However, since European settlement the state has lost approximately 54 percent of its historic wetlands, and much of the remaining wetland habitat has been degraded.[2] To address this loss, the state has adopted law designed to preserve and protect public and private wetlands.[3] In addition §401 water quality certification under the Clean Water Act (CWA), Delaware regulates tidal wetlands under the Wetlands Act. The Delaware Department of Natural Resources and Environmental Control (DDNREC), Division of Water Resources(DWR), Wetlands and Subaqueous Lands Section operates the state's wetland regulatory and protection programs. The state's Ecological Restoration and Protection Team (ERPT), a coalition of state and federal agencies and organizations, conducts coordinated restoration and protection efforts. Finally, state agency scientists and managers are also developing a comprehensive state wetland strategy to better integrate the state's wetland programs.

II. Regulatory Programs

Wetland definitions and delineation

Delaware defines "State waters" or "Waters of the State" as:

> water, on the surface and under the ground, wholly or partially within, or bordering the State, or within its jurisdiction including but not limited to: (a) Waters which are subject to the ebb and flow of the tide including, but not limited to, estuaries, bays and the Atlantic Ocean; (b) All interstate waters, including interstate wetlands; (c) All other waters of the State, such as lakes, rivers, streams (including intermittent and ephemeral streams), drainage ditches, tax ditches, creeks, mudflats, sandflats, wetlands, sloughs, or natural or impounded ponds; (d) All impoundments of waters otherwise defined as waters of the State under this definition; (e) Wetlands adjacent to waters (other than waters that are themselves wetlands) identified in (a)-(d).[4]

For the purposes of the (Tidal) Wetlands Act, Delaware defines "wetlands" as:

> those lands above the mean low water elevation including any bank, marsh, swamp, meadow, flat or other low land subject to tidal action in the State along the Delaware Bay and Delaware River, Indian River Bay,

1. R.J Tiner,. Delaware Wetlands Status and Trends (2002), *noted in* Dep't of Natural Res. and Envtl. Control, State of Delaware 2002 Watershed Assessment Report (305(b)) (2002), *available at* http://www.dnrec.state.de.us/water2000/Sections/Watershed/TMDL/2002_305b.pdf.
2. Del. Dep't of Natural Res. and Envtl. Control, Ecological Restoration & Protection Status Report 2003 – 2006 (2006), *available at* http://www.swc.dnrec.delaware.gov/NR/rdonlyres/7C53E10A-664A-4019-9858-489A461B69C0/0/StatusRpt200306FINAL.pdf.
3. Del.Code Ann. tit. 7, § 6603.
4. Del. Dep't of Natural Res. and Envtl. Control, Regulations Governing the Control of Water Pollution (2006), *available at* http://www.dnrec.state.de.us/water2000/Sections/SurfWater/Library/RGCWP.pdf.

> Rehoboth Bay, Little and Big Assawoman Bays, the coastal inland waterways, or along any inlet, estuary or tributary waterway or any portion thereof, including those areas which are now or in this century have been connected to tidal waters, whose surface is at or below an elevation of 2 feet above local mean high water, and upon which may grow or is capable of growing [any but not necessarily all of a series of wetland plants][5]

"Wetlands" also include:

> those lands not currently used for agricultural purposes containing 400 acres or more of contiguous nontidal swamp, bog, muck or marsh exclusive of narrow stream valleys where fresh water stands most, if not all, of the time due to high water table, which contribute significantly to ground water recharge, and which would require intensive artificial drainage using equipment such as pumping stations, drain fields or ditches for the production of agricultural crops.[6]

Delaware Regulations Governing the Control of Water Pollution define "wetlands" as "those areas that are inundated or saturated by surface or groundwater 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."[7]

Jurisdictional wetland delineation under the Wetlands Act is based on a series of regulatory wetlands boundary maps that have been adopted by the state pursuant to the statute. The maps, created from aerial photographs, depict the extent of wetlands that are regulated by the state.[8] Wetland areas jurisdiction under the state water quality regulations (and CWA §401) are delineated according to state regulations and the U.S. Army Corps of Engineers' 1987 *Wetlands Delineation Manual*.[9]

Wetland-related law and regulation

In addition to protections offered under §401/404 of the CWA, Delaware protects tidal wetlands under the Wetlands Act and submerged lands and tidelands under the Subaqueous Land Act. Delaware issues approximately 400 permits annually under these two laws.[10]

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5. For example, Eelgrass (*Zoxtera marina*), Wedgeon Grass (*Ruppia maritima*), Sago Pondweed (*Potamogeton pectinatus*), Saltmarsh Cordgrass (*Spartina alterniflora*), Saltmarsh Grass (*Spartina cynosuroides*), Saltmarsh Hay (*Spartina patens*), Spike Grass (*Distichlis spicata*), Black Grass (*Juncus gerardii*), Switch Grass (*Panicum virgatum*), Three Square Rush (*Scirpus americanus*), Sea Lavender (*Limomium carolinianum*), Seaside Goldenrod (*Solidago sempervirens*), Sea Blite (*Suaeda maritima*), Sea Blite (*Suaeda linearis*), Perennial Glasswort (*Salicornia virginica*), Dwarf Glasswort (*Salicornia bigelovii*), Samphire (*Salicornia europaea*), Marsh Aster (*Aster tenuifolius*), Saltmarsh Fleabane (*Pluchea purpurascens var. succulenta*), Mock Bishop's Weed (*Ptilimnium capillaceum*), Seaside Plantain (*Plantage oliganthos*), Orach (*Atriplex patula var. hastata*), March Elder (*Iva frutescens var. oraria*), Goundsel Bush (*Baccharis halmifolia*), Bladder Wrach (*Fucus vesiculosis*), Swamp Rose Mallow, Seaside Hollyhock or March Mallow (*Hibiscus palustris*), Torrey Rush (*Scirpus torreyi*), Narrow-leaved Cattail (*Typha angustifolia*), and Broad-leaved Cattail (*T. latifolia*)

6. Del.Code Ann. tit. 7, § 6603(h); 59 Del. Laws, c. 213, § 1; 64 Del. Laws c. 293, § 1.

7. Del. Dep't of Natural Res. and Envtl. Control, *supra* note 4.

8. Del.Code Ann. tit. 7 § 6607; Personal communication with Laura Herr, Div. of Water Res., Wetlands and Subaqueous Lands Section (Feb. 21, 2007).

9. Del. Dep't of Natural Res. and Envtl. Control, *supra* note 4.

10. Personal communication with Laura Herr, Div. of Water Res., Wetlands and Subaqueous Lands Section (Feb. 21, 2007).

Wetlands Act.[11] The Wetlands Act, enacted in 1973, recognizes the importance of wetlands for the protection of the critical coastal areas of Delaware and establishes a permitting program for impacts to tidal wetlands. Under the Act, a permit is required for dredging, filling, bulkheading, plowing or construction of any kind in delineated wetlands.[12]

Regulatory jurisdiction extends to those lands that are subject to tidal action lying above the mean low water elevation and two feet or less above mean high water elevation, and that are capable of supporting the growth of wetland plants. Large nontidal wetlands (greater than 400 acres) that contribute significantly to groundwater recharge are also regulated under the law. Jurisdictional areas are delineated on a series of boundary maps (as described above).[13]

Subaqueous Lands Act.[14] The Subaqueous Lands Act, enacted in 1969, establishes a permitting program to protect the public's interest in subaqueous lands. Subaqueous lands are classified as "submerged lands and tidelands." Submerged lands include: (1) lands lying below the line of mean low tide in the beds of all tidal waters within the boundaries of the state; (2) lands lying below the plane of the ordinary high water mark of nontidal rivers, streams, lakes, ponds, bays and inlets within the boundaries of the State as established by law; and (3) specific manmade lakes or ponds as designated by the Secretary. Tidelands are defined as "lands lying between the line of mean high water and the line of mean low water."[15]

Permits are required for deposit of materials or removal or extraction of materials, as well as construction, repair or reconstruction of structures.[16] Under the law, permittees may be required to mitigate impacts to substantial resources.

11. Del.Code Ann. tit. 7, § 6601.

12. Exceptions include certain mosquito control, construction of navigational aids, duck blinds, foot bridges, wildlife nesting structures, grazing, haying, hunting, fishing and trapping. Del.Code Ann. tit. 7, § 6606.

13. Del.Code Ann. tit. 7, § 6607.

14. Del.Code Ann. tit. 7, § 7201.

15. Del.Code Ann. tit. 7, § 7202.

16. Exceptions include: "(a) This chapter shall not apply to any work performed by any state, county, municipal government or conservation district, or their designated contractor, when that work occurs in nontidal submerged lands in the Delaware Atlantic Coastal Plain Province with a contributing drainage area of less than 800 acres. (b) This chapter shall not apply to maintenance, reconstruction or retrofitting work performed by or with the assistance of any state, county, municipal government or conservation district when that work occurs in any nontidal submerged lands. Such maintenance, reconstruction or retrofitting work shall comply with the standards and specifications associated with best management practices in the Delaware Erosion and Sediment Control Handbook, 1989 or as revised (68 Del. Laws, c. 268, § 2). (c) This chapter shall not apply to any work in agricultural drainage ditches created from nonsubaqueous lands that are designed according to reasonable drainage standards, when performed by or with the assistance of any state, county, municipal government or conservation district. (d) This chapter shall not apply to ponds constructed in uplands when those ponds are constructed by or with the assistance of any state, county, municipal government or conservation district. (e) This chapter shall not apply to stormwater ponds that are permitted in accordance with Chapter 40 of this title or to farm ponds or other ponds whose only source of hydrology is groundwater. (f) The lease provisions of this chapter shall not apply to any wastewater conveyance or treatment works system owned or operated by the State or any county or municipal government with the State. (g) This chapter shall not apply to subaqueous archaeological resources and unmarked human burials and human skeletal remains, which are regulated by the Department of State, Division of Historical and Cultural Affairs pursuant to Chapters 53 and 54 of this title. (68 Del. Laws, c. 268, § 2; 72 Del. Laws, c. 474, § 4; 75 Del. Laws, c. 153, § 12.)" 7 Del.C. Chapter 72.

Coastal Zone Act.[17] The Coastal Zone Act prohibits new heavy industry uses anywhere in Delaware's Coastal Zone, as well as offshore bulk product transfer facilities in the Zone outside the Port of Wilmington. For the purposes of the State Coastal Zone Act, the Coastal Zone is an approximately four-mile wide strip along Delaware's coastline.[18] The Act also establishes the Coastal Zone Act permit program for industrial development other than that of heavy industry in the coastal zone of Delaware.

Organization of state agencies

Within the Delaware Department of Natural Resources and Environmental Control numerous divisions conduct wetland-related activities, including the Division of Water Resources (DWR), Division of Fish and Wildlife (DFW), and Division of Soil and Water Conservation (DSWC).

Division of Water Resources. DNREC-DWR's Wetlands and Subaqueous Lands Section (WSLS) serves as the primary regulatory authority for Delaware's wetlands. The section is responsible for all wetlands, subaqueous, and marina permitting and §401 certification. Applicants may submit a joint application to the WSLS for impacts regulated under the permitting and certification programs.[19] The section has ten full time equivalents (FTEs) and operates on an annual budget of approximately $550,000. General appropriations account for approximately $350,000 of the total budget; the remainder is funded through fees.[20]

DNREC-DWR's Watershed Assessment Section (WAS) manages the state's water quality monitoring program and is working to integrate wetlands and watershed management into program activities. WAS has developed a standardized protocol for nontidal wetlands and is developing a standardized protocol for tidal wetland monitoring that will be used to assess wetland conditions and prioritize restoration and protection on the watershed scale.[21]

Division of Fish and Wildlife. DNREC-DFW partners with state and federal agencies, private landowners, and other organizations on voluntary wetland management and restoration programs. The Division promotes conservation and restoration of wetland habitat as part of its private and public land wetland restoration program, *Phragmites* control cost-share program, and other invasive species control programs. DFW employs two full-time biologists on their private lands program, which is funded by both general state appropriations and federal Landowner Incentive Program funds.[22]

Division of Soil and Water Conservation. DNREC-DSWC's Coastal Management Program (CMP) issues consistency determinations for all federal actions, federal licenses or permits, and projects proposed in the coastal area. CMP also conducts coastal restoration and education programs and provides special area management

17. Del.Code Ann. tit. 7, § 7001.
18. Email from Tricia Arndt, Del. Coastal Mgmt. Program (June 27, 2007)
19. Personal communication with Laura Herr, *supra* note 10.
20. *Id.*
21. Email from Any Jacobs, Del. Dep't of Natural Res., Div. of Water Res., Watershed Assessment Section (June 26, 2007).
22. Email from Shelley Tovell, Del. Dep't of Natural Res., Div. of Fish and Wildlife (June 21, 2007).

planning and assistance to state and local governments for local land use planning. The program employs two FTEs for federal consistency determinations.[23]

§401 certification

Delaware requires §401 certification for all activities that require a federally issued permit, such as a §404 permit, to ensure that projects will not violate Delaware's surface water quality standards (WQS). Certifications require a description of the feasible alternatives considered to avoid, minimize or compensate for impacts to or loss of State waters.[24] The WSLS issues approximately 50 §401 certifications per year,[25] a significant portion of which involve Delaware Department of Transportation projects. WSLS denies a small number of authorizations each year,[26] but more typically, section staff work with applicants to redesign projects that meet approval. WSLS staff rely on qualitative assessment to make certification decisions, as determined by the state's water quality regulations.[27]

Nationwide permits

Section 404 nationwide permits (NWPs) are reviewed by WSLS as they are issued by the U.S. Army Corps of Engineers ("Corps") every five years.[28] For the 2002 NWPs, §401 certification and Coastal Zone Consistency were denied for NWP #40 (Agricultural Activities), NWP #41 (Reshaping Existing Drainage Ditches), NWP #43 (Stormwater Management Facilities), and NWP #44 (Mining Activities). The Corps suspended NWP #29 (Single Family Housing) in Delaware. In addition, §401 certification and Coastal Zone Consistency were conditionally denied in "critical resource waters" for NWP #3 (Maintenance), NWP #7 (Outfall Structures and Maintenance), NWP #12 (Utility Line Activities), NWP #14 (Linear Transportation Projects), NWP #27 (Stream and Wetland Restoration Activities), NWP #39 (Residential, Commercial, and Institutional Developments) and NWP #42 (Recreational Facilities).[29] CMP also reviews the NWPs. For the 2002 NWPs, CMP included restrictions for state natural heritage plants or animals and critical waters.[30] Delaware's action on the 2007 NWPs could not be reviewed within the reporting period.

State Program General Permit. Two state program general permits (SPGP) apply in Delaware for §10 waters, but there are no SPGPs for activities regulated under §404. SPGP #18 permits a range of activities, including

23. Personal communication with Sarah Cooksey, Del. Coastal Zone Mgmt. Program (Mar. 9, 2007).

24. For example, clustering development on upland parcels, considering alternative layouts that avoid or minimize impacts to waters of the State, replacement of State waters lost due to activity where such loss can neither be avoided nor minimized. Del. Dep't of Natural Res. and Envtl. Control, *supra* note 4.

25. Personal communication with Laura Herr, *supra* note 10.

26. WSLS estimates that a total of 9–10 denials are made each year for all types of authorizations including water quality certifications and other permits. Email from Laura Herr, Del. Div. of Water Res., Wetlands and Subaqueous Lands Section, (Apr. 2, 2007).

27. Personal communication with Laura Herr, *supra* note 10.

28. Email from Laura Herr, *Supra* note 26.

29. These NWPs were approved for all other waters. Email from Laura Herr, *supra* note 26.

30. Personal communication with Sarah Cooksey, *supra* note 23.

docks and shoreline stabilization, inside substantially developed artificial lagoons.[31] SPGP #20 regulates bulkheading, docks and piers.[32]

Mitigation

Delaware requires mitigation for wetlands and subaqueous lands permits and water quality certifications.[33] Delaware's Regulations Governing the Control of Water Pollution outline guidelines for compensatory mitigation under the water quality certification program.[34] The regulations allow creation and restoration, as well as compensation through the purchase of mitigation bank credits. Preference is stated for advance compensation that is on-site and within the same watershed as the impacted water.[35] Preferred compensation ratios are not to exceed 3:1. Conservation easements, monitoring, functional assessment, maintenance and reporting programs may be required on mitigated wetlands.

Compliance and enforcement

WSLS has one scientist who serves as the enforcement lead for violations and permit non-compliance under the Wetlands Act and the Subaqueous Lands Act.[36] WSLS coordinates with agency staff from other DNREC divisions and/or federal or local agencies as necessary and appropriate.[37] The majority of violations (approximately 85 percent) are resolved through voluntary compliance and very few penalties or prosecutions are necessary.[38] However, there are currently several pending violations. In the past, enforcement was primarily complaint driven, but the program is increasingly performing more inspections (including over flights) to detect violations.

Delaware law outlines enforcement actions for violations to the state's water quality standards. As a first step, the state may seek voluntary compliance by way of order, warning, notice or other educational means. If the complaint is not resolved through voluntary means, the state may impose a civil or administrative penalty; issue a temporary restraining order, injunction or other appropriate remedy; seek criminal penalties; issue a cease and desist order; or seal any source required to have a permit.[39] Under the Wetlands Act, the state may issue a cease and desist order, impose civil penalties, and/or hold violators liable for the cost of restoration.[40]

31. Dep't of the Army, U.S. Army Corps of Eng'rs, Pa. Dist., Department of the Army General Permit Delaware -SPGP-18, *available at* http://www.nap.usace.army.mil/cenap-op/regulatory/spgp18.pdf (last visited July 26, 2007).
32. Dep't of the Army, U.S. Army Corps of Eng'rs, Pa. Dist., CENAP-OP-R-Delaware State Permit General Permit 20 (SPGP-20), *available at* http://www.nap.usace.army.mil/cenap-op/regulatory/spgp20.pdf (last visited July 26, 2007).
33. Personal communication with Laura Herr, *supra* note 10.
34. Del. Dep't of Natural Res. and Envtl. Control, *supra* note 4.
35. The state is becoming more flexible about these criteria in order to improve the quality of the resulting compensation project. Personal communication with Laura Herr, *supra* note 10.
36. Del.Code Ann. tit. 7, § 6003; Del.Code Ann. tit. 7, § 6614.
37. Email from Laura Herr, Division of Water Resources, Wetlands and Subaqueous Lands Section (June 13, 2007).
38. Personal communication with Laura Herr, *supra* note 10.
39. Del.Code Ann. tit. 7, § 6003; Del. Dep't of Natural Res. and Envtl. Control, *supra* note 4.
40. Del.Code Ann. tit. 7, §6617.

Tracking systems

DNREC manages a searchable state tracking system, Delaware Environmental Navigator, for information collected on permits, §401 certifications, enforcement actions, and environmental monitoring.[41] Data is available for viewing both as a map and as text.[42]

III. Water Quality Standards

Delaware has not adopted have water quality standards or designated uses specific to wetlands.[43] However, WQS and designated uses apply to all "waters of the state," which include wetlands. Surface WQS are narrative and numeric in nature and include criteria related to temperature, dissolved oxygen, bacteria, nutrients and toxic substances. State WQS designate wetland-related uses, including fish, aquatic life and wildlife habitat and primary and secondary contact recreational activities.[44] Anti-degradation standards are not specifically identified for wetlands, and so the provisions that apply to all "waters of the state" also apply to wetlands.

IV. Monitoring and Assessment

WAS maintains a Surface Water Quality Monitoring Program for all waters of the state. The program collects data on the chemical, physical, and biological characteristics of Delaware waters. This information is entered into a national database called STORET (storage and retrieval system) and is used in assessing the water quality of each basin for the state's Watershed Assessment Report (CWA §305(b) Report).[45]

WAS is looking to expand the water monitoring program to include wetlands. The Section's Wetland Monitoring and Assessment Program has developed standardized protocols for nontidal wetlands and is developing standardized protocols for tidal wetlands and restoration sites.[46] Protocols are based on assessing the condition of wetlands and determining the dominant stressors that are lowering wetland condition on the watershed level.[47] Methodologies include the Delaware Comprehensive Assessment Protocol (DECAP) and the Delaware Rapid Assessment Protocol (DERAP).[48] DECAP is an assessment of a wetland based on the vegetation, hydrology, soils, surrounding land use, and topography of the site. DERAP is a rapid assessment

41. Data on wetlands mitigation will be added in the future. Personal communication with Laura Herr, *supra* note 10.
42. Delaware Deptartment of Natural Resources and Environmental Control, *Delaware Environmental Navigator*, *at* http://www.nav.dnrec.delaware.gov/dnreceis/ (last visited July 26, 2007).
43. Del. Dep't of Natural Res. and Envtl. Control, State of Delaware Surface Water Quality Standards (2004*)*, *available at* http://www.dnrec.state.de.us/DNREC2000/Divisions/Water/WaterQuality/WQStandard.pdf.
44. *Id*. http://www.dnrec.state.de.us/DNREC2000/Divisions/Water/WaterQuality/WQStandard.pdf
45. Dep't of Natural Res. and Envtl. Control, Div. of Water Res., Watershed Assessment Branch, Surface Water Quality Monitoring Program (2007), *available at* http://www.dnrec.state.de.us/DNREC2000/Library/Water/swmonpro.pdf.
46. Personal communication with Amy Jacobs, Del. Dep't of Natural Res., Div. of Water Res., Watershed Assessment Section (Mar. 5, 2007).
47. Dep't of Natural Res. and Envtl. Control, Div. of Water Res., Watershed Assessment Branch, *supra* note 45.
48. Del. Dep't of Natural Res. and Envtl. Control, *supra* note 2.

methodology based on identifying the presence or absence of stressors to wetland sites in three categories: hydrology; habitat and plant community; and surrounding buffers. The program is also prioritizing land for restoration and protection.[49]

The program is also developing a tidal assessment protocol for the state that may eventually be used for regulation and is collaborating with Virginia and Maryland on the development of tidal assessment methodologies for the Mid-Atlantic region. In addition, the program performs research on topics related to wetland restoration and protection. The wetland monitoring program is funded through grants from the U.S. Environmental Protection Agency (EPA) along with some state funds.[50]

DNREC coordinates the volunteer Adopt-A-Wetland Program.[51] The program's goals are to increase wetlands awareness, provide education about the value of wetlands and recruit volunteers to assist in monitoring and restoring these resources. The program is focusing on identifying priority sites for adoption into the program, including wetlands restoration sites that are not being monitored and sites where volunteers can provide data useful to WAS and Natural Heritage initiatives. The state currently has more than 80 volunteer groups enrolled in the program.[52] The program, funded by grants from the U.S. Fish and Wildlife Service (FWS) and EPA, has produced two educational videos, a comprehensive guidebook for adopters, and series of loan kits for monitoring different components of the wetlands.[53]

V. Restoration and Partnerships

Through the Chesapeake Bay program, Delaware has committed to restoring 1,500 acres and enhancing 1,500 acres of wetlands in the Chesapeake Bay watershed by 2010. A group of state agency scientists and managers is also developing a comprehensive state wetland strategy to better integrate all of the state's wetlands programs.

The Ecological Restoration and Protection Team (ERPT) was created by DNREC in 2003 to establish and improve wildlife habitat, enhance water quality and provide stream-bank protection, and reduce erosion throughout the state.[54] ERPT, which includes scientists, managers, and environmentalists from more than 32 state and federal agencies and organizations, conducts coordinated restoration and protection efforts focused on streams, drainage ditches, wetlands, and riparian corridors. Since 2003, ERPT's efforts have result-

49. Personal communication with Amy Jacobs, *supra* note 46.
50. *Id.*
51. Department of Natural Resources and Environmental Control, *Adopt-A-Wetland Program*, *at* http://www.dnrec.state.de.us/DNREC2000/Divisions/FW/Adopt-A-Wetland.htm (last visited July 26, 2007).
52. Personal communication with Gary Kreamer, Del. Dep't of Natural Res., Div. of Fish and Wildlife (Feb. 20, 2007).
53. *Id.*
54. The Del. Dep't of Natural Res., *Ecological Efforts Restore 20 Sites in Delaware in 2006; Projects included upland, wetland and stream restorations, shoreline stabilization and steam-side plantings*,DNREC News, Jan. 22, 2007, *available at* http://www.dnrec.state.de.us/dnrec2000/admin/Press/Story1.asp?PRID=2352.

ed in the establishment of over 480 acres of grasses, forests, wetlands, and riparian corridors, the restoration of 7,225 feet of streams and shoreline, and the treatment of more than 36,000 acres of *Phragmites*.[55]

In 2005, ERPT, WAS, and DWF (Adopt-A-Wetland Program) were awarded a cooperative grant from EPA to expand their efforts in three areas: restoration, monitoring and assessment, and education. Under the grant, monitoring and assessment programs are being used to target degraded wetlands and streams for restoration, and watershed scale restoration plans are being developed to identify and address impacts.

DFW's Delaware Landowner Incentive Program provides 75 percent cost-share for the restoration of farmed and prior converted wetlands and enhancement of existing rare and unique wetland ecosystems. Landowners receive a flat-rate payment for construction and planting of a wetland and associated 35-foot buffer and may receive an annual rental payment to compensate for income lost by taking the land out of agricultural production. Under this program, DFW develops habitat management plans for each property, oversees construction and restoration, and is beginning to monitor the sites enrolled in the program. The landowner is required to manage and maintain the land for five to ten years. Both upland and wetland habitats are created depending on the desires of the landowner and available funding. In total, the program has enrolled 115 landowners and restored 958 acres.[56]

DFW also coordinates with the U.S. Fish and Wildlife Service (FWS) on the Partners for Wildlife program. The program primarily provides funds for ecosystem-based restoration of impaired waters and private lands that are in close proximity to wildlife management areas and refuges. In addition, DFW runs the *Phragmites* spraying cost-share program, which is intended to improve wildlife habitat in wetlands degraded by the invasive weed. In partnership with the Natural Resources Conservation Service's Wildlife Habitat Incentive Program, the program is able to cover approximately 88 percent of the cost of landowners' *Phragmites* treatment.

Several other state agencies are involved in wetland restoration efforts across the state. DDNREC-DSWC provides brochures for landowners on restoration efforts in Delaware and works with partners on ecological restoration and protection efforts. DDNREC Division of Parks and Recreation runs an open space program for purchasing environmentally sensitive areas and has easements on properties containing wetlands. CMP coordinates a restoration program focused on both urban and coastal projects.[57] Additionally, the DDNREC-DSWC Coastal Programs Section implements the Coastal and Estuarine Land Conservation Program, an acquisition program designed to protect coastal and estuarine lands considered important for their ecological, conservation, recreational, historical or aesthetic values.[58]

55. Del. Dep't of Natural Res. and Envtl. Control, *supra* note 2.
56. Personal communication with Shelley Tovell, Del. Dep't of Natural Res., Div. of Fish and Wildlife (Mar. 7, 2007).
57. Personal communication with Sarah Cooksey, Del. Coastal Zone Mgmt. Program (March 9, 2007).
58. Email from Tricia Arndt, *supra* note 18.

VI. Education and Outreach

DFW's Office of Education and Outreach publishes wetlands information and runs several wetland education programs. DFW's Aquatic Resources Education (ARE) Center, funded with grants from FWS,[59] hosts wetland-related teacher and youth group education trainings at the Center's overnight lodge. The Eco-Explorers Program, started with a grant from the Delaware Department of Education, is a hands-on education field-trip program that allows fifth grade students to learn about tidal salt marsh plants and animals. In addition, DFW has helped to integrate wetlands into the seventh grade watershed curriculum through a presentation on Delaware wetlands and other activities.

Through its ARE Center, DFW has also developed, in collaboration with local high school students, Wetland Activities for Delaware Educators (WADE) kits. The kits, a series of eight interactive "curriculum-standard-correlated" learning stations, are loaned out to middle school teachers across the state. DFW runs WADE kit trainings to introduce teachers to the kit and show them how to use it. ARE has also assisted in adapting and producing copies of the WADE kits for use by educators in New Jersey.[60]

Several other state agencies are involved with wetland-related education programs. DDNREC Division of Parks and Recreation operates a number interpretive trails and centers and educational programs that incorporate information on wetlands at several of Delaware's 15 state parks. In addition, Delaware's National Estuarine Research Reserve manages two reserves for research and education purposes. The Research Reserve program is a collaboration of the DNREC-DSWC, CMP, and National Oceanographic and Atmospheric Administration.[61]

VII. Coordination among State and Federal Agencies

Delaware's state agencies regularly coordinate with each other as well as federal agencies. WSLS has monthly joint permit processing meeting with the Corps, EPA, FWS, National Marine Fisheries Service, state historic preservation office, and CMP. The section has also signed a mitigation banking agreement with Delaware Department of Transportation (DelDOT).[62] WSLS also worked with the DelDOT on developing their mitigation bank. A group of state agency scientists and managers is developing a comprehensive state wetland strategy to better integrate the state's wetlands programs.[63] Regionally, WAS is working with Virginia and Maryland on tidal wetlands monitoring protocols through the Chesapeake Bay Program.

59. The Education Center receives Aquatic Resources Education Funds from FWS every year. The money is from the sporting industry so most of the programs are fishing related. Personal communication with Gary Kreamer, *supra* note 52.
60. *Id.*
61. Delaware Department of Natural Resources, Delaware National Estuarine Research Reserve, *at* http://www.dnrec.state.de.us/DNREC2000/Divisions/Soil/DNERR/ (last visited July 26, 2007).
62. Personal communication with Laura Herr, *supra* note 10.
63. Personal communication with Amy Jacobs, *supra* note 46.

VIII. Acronyms and Abbreviations

ARE – Aquatic Resources Education

CMP – Coastal Management Program

Corps – U.S. Army Corps of Engineers

CWA – Clean Water Act

DDNREC – Delaware Department of Natural Resources

DECAP – Delaware Comprehensive Assessment Protocol

DelDOT – Delaware Department of Transportation

DERAP – Delaware Rapid Field Assessment Protocol

DFW – Division of Fish and Wildlife

DSWC – Division of Soil and Water Conservation

DWR – Division of Water Resources

EPA – U.S. Environmental Protection Agency

ERPT – Ecological Restoration and Protection Team

FTE – Full Time Equivalent

FWS – U.S. Fish and Wildlife Service

MBRT – Mitigation Banking Review Team NWP – Nationwide Permit

NWP – Nationwide Permit

SPGP – State Program General Permit

WADE – Wetland Activities for Delaware Educators

WAS – Watershed Assessment Section

WSLS – Wetlands and Subaqueous Land Section

WQS – Water Quality Standards

Indiana

I. Overview

Indiana ranks fourth highest among the 50 states with respect to the proportion of wetland acreage lost.[1] An estimated 85 percent of Indiana's original wetlands have been lost to drainage projects; approximately 813,000 acres of wetlands remain, comprising 3.5 percent[2] of the state's total land area. Of these remaining wetlands, approximately one-third are considered to be so-called "isolated" wetlands.[3] Indiana's Department of Environmental Management (IDEM) administers the §401 Water Quality Certification program under the Clean Water Act (CWA) in addition to a state-level regulatory program that targets isolated wetlands. The Department of Natural Resources (IDNR) regulates wetlands situated within floodways and the high-water line of lakes.

II. Regulatory Programs

Wetland definitions and delineation

In Indiana, "waters" are defined as "the accumulations of water, surface and underground, natural and artificial, public and private, [or] a part of the accumulations of water; that are wholly or partially within, flow through, or border upon Indiana." The term also includes all "waters of the United States," as defined in the Clean Water Act. The term does not include: (1) an exempt isolated wetland; (2) a private pond; or (3) an off-stream pond, reservoir, wetland, or other facility built for reduction or control of pollution or cooling of water before discharge.[4]

The state defines wetlands as "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: (1) swamps; (2) marshes; (3) bogs; and (4) similar areas."[5] A "state regulated wetland" is defined as "an isolated wetland located in Indiana that is not an exempt isolated wetland."[6]

1. Indiana Department of Natural Resources. *Indiana Wetlands Conservation Plan* (1996), *at* http://www.in.gov/dnr/fishwild/publications/inwetcon/wetconpl.htm (last visited July 5, 2007).
2. Percentage calculated using information from the following resources. Indiana Department of Administration, *State Land Office:Facts at a Glance*, *at* http://www.in.gov/idoa/landoff/glance.html (last visited July 5, 2007); *Id.*
3. Quinn, Bowden. *Indiana's New Wetland Legislation: Threat to Isolated Wetland . . 26*:3. National Wetlands Newsletter , 22, 22-25 (2004), .
4. Ind. Code § 13-2-265 *et. seq.*
5. Ind. Code § 13-11-2-265.7.
6. "'Isolated wetland' means a wetland that is not subject to regulation under Section 404(a) of the Clean Water Act." 327 Ind. Admin. Code -17-1-3; Ind. Code § 13-11-2-221.5.

Wetland delineation criteria correspond to the criteria within the U.S. Army Corps of Engineers' 1987 *Wetlands Delineation Manual*.[7]

Wetland-related law and regulation

IDEM regulates "waters of the state," including administration of the §401 Water Quality Certification Program. The IDEM also administers a permitting program[8] for wetland activities in state regulated wetlands (including many isolated wetlands) in order to "promote a net gain in high quality isolated wetlands; and [. . .] assure that compensatory mitigation will offset the loss of isolated wetlands allowed by the permitting program."[9]

IDNR regulates construction activities within, over, and/or under the state's waterways. Agency jurisdiction falls under the Lake Preservation Act (LPA)[10] and the Flood Control Act (FCA).[11]

> Although state legislation administered by the Department of Natural Resources does not typically address wetlands or habitat by this terminology, the broad language contained within several programs expresses a clear legislative mandate that environmental and resource functions and benefits be considered in the regulatory process.[. .] For example, the [FCA] [. . .] precludes the issuance of a license which will have 'unreasonably detrimental affects upon fish, wildlife, or botanical resources'. The [LPA] [. . .] protects against activities which would threaten the 'natural resources and natural scenic beauty' of Indiana's public freshwater lakes. At the heart of these environmental and resource values are wetlands."[12]

Under the LPA, the IDNR regulates public freshwater lakes, including wetlands within the lake's legal and average "shoreline" or "water line."[13] Under the FCA, IDNR regulates activities conducted in "the area within the floodway produced by the regulatory flood."[14] The area within the floodway often encompasses wetlands and streams.[15]

7. Ind. Code § 13-11-2-265.8.
8. Ind. Code § 13-18-22; 327 Ind. Admin. Code 17-1-1.
9. Ind. Code § 13-18-22-1.
10. Ind. Code § 14-26-2.
11. Ind. Code § 14-28-1.
12. Natural Resources Commission Information Bulletin #17, *Wetlands and Habitat Mitigation* (1997), *at* http://www.in.gov/legislative/register/20061213-IR-312060562NRA.xml.pdf (last visited July 5, 2007).
13. Personal communication with James Ray, Ind. Dep't of Natural Res., Lake & River Enhancement Section (Feb. 28, 2007).
14. "'Regulatory flood' means 'a flood having a one percent (1%) probability of being equaled or exceeded in a year as calculated by a method and procedure that is approved by the Natural Resources Commission. The regulatory flood is equivalent to the base flood or the 100-year frequency flood.' 'Floodway' means 'the channel of a river or stream and those portions of the flood plains adjoining the channel which are reasonably required to efficiently carry and discharge the peak flow of the regulatory flood of any river or stream.'" Ind. Dep't of Envtl. Mgmt., Office of Water Quality. Waterway Permitting Handbook (2002), *available at* http://www.in.gov/wetlands/publications/cleanwater.pdf (last visited July 5, 2007).
15. Ray, *supra* note 13.

Organization of state agencies

IDEM has six full-time equivalents, who are tasked with enforcement, permitting, monitoring, §401 certification, and outreach activities.[16] Funding for IDEM's wetland activities, approximately $500,000 per year, is derived primarily from federal CWA §106 grants.[17]

IDNR does not operate a program dedicated solely to wetlands; however, three divisions conduct wetland-related activities: Division of Fish and Wildlife, Division of Water, and Division of Nature Preserves. Operating out of one central office, employees from all three divisions review permit applications under the CPA and FCA. Staff activities are funded by the state's general appropriations fund. Because activities vary widely and are not always wetland-specific, estimating an annual budget is difficult.[18]

§401 certification

A §401 certification from IDEM must be obtained for any activity requiring a federal permit. The state issues an estimated 750 certifications per year (including general permits). Most applications are approved, often with conditions;[19] less than one percent are waived, and one to two percent are denied.[20]

Before issuing a certification, IDEM will review the proposed activity and use qualitative assessments and best professional judgment to determine whether or not it conforms to Indiana law, including state water quality standards. IDEM denies water quality certification if the application is deficient, if the impacts can be avoided or minimized, or if the proposed compensatory mitigation is determined to be insufficient to offset the effects of the activity.[21] All applications for certification are subject to public comment.[22]

Nationwide permits

Indiana has denied[23] and conditioned[24] a number of the NWPs issued in 2002. In addition, the Corps and IDEM have developed a Regional General Permit (RGP) to replace 16 of the NWPs[25] for projects determined

16. Personal communication with Marylou Renshaw, Watershed Planning Branch in the Office of Water Quality, Ind. Dep't of Envtl. Mgmt., (Feb. 23, 2007).
17. Personal communication with James Robb, Wetlands & Storm Water Section, Ind. Dep't of Envtl. Mgmt. (Feb. 25, 2007).
18. Ray, *supra* note 13.
19. "Typical conditions include minimization of impacts, compensatory mitigation for wetland impacts, establishment of buffer zones around waterbodies, prohibitions on work during certain time periods, stormwater and erosion control measures, conservation easement, and additional monitoring or water quality studies." Indiana Department of Environmental Management, *Section 401 Certification Program Overview*, *at* http://www.in.gov/idem/programs/water/401/overview.html (last visited July 5, 2007).
20. Robb, *supra* note 17.
21. *See* Indiana Department of Environmental Management, Nonrule Policy Document, *Water-011-NPD - Reasons for Denial*., *at* http://www.in.gov/idem/rules/policies/water/011.pdf (last visited July 5, 2007); Robb, *supra* note 17.
22. Indiana Department of Environmental Management, *supra* note 19.
23. The following NWPs have been denied: NWP#17-Hyrdopower Projects; NWP#20-Oil Spill Cleanup; NWP#23-Approved Categorical Exclusions; NWP#31-Maintenance of Existing Flood Control Facilities; NWP#32-Completed Enforcement Actions; NWP#34-Cranberry Production Activities; NWP#35-Maintenance Dredging of Existing Basins; NWP#38-Cleanup of Hazardous and Toxic Waste. Letter from Martha Clark Mettler, Chief, Watershed Branch, Office of Water Quality, to James Townsend, US Army Corps of Eng'rs (July 6,2004, *available at* http://www.in.gov/idem/programs/water/401/idem401nwp02.pdf (last visited July 5, 2007).
24. The following NWPs have been conditioned: NWP#3-Maintenance; NWP #12-Utility Line Activities; NWP #16-Returned Water from Upland Disposal Areas; NWP#27-Stream and Wetland Restoration Actvities; NWP#37-Emergency Watershed Protection and Rehabilitation. *Id.*

to pose minimal impact.[26] Generally, the Corps uses RGPs to authorize projects that affect less than one acre of "waters of the United States," provided the project complies with the terms and general conditions outline in the RGP.[27] Several specific conditions also apply to the RGP.[28] Indiana's action on the 2007 NWPs could not be reviewed within the reporting period.

25. NWP #7-Outfall Structures; NWP #11-Temporary Recreational Structures; NWP #13-Bank Stabilization; NWP #14-Linear Transportation Projects; NWP #15-U.S. Coast Guard Approved Bridges; NWP #18-Minor Discharges; NWP #19-Minor Dredging; NWP #25-Structural Discharges; NWP #29-Single-family Housing; NWP #36-Boat Ramps; NWP #39-Residential,Comm.and Institutional Dev.; NWP #40-Agricultural Activities; NWP #4-Reshaping Existing Drainage Ditches; NWP #42-Recreational Facilities; NWP #43-Stormwater Management Facilities; NWP# 44-Mining Activities. *Id.*

26. "*The following activities can be authorized by the RGP:*

1. New Construction Activities, including filling and grading, dredging, channelization, road crossings, culverts, bank stabilization.
2. Agricultural Activities, including clearing, tiling, ditching, fills for buildings or access roads.
3. Mining Activities, including staging, access, extraction, berms, temporary storage. Excludes surface coal mining.

The following Maximum Limitations are placed on the RGP by the US ACOE:

1. Discharges of dredged or fill material are limited to one (1) acre or less of "waters of the United States," including wetlands;
2. Dredging in "navigable waters" is limited to 10,000 cubic yards;
3. Structures and fills for docking and mooring are limited to similar permitted structures and fills in the vicinity;
4. Discharges of dredged or fill material into Lake Michigan are limited to one tenth (0.1) acre, except for bank stabilization;
5. Impacts resulting from filling greater than one tenth (0.1) acre of special aquatic sites, or work causing more than minimal effects will require mitigation to compensate for impacts to the stream, special aquatic sites or wetlands affected. Other work or structures in navigable waters will be evaluated and must include mitigation to reduce impacts to minimum levels.

Proposed projects that fall under one of the three classes of activities listed above, and will result in impacts less than the Maximum Limitations listed above, are eligible for authorization under the RGP. All proposed projects are subject to the Corps' restrictions and the RGP General Conditions detailed in the Public Notice issued February 11, 2000." IDEM, *Regional General Permit*, *at* http://www.in.gov/idem/programs/water/401/rgp02.html (last visited July 5, 2007).

27. The following conditions apply to all activities that qualify under the Regional General Permit or any Nationwide Permit approved under 401 certification in Indiana: "1.The person shall deposit any dredged material in a contained upland disposal area to prevent sediment run-off to any waterbody. The person shall dispose of all dredged and excavated material according to the requirements of 329 IAC 10, governing Solid Waste Land Disposal Facilities. The person's project information may be forwarded to the IDEM Office of Land Quality, Industrial Waste Section for review. Sampling may be required to determine if the dredged sediment is contaminated. Failure to properly dispose of contaminated sediment may result in enforcement action. 2.The person shall install erosion control methods prior to any soil disturbance to prevent soil from leaving the construction site. Appropriate erosion control methods include, but are not limited to, straw bale barriers, silt fencing, erosion control blankets, phased construction sequencing, and earthen berms. The person shall monitor and maintain erosion control structures and devices regularly, especially after rain events, until all soils disturbed by construction activities have been permanently stabilized. 3.The person shall clearly mark the construction limits shown in the attached plans at the project site during construction. 4.The permittee shall allow the commissioner or an authorized representative of the commissioner (including an authorized contractor), upon the presentation of credentials: (a) to enter upon the permittee's property; (b) to have access to and copy at reasonable times any records that must be kept under the conditions of this certification; (c) to inspect, at reasonable times, any monitoring or operational equipment or method; collection, treatment, pollution management or discharge facility or device; practices required by this certification; and any wetland mitigation site; and (d) sample or monitor any discharge of pollutants or any mitigation site. 5.This granting of Section 401 Water Quality Certification does not relieve the recipient of the certification from the responsibility of obtaining any other permits or authorizations that may be required for this project or related activities from IDEM or any other agency or person. 6. This certification does not: (a) authorize impacts or activities outside the scope of this certification; (b) authorize any injury to persons or private property or invasion of other private rights, or any infringement of federal, state or local laws or regulations; (c) convey any property rights of any sort, or any exclusive privileges; (d) preempt any duty to obtain federal, state or local permits or authorizations required by law for the execution of the project or related activities; or (e) authorize changes in the plan design detailed in the application." *Id.*

28. These conditions also apply to NWP #3,12,27 and 37. *Id.*

Mitigation

One goal of the isolated wetland permit program administered by IDEM is to ensure that "compensatory mitigation will offset the loss of isolated wetlands allowed by the permitting program."[29] Indiana Code outlines required standards and ratios for compensatory mitigation.[30] Further guidance is provided by two "non-rule" policy documents published by the IDEM that provide information on determining when compensatory mitigation is complete and meets success criteria.[31] IDEM also has conducted an informal study of wetland mitigation success to determine whether mitigated wetlands were being constructed according to guidelines and were functioning properly.[32]

Compensatory mitigation also is required for wetland and stream impacts associated with permitted activities under the LPA and the FCA.[33] To provide guidance for the IDNR's compensatory mitigation activities, the state's Natural Resource Commission published *Information Bulletin #1*, a non-rule document establishing "a general framework for the assessment and determination of wetlands or habitat compensatory mitigation where a construction project is likely to reduce or degrade an existing wetland or habitat."[34] In addition, the IDNR began drafting mitigation guidelines in 2006. Agency staff intend to make the guidelines an enforceable "rule document" upon completion.[35]

Under the *Interagency Coordination Agreement on Wetland Mitigation Banking within the State of Indiana,*[36] the Louisville and Detroit Districts of the Corps, USDA Natural Resources Conservation Service (NRCS), EPA, U.S. Fish and Wildlife Service (FWS), IDEM, and IDNR participate on a mitigation banking review team. So far, the state has authorized one wetland mitigation bank under this agreement in northwest Indiana, called the Lake Station Wetland Mitigation Bank.[37]

Compliance and enforcement

Wetland enforcement cases are typically resolved through administrative action, which may include: an agreed order that sets forth compliance terms and a civil penalty to which both IDEM and the violator agree;[38] or a unilateral order issued by IDEM containing compliance terms and a civil penalty that is subject to appeal by the violator.[39] In 2006, one Commissioner's Order and one civil penalty were issued. No criminal penalties were issued.[40]

29. Ind. Code §13-18-22-1.
30. Ind. Code §13-18-22-6.
31. Indiana Department of Environmental Management, *Determining when Compensatory Mitigation is Complete, Water-009-NPD* (September 8, 2006), *at* http://www.in.gov/idem/rules/policies/water/009.pdf (last visited July 5, 2007).
32. Personal communication with Dennis Clark, Chief, Assessment Branch, Ind. Dep't of Envtl. Mgmt. (March 9, 2006).
33. Ray, *supra* note 13.
34. *Id.*
35. Personal communication with Jon Eggen, Ind. Dep't of Natural Res. (March 8, 2007).
36. Interagency Coordination Agreement on Wetland Mitigation Banking in the state of Indiana , *at* http://www.in.gov/idem/programs/water/401/indica1002.pdf (last visited July 5, 2007).
37. Renshaw, *supra* note 16.
38. Ind. Code § 13-30-3-4, 13-30-3-10 to 13-30-3-12.
39. The Statutory range of penalty amounts is zero to $25,000 per day per violation. Ind. Code § 13-30-4-1.
40. Ind. Code § 13-30-6-1.

Tracking systems

The IDEM does not have a formal system for tracking permits or mitigation. The agency uses spreadsheets to track compliance with review deadlines and is currently working on both a spreadsheet to track mitigation monitoring timelines and a database to track all aspects of the regulatory process.[41]

IDNR operates a comprehensive database called *Unity* to track all activities and documents relating to the permitting process, including inspection reports, images from site inspections, and electronic versions of issued permits. Mitigation requirements and review documents from periodic follow-up site inspections also are recorded in the *Unity* database, and IDNR is working to improve mitigation tracking.[42]

III. Water Quality Standards

Indiana's water quality standards do not identify criteria, designated uses, or anti-degradation standards specific to wetlands. As such, designated uses for wetlands default to the open water designated uses.[43] Wetland functions that the state water quality standards and open water designated uses relate to include: sediment trapping, fish and wildlife habitat, water quality/pollution control, and minimum stream flows.[44]

IV. Monitoring and Assessment

Indiana Department of Natural Resources

Indiana has not adopted a wetland-specific monitoring or assessment program. However, the IDNR monitors wetland habitat as an auxiliary component to their fish and wildlife habitat monitoring program. These activities are funded by the federal Fish and Wildlife Act. Although IDNR's regulatory program does not require wetland assessment or monitoring, the agency plans to increase monitoring and assessment in order to determine habitat quality for wetlands. IDNR monitors all wetland mitigation projects for three years. IDNR does not prescribe the use of a formal assessment methodology, but in the past, the agency has employed the Chicago District's assessment methodology. In general, IDNR tracks biological criteria using a functional assessment methodology to determine whether the mitigation sites achieve performance criteria, which are defined on a project-by-project basis. Typically, however, the success of wetland habitat mitigation is measured and reported in terms of the percentage of surviving plantings and the hydrology of the site. Last year, the IDNR authorized the use of a floristic quality assessment for wetlands.[45]

The IDNR's Division of Fish and Wildlife sponsors "Hoosier Riverwatch," a stream and river quality monitoring initiative started in 1994 to increase public awareness of water quality issues and concerns by training volun-

41. Renshaw, *supra* note 16.
42. Eggen, *supra* note 35.
43. 327 Ind. Admin. Code 2-1-1.
44. 327 Ind. Admin. Code 2-1-3, 2-1-6.
45. Eggen, *supra* note 35.

teers to monitor stream water quality. Approximately 300-400 groups are actively monitoring around the state. Funding for this program is provided, in part, by the federal Sport Fish Restoration Fund.[46]

Indiana Department of Environmental Management

In response to an EPA request, the IDEM has recently revised their monitoring strategy to include a wetland assessment program that incorporates the following components: (1) inventory of the state's wetlands using one-meter resolution aerial photography; (2) ground-truthing of the photographic inventory using a rapid bioassessment methodology; and (3) detailed, comprehensive assessments in a small sample of identified wetlands to determine quality, type, and composition. IDEM plans to use this wetland monitoring strategy for regulatory enforcement; however, none of the proposed activities have been implemented due to a lack of funding. At the moment, the agency is conducting broad site assessments using best professional judgment to support their certification and/or permit decisions.

IDEM also supports a formal stream monitoring and assessment program, which is integrated with the agency's surface water quality monitoring program. The IDEM utilizes a probabilistic monitoring strategy, developed cooperatively with the EPA, to track chemical and biological criteria for the development of the CWA 303(d) list and 305(b) report. The data are also used for enforcement purposes.[47]

V. Restoration and Partnerships

Both IDNR and IDEM administer state and federal restoration programs that include a wetland component. These include incentive programs that build partnerships between public agencies and private land owners. Within IDNR, the Division of Fish and Wildlife acquires and manages Wetland Conservation Areas for fishing and hunting and, through the Lake and River Enhancement Program, provides funding and technical assistance to lake associations and landowners for construction and maintenance of wetlands that treat nonpoint source pollution. The Division of Forestry provides technical assistance and administers incentive programs for the stewardship of forested wetlands (the major wetland type in Indiana) and management of wetlands in state forests. The Division of Reclamation advises landowners in development of wetlands for wildlife habitat over reclaimed mine lands. The Division of State Parks and Reservoirs restores, enhances and creates wetlands for the purposes of watershed protection, recreational activities such as hunting and fishing, habitat enhancement, and ecosystem restoration. Finally, the Division of Nature Preserves manages natural areas that contain rare wetland types and species, and, through the Lake Michigan Coastal Program, preserves and restores high quality wetland areas in the Lake Michigan basin. The program also provides funding and technical assistance.[48]

46. *See* Indiana Department of Natural Resources, *Hoosier Riverwatch*, at http://www.in.gov/dnr/riverwatch/ (last visited July 5, 2007).
47. Clark, *supra* note 32.
48. Natural Resources Commission, Information Bulletin #27 (Second Amendment), *Wetland Conservation Guidelines at* http://www.in.gov/legislative/register/20061213-IR-312060565NRA.xml.pdf (last visited July 5, 2007).

Table 1. State wetland incentive programs.[1]

Program Name	*Purpose*	*Funding Source*	*Target Lands/Owners*
Appalachian Clean Streams Initiative	To improve water quality in streams adversely impacted by acidic drainage from abandoned coal mines.	US Department of the Interior, INDR Division of Reclamation, Landowner contributions (in-kind or direct)	All landowners of southwestern Indiana
Classified Wildlife Habitat Act	To reduce habitat loss of private land	Dedicated Fish and Wildlife Fund	Landowners of grasslands, shrublands, wetlands, woodlands less than 10 acres, and riparian areas.
Indiana Classified Forest Program	To encourage the retention of forest land in Indiana for the benefits of timber production, watershed protection	State funded	Native and/or planted forest lands at least 10 acres in size
LARE	To control sediments and nutrient inflows into public access lakes or rivers	Boat fee, cigarette tax, landowner contributions (cost-share)	Watersheds of public-access lakes and rivers

1. Phil McLoud, *A Summary of Wetland Incentive Programs in Indiana*, *available at* http://www.in.gov/wetlands/publications/summary.pdf (last visited July 5, 2007).

The *Hoosier Wetlands Conservation Initiative,* the "action" component of the Indiana Wetland Conservation Plan, presents a strategic approach to conserving Indiana's wetland resources, including "positive incentives that motivate people to voluntarily conserve and restore wetlands are emphasized."[49] Table 1 outlines state-level incentive programs with wetland restoration components that encourage partnerships between public agencies and private landowners.

Finally, since 1994 Indiana has been administering the federal Wetlands Reserve Program (WRP).[50] Other federal incentive programs with either direct or indirect wetland restoration components being administered by both federal and state agencies in Indiana include: Conservation Reserve Program, Emergency Watershed Program-Floodplain Easement Program, Environmental Quality Incentives Program, Farmable Wetlands Project, Partners for Fish and Wildlife, Forest Land Enhancement Program, Forestry Incentives Program, Watershed Protection and Flood Prevention Program, Forest Stewardship Program, and CWA Section 319 Nonpoint Source Management Programs.[51] With the exception of the 319 program, state agencies do not participate significantly in the administration of most federal programs.[52]

49. Indiana Department of Natural Resources, *supra* note 1.
50. United States Department of Agriculture, Natural Resource Conservation Service. *Indiana Wetlands Reserve Program*, *at* http://www.nrcs.usda.gov/PROGRAMS/wrp/states/in.html (last visited July 5, 2007).
51. McLoud, *supra* note 61.
52. Ray, *supra* note 13.

VI. Education and Outreach

The IDEM developed a formal outreach and education plan in 1997 with funding from an EPA wetland program development grant. Seeking to raise awareness on regulatory issues, the need for wetland protection, and the value of wetlands, the IDEM used this grant to develop and distribute videos, a series of brochures, and presentations throughout the state to regulated communities. IDEM's outreach strategy targets state agencies (e.g., IDNR, Soil and Water Conservation Districts, Indiana Department of Transportation), developers, landowners, citizens, universities, and associations.[53]

IDNR conducts various activities seeking to help educators integrate wetland education into their curriculum, including Project Learning Tree, Project WILD, GoFishIN, and Project WET.[54] In addition, the Division of Nature Preserves conducts education related to their restoration activities.[55]

VII. Coordination among State and Federal Agencies

IDEM, IDNR and FWS have a memorandum of understanding (MOU) regarding their mutual review of 401 certification applications.[56] IDEM also has an MOU with the NRCS relating to mitigation activities, specifically, the methodology used to assess wetlands and determine the acreage of mitigation required. There also is informal coordination among EPA, Corps, FWS, IDNR, and IDEM on regulatory and jurisdictional issues.[57]

In 1994, the IDNR initiated the development of the Indiana Wetlands Conservation Plan (IWCP). Three groups participated in the development of the plan: (1) Wetlands Advisory Group, which represented diverse stakeholders in Indiana wetlands conservation—from environmentalists to county surveyors and farmers to coal mine operators; (2) Technical Advisory Team, comprising technical representatives from the state and federal agencies that have regulatory or oversight roles in wetlands conservation; and (3) Project Reviewers, comprising several hundred stakeholders that were solicited for input on the IWCP by telephone and through the mail throughout the planning process. More than 900 individuals across Indiana participated in the Plan's development.[58]

On April 23, 1996, the Natural Resources Commission adopted the "Resolution for the Adoption of the Indiana Wetlands Conservation Plan," requiring the IDNR to "pursue full implementation of the Indiana Wetlands Conservation Plan."[59] In April 1997, the U.S. EPA provided the IDNR with a two-year grant to fund implementation of several specific actions identified in the plan. Currently, the Technical Advisory Team, Wetland

53. Robb, *supra* note 17.
54. See Indiana *Wet*lands, *Teachers and Educators at* http://www.in.gov/wetlands/teachers/index.html (last visited July 5, 2007).
55. Personal communication with John Bacone, Ind. Dep't of Natural Res., Division of Nature Preserves (Mar. 15, 2007).
56. Renshaw, *supra* note 16.
57. Robb, *supra* note 17.
58. Indiana Department of Natural Resources, *supra* note 1.
59. *Id.*

Advisory Group, and Project Reviewers are implementing these activities through the coordination of a contracted project facilitator.[60]

VIII. Acronyms and Abbreviations

CWA – Clean Water Act

EPA – U.S. Environmental Protection Agency

FCA – Flood Control Act

FWS – U.S. Fish and Wildlife Service

IAC – Indiana Annotated Code

IDEM – Indiana Department of Environmental Management

IDNR – Indiana Department of Natural Resources

LPA – Lake Preservation Act

NRCS – Natural Resource Conservation Service

NWP – Nationwide Permit

RGP – Regional General Permit

WRP – Wetland Reserve Program

60. *Id*

Kansas

I. Overview

Kansas has a variety of wetland types—sandhill pools to playa lakes to fresh- and salt-water marshes—that cover approximately 425,000 acres of the state.[1] The state holds two Ramsar wetland sites of international importance: the Cheyenne Bottoms Wildlife Area (owned and operated by the Kansas Department of Wildlife) and the Quivira National Wildlife Refuge (owned and operated by the U.S. Fish and Wildlife Service).[2] Over the past two centuries, Kansas has lost almost 50 percent of its wetlands to agriculture and development.[3] Because Kansas is part of the Central Flyway, its wetlands are critical to migrating water and shore birds, especially Cheyenne Bottoms Wildlife Area, which is the largest marsh in the U.S. interior.[4]

The state's wetland regulatory efforts include §401 water quality certifications and the Kansas Department of Agriculture's permits for fill and stream obstructions in floodplains. In addition, various state agencies play active non-regulatory roles in protecting and restoring wetlands.

II. Regulatory Programs

Wetlands definitions and delineation

Kansas statutes define "waters of the state" as "all streams and springs, and all bodies of surface and subsurface waters within the boundaries of the state"[5] The Kansas Department of Health and the Environment (KDHE) defines "surface waters of the state" as "all surface waters occurring within the borders of the state of Kansas or forming a part of the border between Kansas and one of the adjoining states."[6] Regulations also state that surface waters encompass "wetlands, including water bodies meeting the technical definition for jurisdictional wetlands given in the 'Corps of Engineers Wetlands Delineation Manual,' as published in January 1987."[7]

KDHE regulations also classify surface waters, including wetlands:

1. U.S. Geological Survey, *National Water Summary on Wetland Resources*, *at* http://water.usgs.gov/nwsum/WSP2425/state_highlights_summary.html (last modified Mar. 7, 1997).
2. Personal Communication with Kathy Mulder, U.S. Envtl. Prot'n Agency (Oct. 2007).
3. U.S. Geological Survey, *National Water Summary on Wetland Resources*, *at* http://water.usgs.gov/nwsum/WSP2425/state_highlights_summary.html (last modified Mar. 7, 1997); Department of Health and the Environment – Bureau of Water, *Watershed Management Section*, *at* http://www.kdheks.gov/nps/ (last visited Mar. 23, 2007).
4. Natural Kansas, *Wetlands and Wildlife*, *at*http://www.naturalkansas.org/wetlands.htm (last visited Mar. 23, 2007).
5. Kan. Stat. Ann. § 65-161(a).
6. Kan. Admin. Regs. § 28-16-28b(ggg).
7. *Id.* at § 28-16-28b(fff).

> Classified wetlands shall be the following: (i) All wetlands owned by federal, state, county, or municipal authorities; (ii) all privately owned wetlands open to the general public for hunting, trapping, or other forms of secondary contact recreation; and (iii) all wetlands classified as outstanding national resource waters or exceptional state waters, or designated as special aquatic life use waters according to subsection (d) of this regulation. Wetlands created for the purpose of wastewater treatment shall not be considered classified wetlands.[8]

The KDHE relies on the U.S. Army Corps of Engineers (Corps) or consultants for delineations.[9] The state's water quality standards (WQS) refer to the Corps' 1987 *Wetlands Delineation Manual* delineation criteria.[10]

Wetland-related law and regulation

§401 certification. Any actions requiring a federal permit, license, or approval that result in a discharge into waters of the state, including §404 dredge and fill permits and Nationwide Permits (NWP), require Clean Water Act (CWA) §401 certification. Proposed projects must comply with the terms and conditions of the state's WQS in order to receive a §401 certification.[11] Once the Corps receives a §404 permit application, it issues a joint public notice with the KDHE. Public comments are gathered by both the Corps and KDHE. Upon completion of their record of decision and the §404 permit is ready to be issued, the Corps requests a §401 water quality certification from the KDHE. The KDHE reviews public comments received. Comments pertinent to the intent of the §401 certification (e.g., impacts on water quality, water supply, and aquatic life) are evaluated for the need to include a condition in the certification to address the public's concern. Additionally, any certified project located in an outstanding natural resource water, exceptional state water, or special aquatic life water, must prepare a project water quality protection plan and submit it to the KDHE Central Office in Topeka. These plans are filed in the central office and a notification of the project and plans received is sent to the appropriate KDHE District office.[12]

The KDHE issues approximately 55 certifications a year. Because the Corps has pre-application meetings and ensures §404 applications meet specific minimum qualifications, no application for a §401 certification application has required a denial. No applications are waived, even for projects with minimal impacts due to the §401's "water quality awareness outreach potential."[13] Staff mainly uses qualitative assessment and best professional judgment when making decisions on §401 certification applications.

All certifications are required to recognize related designated uses and WQS as well as water protection measures or best management practices (BMP) the applicant will need to implement to avoid a violation.[14]

8. Kan. Admin. Regs. § 28-16-28d(a)(2)(B).
9. Personal Communication with Scott Satterthwaite, Kan. Dep't of Health and the Env't (Nov. 17, 2006).
10. U.S. Army Corps of Eng'rs, Wetlands Research Program Technical ReportY-87-1, Corps of Engineers Wetlands Delineation Manual (1987), *available at* http://www.saj.usace.army.mil/permit/documents/87manual.pdf.
11. Kan. Admin. Regs. § 28-16-28b(nnn).
12. Personal Communication with Scott Satterthwaite, Kan. Dep't of Health and the Env't (Feb. 16, 2007).
13. Personal Communication with Scott Satterthwaite, Kan. Dep't of Health and the Env't (Nov. 17, 2006).
14. *Id.*

State Water Resources Planning Act. The State Water Resources Planning Act authorizes the Kansas Water Office (KWO) to develop and update the Kansas Water Plan,[15] which is approved by the Kansas Water Authority.[16] Each of the 12 basin sections in the plan includes information on riparian and wetlands management issues. KWO staff members work with state agencies that receive funding from the State Water Fund[17] to implement actions in the plan, such as those relating to wetlands management.

Organization of state agencies

Kansas Department of Health and the Environment. The KDHE is the primary wetlands regulatory agency in the state. Its Division of Environment, Bureau of Water is responsible for issuing §401 water quality certifications. Most wetland-related reviews are handled at the main office in Topeka; however, there are Watershed Field Coordinators in three district offices (Hayes, Wichita, and Lawrence) who conduct some wetland-related work, such as attending Corps sponsored §401 pre-application meetings on behalf of the Division.[18] Most Bureau staff work on a variety of programs including storm water, TMDL, and U.S. Environmental Protection Agency (EPA) §319 grant programs. Staff also carries out promotion and education efforts that pertain to restoration, protection, and establishment of wetlands as water quality protection measures. For example, staff members provide educational materials, administer grants to the Kansas Alliance for Wetlands and Streams (KAWS), and encourage watershed groups to incorporate wetland-related activities into their watershed restoration and protection strategies (WRAPS).[19]

It is difficult to estimate the number of full-time equivalents (FTE) or the percent of the Bureau's budget dedicated to wetland-specific activities. However, the §401 program has .15 FTE for water quality certification and §404-related activities. Education activities utilize .35 FTE.[20]

The Bureau of Environmental Field Services, also within the Division of the Environment, is responsible for administering various monitoring programs, including the Lakes and Wetlands Monitoring Program. Program employees monitor lakes and wetlands and provide some technical support to the general public, state agencies, and schools that are carrying out local monitoring efforts. They also implement environmen-

15. The Kansas Water Plan serves to guide state agencies as to their roles over water resources including maintaining state surface waters water quality standards developed by the Kansas Department of Health and the Environment (KDHE). *See* Kan. Stat. Ann. § 82a-928(j).
16. Kan. Stat. Ann. § 82a-928(j). The Kansas Water Authority is part of the Kansas Water Office (KWO) and consists of members appointed by the Governor and legislative leaders. The Kansas Water Authority also submits funding recommendations to the Governor and the legislature based on priorities in the Water Plan. *See* Kansas Water Office, *Kansas Water Authority*, *at* http://www.kwo.org/KWA/Kansas%20Water%20Authority.htm (last updated Feb. 27, 2007).
17. The Governor and legislature use the Kansas Water Plan to guide allocation of the State Water Fund, which allocates approximately $16 to $18 million dollars a year to state agencies to implement actions in the plan. Funds are generated through a "combination of state general revenues, economic development initiative funds (lottery), and various water use fees on municipal, industrial and stock water uses, and fees on pesticide and fertilizer use. Pollution fines, penalties and sand royalties also contribute to the fund." *See* Kansas Water Office, *About Us*, *at* http://www.kwo.org/About%20Us.htm (last updated Feb. 27, 2007).
18. Satterthwaite, *supra* note 13.
19. Satterthwaite, *supra* note 12.
20. *Id.*

tal education efforts.[21] The Lake and Wetlands Monitoring Program has two employees. The program is funded primarily through state general funds.[22]

Department of Agriculture. The Kansas Department of Agriculture's Division of Water Resources (DWR) issues permits for any type of fill, one or more feet high, placed in floodplains; stream obstructions; dams; and modifications to stream channels. Although wetlands are not explicitly included in the state's Levee Law that regulates the permitting in floodplains,[23] the DWR will issue permits for fill in wetlands in floodplains. Staff members work in the headquarters in Topeka and three of DWR's field offices, but they all coordinate on permitting activities. Most employees are engineers and spend the majority of their time reviewing permit applications and drawings. Only a small number of permits relate to wetlands and if they do, they are often for constructed wetlands. As such, staff spend no more than five percent of their time on wetland-related permits (this includes permits for constructed wetlands). The budget for the DWR's permitting program for all floodplain fills and stream obstructions is approximately $500,000 and is derived primarily from state general funds, although approximately 20 percent of the total is from an application fee fund.[24]

State Conservation Commission. The State Conservation Commission (SCC) has statutory authority to assist local conservation and watershed districts and state agencies to conserve the state's natural resources. The SCC also establishes state policy for administering ten programs, one of which is the Riparian and Wetland Protection Program. Through this program, the SCC administers a cost-share program for riparian or wetland projects (more information in *Section V. Restoration*).[25] Of the SCC's 13 employees, one staff person is dedicated to the Riparian and Wetlands Protection Program. This program receives approximately 200,000 cost-share dollars a year from the State Water Fund.[26]

Nationwide permits

The KDHE meets with the Corps and other state and federal agencies to develop draft Kansas Regional Conditions. The department reviews the proposed NWP action and issue a "blanket" §401 for all NWPs.[27] For the NWPS issued in 2002, the state applied eleven conditions–some for specific NWPs[28] and some applicable

21. Kansas Department of Health and the Environment – Bureau of Environmental Services, *Technical Services Section*, *at* http://www.kdheks.gov/befs/tech_svcs_section.html (last visited June 28, 2007).
22. Personal Communication with Edward Carney, Kan. Dep't of Health and Env't (Dec. 14, 2006).
23. Kan. Stat. Ann. § 24-126.
24. Personal Communication with Matt Scherer, Kan. Dep't of Agric. (Nov. 13, 2006).
25. Personal Communication with Rob Reschke, State Conservation Comm'n (Jan. 19, 2007).
26. *Id.*
27. Satterthwaite, *supra* note 12.
28. NWP# 3 – Maintenance, NWP # 12 – Utility Activities, NWP # 23 – Approved Categorical Exclusions, NWP# 27 – Stream and Wetland Restoration Activities, NWP# 43 – Stormwater Management Facilities, and NWP# 44 – Mining Activities. *See* U.S. Army Corps of Engineers, Kansas City District, Nationwide Permit (NWP) Regional Conditions- Kansas, *available at* http://www.nwk.usace.army.mil/regulatory/nwp_information/ks_nwp_2002_reg_conditions.htm .

to all NWPs.[29] No NWPs were denied.[30] In March 2007, the KDHE issued its blanket §401 certification and conditions for the reissued NWPs.[31]

Mitigation

The state has not adopted mitigation requirements for §401 certifications. The KDHE does recognize that some wetlands mitigation required by the Corps will enhance water quality restoration and protection. The KDHE also may provide recommendations to the Corps for mitigation to replace a natural water quality protection land feature, such as an oxbow adjacent to cropland that has natural pollutant removal characteristics.[32] A Stream Mitigation Task Force[33] has developed stream mitigation guidelines for use by the state and the Corps.[34] The DWR may require project applicants to modify their projects to reduce impacts.[35]

The state has one mitigation bank and two in-lieu fee programs, but they are under the Corps' jurisdiction. KDHE does not play a role in establishing these activities; however, it ensures that the instruments for these activities are consistent with WQS and the principles and practices of the Kansas Non-point Source Pollution Management Plan (December 2000). The KDHE also participates on the Mitigation Banking Review Team for Kansas.[36]

Compliance and enforcement

Kansas has not adopted specific compliance or enforcement laws or regulations for wetlands. Wetlands enforcement actions come under the purview of water quality standard violations. The state is authorized to issue abatement or corrective action orders,[37] injunctions,[38] and civil penalties of not more than $10,000 per violation each day the water quality violation occurs.[39] Violations for §404/§401 permits fall under the jurisdiction of the Corps; however, the Corps can request that the KDHE take enforcement actions.[40]

29. Please see the following source for specific conditions as they are extensive. U.S. Army Corps of Eng'rs, Kan. City Dist., Nationwide Permit (NWP) Regional Conditions- Kansas, *available at* http://www.nwk.usace.army.mil/regulatory/nwp_information/ks_nwp_2002_reg_conditions.htm.
30. Satterthwaite, *supra* note 13.
31. *See* U.S. Army Corps of Eng'rs, Kan. City Dist., Kansas Water Quality Certification Section 404 Nationwide Permits (March 14, 2007), *available at* http://www.nwk.usace.army.mil/regulatory/2007nwps/Initial%20PN%20KS.pdf.
32. Personal Communication with Scott Satterthwaite, Kan. Dep't of Health and the Env't (Feb. 20, 2007).
33. Task force is comprised of the Army Corps of Engineers and other federal agencies; state agencies including but not limited to the Kansas Department of Health and the Environment, the Department of Agriculture's Division of Water Resources, the Kansas Water Office, the Kansas Department of Wildlife and Parks, and Kansas Department of Transportation; and county and local land trusts. Satterthwaite, *supra* note 13.
34. *d.*
35. Scherer, *supra* note 24.
36. Satterthwaite, *supra* note 13.
37. Kan. Stat. Ann. §65-171d; Kan. Admin. REGs. § 28-1628f(g).
38. Kan. Stat. Ann. § 65-171e.
39. Kan. Stat. Ann. § 65-171d.
40. Satterthwaite, *supra* note 13.

Tracking systems

The KDHE uses an informal database for tracking §401 permits. The Corps also sends the KDHE quarterly summaries of the NWPs and §404 permits it has issued. The KDHE also is beginning to utilize GIS to assess impacts from projects on a watershed scale. Specifically, staff uses the GIS tool to identify what §401 certifications have been issued and what watershed protection projects are in place in a particular area.[41]

III. Water Quality Standards

Kansas has not developed WQS or an anti-degradation policy specific to wetlands; however, the standards and policy refer to all surface waters of the state, which encompass wetlands. The state has developed designated uses that apply to classified surface waters of the state, including wetlands.[42] Designated uses, along with surface water classifications and outstanding national resource waters and exceptional state waters, are recorded in the Kansas Surface Water Register.[43] Any designated uses not in the register are determined on a case-by-case basis using attainment analyses.[44]

Surface WQS are both narrative and numeric. They are used for the KDHE's monitoring programs, and they provide information for 305(b) reports. Designated uses and WQS relate to fish and wildlife habitat, water quality/ pollution control, and minimum stream flows. Groundwater recharge and aquatic life support uses relate specifically to wetlands. Additionally, other uses such as secondary contact recreation may relate to wetlands in some cases.[45]

IV. Monitoring and Assessment

Kansas operates a formal monitoring program for publicly-owned wetlands through the KDHE, Bureau of Environmental Field Services' Lake and Wetland Monitoring Program.[46] The monitoring network includes 122 lakes and wetlands, of which five are wetland sites. Lakes and wetlands are visited on a three to five year rotation.[47] Approximately 45 physicochemical parameters are measured, including: major cations and anions, heavy metals, turbidity related parameters, nutrients, about 40 to 50 pesticides and polychlorinated biphenyl (PCB), and several biological measures (phytoplankton and macrophytes). Dissolved oxygen content and temperature are tested in wetlands' surface waters.[48] As a part of a grant received from the U.S.

41. *Id.*
42. Kan. Admin. Regs. § 28-16-28d(d)(1).
43. Kan. Admin. Regs. § 28-16-28g.
44. Kan. Admin. Regs. § 28-16-28d(d)(3).
45. Satterthwaite, *supra* note 13.
46. The Bureau received an U.S. Environmental Protection Agency (EPA) grant in the 1990's to evaluate factors of an assessment methodology. The Bureau altered the assessment to look at wetland function and services. This assessment methodology was part of a one-time project and is not used repeatedly. Carney, *supra* note 22.
47. Kansas Department of Health and the Environment – Bureau of Environmental Services, *supra* note 21.
48. Carney, *supra* note 22.

Environmental Protection Agency (EPA) in the 1990's, the Lake and Wetland Monitoring Program also examined approximately 36 public wetlands.[49,50] The program's database includes approximately 250,000 analytical records that encompass about 300 water bodies and over 100 analytical parameters.[51]

The Bureau also operates various other monitoring programs including Stream Chemistry and Biological Monitoring Programs. Monitoring data is compared to both numeric and narrative WQS to determine compliance with the standards.[52] Monitoring data also are used for developing 303(b) lists, Total Maximum Daily Loads (TMDL), and 305(b) reports. Additionally, data are used to characterize wetlands throughout the state. Because monitoring data is available online for the public, it also could be used for planning mitigation efforts. [53]

The Bureau does not operate a volunteer monitoring program.[54]

V. Restoration and Partnerships

Kansas has no formal, statewide wetlands restoration program; however, various agencies play a role in wetlands restoration. KDHE's Bureau of Watershed Management is responsible for administering most of the department's grants, such as EPA §319 grants, to various entities and organizations for wetlands restoration activities. The KDHE administers §319 grants through the Watershed and Restoration Strategy (WRAPS) Program.[55] WRAPS is a planning and management framework to protect watersheds, including wetlands. The KDHE also may provide technical advice on project design plans[56] and has been involved in developing constructed wetlands.[57]

The SCC allocates cost-share funds to county conservation districts through its Riparian and Wetlands Program. The conservation districts administer the grants to landowners to implement best management practices on their lands to protect and improve water quality. Funded projects include wetland enhancement, restoration, and creation projects.[58]

49. Satterthwaite, *supra* note 13.
50. Carney, *supra* note 22.
51. Kansas Department of Health and the Environment, Bureau of Environmental Services, *supra* note 21.
52. Carney, *supra* note 22.
53. *Id.*
54. *Id.*
55. The Watershed and Restoration Strategy is meant to engage stakeholders by watershed to "identify watershed restoration and protection needs, [e]stablish watershed management goals, create a cost effective action plan to achieve goals, [and] implement the action plan." The KDHE administers funding for the implementation of the action plans. The department also participates with other state and federal agencies on the WRAPS Work Group to facilitate coordination between state, federal, local, and private interests. Kansas Natural Resource Sub-Cabinet, *Watershed Restoration and Protection Strategy- WRAPS*, *at* http://www.kdheks.gov/nps/wraps/wraps_brochure.pdf (last visited June 28, 2007).
56. Satterthwaite, *supra* note 13.
57. *Id.*
58. Reschke, *supra* note 25.

The Kansas Department of Wildlife and Parks (KDWP) does not have a formal wetlands restoration program; however, its Environmental Services Division participates and/or pursues wetlands restoration in conjunction with water fowl and threatened and endangered species activities on public lands. For example, using North American Waterfowl Conservation Act grants, the KDWP worked with Ducks Unlimited to restore wetlands in McPherson Valley. Much of its work also has involved restoring and/or reclaiming agricultural lands. The Fish and Wildlife Division has been involved in the Playa Lakes Joint Venture[59] to restore playa lakes.[60]

The KWO, the water planning agency for the state, completed the *Kansas Wetlands and Riparian Areas Protection and Restoration Implementation Plan* in 2003 with funding from the EPA. The plan was developed in coordination with federal, state, and local agencies, tribes, private sectors, agricultural sectors, and non-governmental organizations. Recommendations for conserving and restoring the state's priority wetlands are included in the plan.[61]

The Kansas Alliance for Streams and Wetlands (KAWS)[62] is a non-profit organization that plays a significant role in wetlands restoration and education in the state. It partners with and receives funding from state agencies such as the KDHE, SCC, and KDWP, as well as federal agencies such as EPA and the U.S. Fish and Wildlife Service (FWS).[63] Its primary restoration and education efforts are carried out through demonstration projects. In 2004, KAWS completed 125 projects, spending approximately $621,000 in grant funding.[64]

VI. Education and Outreach

Although there are no formal, state wetland education programs, several agencies provide education on wetlands. The KDWP conducts outreach on all of its projects, which can include wetland-related information.[65] The KWO education program has no wetland-specific activities; however, wetlands information is integrated into much of its education work, such as its basin planning program.[66] In addition to state agency programs, KAWS is a major provider of wetlands education in the state through its numerous demonstration programs.[67]

59. The Playa Lakes Joint Venture is one of 13 Habitat Joint Ventures. Its goal is to restore playa lakes and other wetland areas to benefit birds, wildlife and people. It works in six states (Colorado, Kansas, Nebraska, New Mexico, Oklahoma and Texas) through a partnership of state and federal agencies and public and private entities. *See* Playa Joint Lakes Venture, *Our Mission*, *at* http://www.pljv.org/cms/mission (last visited June 28, 2007).

60. Personal Communication with James Hays, Kan. Dep't of Wildlife and Parks (Nov. 14, 2006).

61. Kansas Water Office, Kansas Wetlands and Riparian Areas Protection and Restoration Implementation Plan (Sept. 2003), *available at* http://www.kaws.org/PDF/Implementation%20Plan%20Doc%20Final.pdf.

62. The Kansas Alliance for Streams and Wetlands (KAWS) began in 1996 to encourage protection, and restoration of wetlands and streams in the state working with local partners, government agencies, and individuals. *See* Kansas Alliance for Wetlands and Streams, *at* http://www.kaws.org (last visited June 28, 2007).

63. Personal Communication with Tim Christian, Kan. Alliance for Streams and Wetlands (Nov. 15, 2006).

64. Kan. Alliance for Wetlands and Streams, Annual Report (2004), *available at* http://www.kaws.org/PDF/2004%20Annual%20Report.pdf.

65. Hays, *supra* note 60.

66. Personal Communication with Kerry Wedel, Kan. Water Office (Jan. 12, 2007).

67. Christian, *supra* note 63.

VII. Coordination among State and Federal Agencies

Various state agencies work together on wetland-related activities. The KDHE and the DWR coordinate when §401 certifications are issued for projects that also require a DWR permit. The KWO coordinates and works on wetland-related issues with the KDHE, SCC, and the KDWP.[68] Specifically, KWO staff members work with state agencies that receive funding from the State Water Plan Fund to implement actions in the plan, such as those relating to wetlands management. Several state agencies, represented on the Governor's Natural Resources Sub-Cabinet including the KDHE, KDWP, SCC, KWO, and the Department of Agriculture, coordinate to implement the Kansas WRAPS program through a Memorandum of Agreement (MOA).

State and federal agencies also coordinate on wetland-related permits and activities. The KDHE works closely with the Corps and occasionally with the FWS on §401 water quality certifications. The KDHE also works with the Natural Resources Conservation Service (NRCS) and serves on the NRCS state technical committee.[69] The KDWP Public Lands Department also works with the NRCS on its Wetland Reserve Program.[70] The KDWP reviews all §404/§401 permits and DWR permits and provides input and recommendations in regards to wetland-related issues where applicable.[71] Additionally, through its Landowner Incentive Program, the KDWP joined with the U.S. Department of Agriculture to protect the Great Plains playa lakes.[72] Finally, the DWR coordinates with the Corps when §404 permits are for activities taking place in a floodplain or stream which require a DWR permit.[73]

VIII. Acronyms and Abbreviations

CWA – Clean Water Act

DWR – Division of Water Resources (Kansas Department of Agriculture)

EPA – U. S. Environmental Protection Agency

FTE – Full-time Equivalent

FWS – U.S. Fish and Wildlife Service

KAWS – Kansas Alliance for Wetland and Streams.

KDHE –Kansas Department of Health and the Environment

KDWP – Kansas Department of Wildlife and Parks

68. Wedel, *supra* note 66.
69. Satterthwaite, *supra* note 13.
70. Hays, *supra* note 60.
71. *Id.*
72. Personal Communication with Steve Adams, Kan. Dep't of Wildlife of Recreation and Parks (Nov.13, 2006.)
73. Scherer, *supra* note 24.

KWO – Kansas Water Office

NRCS – Natural Resources and Conservation Service

NWR – National Wildlife Refuge

PCB – Polychlorinated biphenyl

TMDL – Total Maximum Daily Load

WRAPS – Watershed Restoration and Protection Strategy

Massachusetts

I. Overview

Massachusetts has lost 20 percent of the wetlands that were in existence at the time of European settlement.[1] Of the approximately 48,000 acres of coastal saltmarsh remaining, about 8,000 acres are considered degraded by human activity.[2] Many riparian buffer zones along streams, wetlands and rivers have been removed for farming activities, and hedgerow habitat has been lost because of consolidation of small fields into larger ones.[3] There are over 48,000 acres of wetlands in Massachusetts, but between 1991 and 2001, over 800 acres of wetlands were lost or altered in the state.[4]

II. Regulatory Programs

Wetland definitions and delineation

Waters of the Commonwealth is defined as "all waters within the jurisdiction of the Commonwealth, including, without limitation, rivers, streams, lakes, ponds, springs, impoundments, estuaries, wetlands, coastal waters, groundwaters, and vernal pools."[5]

The Wetlands Protection Act defines coastal and freshwater wetlands separately. Coastal wetlands are "any bank, marsh, swamp, meadow, flat or other lowland subject to tidal action or coastal storm flowage."[6] Freshwater wetlands are "wet meadows, marshes, swamps, bogs, areas where the groundwater, flowing or standing surface water or ice provide a significant part of the supporting substrate for a plant community for at least five months of the year; emergent and submergent plant communities in inland waters; that portion of any bank which touches any inland waters."[7]

The state has developed its own wetland delineation methodology, which is more exacting and stringent than the Corps standard.[8] The Wetlands Protection Act states within the definition of bogs, marshes, swamps, and wet meadows that "...a significant part of the vegetational community is made up of, but not limited to,

1. U.S. Fish and Wildlife Serv., Partners for Fish and Wildlife, Massachusetts (July 2001), *available at* http://www.fws.gov/northeast/partners/Documents/State%20Summaries/MA-needs.pdf.
2. *Id.*
3. *Id*.
4. Massachusetts Department of Environmental Protection, *Wetlands Loss Map Q &A, at* http://www.mass.gov/dep/water/resources/wlossmap.htm (last viewed on July 3, 2007).
5. 314 Mass. Code Regs. 4.02.
6. Mass. Gen. Laws ch. 131, § 40.
7. *Id*.
8. Personal Communication with Michael Stroman, Wetlands Program Chief, Mass. Dep't of Envtl. Mgmt. (Mar. 14, 2007).

nor necessarily including all of the following plants or groups of plants..."[9] The definition for Bordering Vegetative Wetlands (BVW) in the wetland regulations states that these areas "...support a predominance of wetland indicator plants..."[10] The regulations go on to describe a BVW boundary as "...the line within which 50 percent or more of the vegetational community consists of wetland indicator plants..."[11]

In order to provide consistency in determining BVW boundaries, the state Department of Environmental Protection (MassDEP) has produced a handbook describing a methodology.[12] MassDEP has also developed a field data form, contained in the handbook, that should be used to report information used in determining the boundary.[13] The handbook includes the details of how to conduct, prepare for, and review boundary delineations for Bordering Vegetated Wetlands.[14] It describes how to conduct the dominance test, how to determine the presence of wetland hydrology at a site, and how to establish the BVW boundary from this information.[15]

Wetland-related law and regulation

Wetlands Protection Act. The Massachusetts Wetlands Protection Act, the main regulatory authority for protecting wetlands in the state, regulates activities in all wetlands in the state.[16] The Wetlands Protection Act protects wetlands and the public interests they serve, including flood control, prevention of pollution and storm damage, and protection of public and private water supplies, groundwater supply, fisheries, land containing shellfish, and wildlife habitat.[17] These public interests are protected by requiring a careful review of proposed work that may alter wetlands or work in 100-foot buffer zones to certain types of wetlands.[18]

The Wetland Protection Act is administered in a decentralized way. While the policies and regulations are promulgated by MassDEP, permits are actually issued by the 351 local conservation commissions.[19] The commissions' volunteer boards comprise three to seven members appointed by the selectmen or city council. In addition to developing regulations and policies, MassDEP provides technical training to commissions. MassDEP also hears appeals of decisions made by commissions.

9. Mass. Gen. Laws ch. 131 § 40.
10. 310 Mass. Code Regs. 10.55(2)(a).
11. 310 Mass. Code Regs. 10.55(2)(c).
12. Massachusetts Department of Environmental Protection, *Wetlands Program Policy, Bordering Wetland Vegetation Delineation Criteria and Methodology* (March 1, 1995), *at* http://www.mass.gov/dep/water/laws/bvw.htm.
13. *Id*.
14. Scott Jackson, Delineating Bordering Wetland Vegetation Under the Massachusetts Wetland Protection Act, A Handbook, (Massachusetts Department of Environmental Protection, Division of Wetlands and Waterways ed., 1995) *available at* http://www.mass.gov/dep/water/laws/bvwmanua.pdf.
15. *Id*.
16. Mass. Gen. Laws ch. 131 § 40.
17. Massachusetts Department of Environmental Protection, *Protecting Wetlands in Massachusetts*, *at* http://www.mass.gov/dep/water/resources/protwet.htm (last visited July 3, 2007).
18. *Id.*
19. Mass. Gen. Laws ch. 131, § 40; 310 Mass. Code Regs. 10.00.

The conservation commissions ensure that proposed activities will not alter resource areas and the public interests they provide by reviewing projects on a case-by-case basis.[20] The regulations describe how each type of resource area provides one or more of the public interests. The regulations also spell out the type and extent of work allowed in resource areas. Proposed work must meet these standards. This information helps landowners and developers plan their work and helps commissions apply the law to specific projects.[21]

The law regulates many types of work in resource areas, including vegetation removal, regrading, and construction of houses, additions, decks, driveways, and commercial or industrial buildings. A person proposing to conduct work in a wetland resource area or within 100 feet of a wetland (an area called the buffer zone) is required to contact the local conservation commission before starting work. To determine if a proposed work site is in a resource area or whether the work will alter a resource area, those conducting such projects can apply for a Request for Determination of Applicability. If the conservation commission determines that the work will alter a resource area, the person must file an application, called a Notice of Intent (NOI), and pay an application fee. The NOI requires a plan describing the details of the proposed project, location of wetland resource areas and buffer zones, and measures to be taken to protect them. This information can be found in the regulations and application instructions. The conservation commissions provide guidance on the content and detail needed in plans.[22]

Commissions visit sites to verify the resource area boundaries on the property. At a public hearing on the project, the applicant may present information, and abutters and other members of the public may ask questions. Following the hearing, commissions may issue a permit, called an Order of Conditions, which either approves the project—with special conditions that will protect the public interests—or deny the project if impacts to resource areas cannot be avoided or mitigated. The applicant, landowner, any aggrieved person, abutter, group of ten citizens, or MassDEP may appeal the local commission's decision.[23]

The Act also authorized wildlife habitat protection, including wetlands restoration, which is guided by the Wildlife Habitat Guidance.[24]

Inland and Coastal Wetland Restriction Acts. Permanent restriction orders have been placed on selected wetlands in over 50 communities under the Inland[25] and Coastal[26] Wetlands Restriction Acts.[27] The restriction orders provide added protection for selected wetlands by prohibiting certain activities in advance of any work being proposed.[28]

20. 310 Mass. Code Regs. 10.00.
21. *Id*.
22. Massachusetts Department of Environmental Protection, *supra* note 17.
23. *Id.*
24. Mass. Dep't of Envtl. Prot., Bureau of Res. Prot., Wetlands and Waterways Program, Wildlife Habitat Protection Guidance for Inland Wetlands (Mar. 2005), *available at* http://www.mass.gov/dep/water/laws/wldhab.pdf.
25. Mass. Gen. Laws ch. 131 § 40A; 310 Mass. Code Regs. 13.00.
26. Mass. Gen. Laws ch. 130 § 105; 310 Mass. Code Regs. 12.00.
27. Massachusetts Department of Environmental Protection, *supra* note 17.
28. *Id*.

Restriction orders are recorded at the Registries of Deeds in the counties where the properties are located to inform future landowners of the restriction. Affected municipalities have copies of the community's restricted wetlands plans and restriction orders. Restriction orders are implemented through the Wetlands Protection Act permitting process. A landowner proposing work in a restricted wetland must file a Notice of Intent (NOI) and check the appropriate box on the form. Upon receipt of the NOI, the conservation commission and MassDEP regional office should check their copies of the restricted wetlands plans and restriction orders to determine if work is proposed in a restricted wetland and if the work is allowed under the restriction order. Orders of Conditions must not allow work that is prohibited by a restriction order.[29]

Local Wetlands Bylaws. Over 170 Massachusetts communities have local wetlands protection bylaws in addition to the state and federal laws.[30]

Organization of state agencies

Several state and local agencies participate in both regulatory and non-regulatory wetlands activities throughout the state.

Conservation Commissions. Every city and town in the state has a conservation commission, enabled by the Conservation Commission Act.[31] Conservation commissions have between three and seven volunteer members.[32] The town meeting or city council sets the number. Terms are three years in length. Approximately 100 of the commissions also have full time employees. The commissions have the primary responsibility for wetland protection and permitting under the Wetlands Protection Act.[33] Under this law, commissions across the state process over eight to ten thousand applications every year for permits to do work in and near wetlands, flood plains, banks, riverfront areas, beaches and surface waters.[34] They also play a role in wetlands conservation.

Massachusetts Association of Conservation Commissions. The commissions are supported by the Massachusetts Association of Conservation Commissions (MACC). The MACC was formed in 1961 to provide and disseminate educational materials describing their duties and outlining methods of attaining their goals and to discuss ways of improving the citizen's role in environmental protection.[35]

The MACC conducts a major annual meeting for conservation commission members. The MACC *Annual Environmental Conference* is the largest annual gathering of local environmental officials in New England and includes about 40 workshops and nearly 50 exhibits. The MACC's annual *Fall Conference* covers a relevant topic

29. *Id*.
30. *Id*.
31. Massachusetts Association of Conservation Commissions, *About Conservation Commissions, at* http://www.maccweb.org/about_commissions.html (last visited July 3, 2007).
32. *Id*.
33. Mass. Gen. Laws ch. 131 § 40.
34. *Id*.
35. Massachusetts Association of Conservation Commissions, *About Us, at* http://www.maccweb.org/about_us.html (last visited July 3, 2007).

in depth. In between annual meetings, the MACC offers a variety of specialized education programs. The MACC publishes the Environmental Handbook for Massachusetts Conservation Commissioners and a regular Newsletter, and writes or distributes over 100 other government, legal and environmental publications.[36]

The MACC's original mission of encouraging and assisting the establishment of conservation commissions in every municipality was achieved in the 1980s.[37] The MACC continues to provide education and support for the commissions and to work for strong, workable, science-based laws and regulations regarding wetlands, other water resources, open space, and biological resources.[38]

Massachusetts Department of Environmental Protection. The Massachusetts Department of Environmental Protection (MassDEP) is the central authority for wetlands protection under the Wetlands Protection Act. The MassDEP issues regulations, hears appeals, and enforces regulations when there are violations.[39]

Four regional offices are the hubs of MassDEP permitting, compliance, enforcement, and cleanup activity.[40] Staff based in these offices work primarily in the field and are familiar with the communities they serve.[41] The regulatory program has approximately 40 full time employees who participate in permitting, enforcement, compliance, monitoring, §401 certification, outreach and technical support, and some restoration.[42] The program has an annual budget of approximately $1.2–1.3 million, funded through fees.[43] The MassDEP Circuit Rider program provides direct technical assistance and training to the conservation commissions on the administration of the Wetlands Protection Act.[44] There are seven regional circuit riders and a coordinator based in Boston.[45] The agency also is tracking wetland change through GIS imagery that will be used for analysis and improved enforcement.[46]

Massachusetts Estuary Project. The Massachusetts Estuary Project (MEP) began in order to address the problems caused by excess nitrogen loading in 89 estuaries in southeastern Massachusetts. The MEP is a collaborative effort among coastal communities, MassDEP, the School of Marine Science and Technology (SMAST) at the University of Massachusetts, Dartmouth, the US Environmental Protection Agency (EPA) Executive Office of Environmental Affairs, and the Cape Code Commissions.[47]

36. *Id.*
37. Massachusetts Association of Conservation Commissions, *Mission, at* http://www.maccweb.org/about_mission.html (last visited July 3, 2007).
38. *Id*.
39. Mass. Gen. Laws ch. 131 § 40.
40. MassDEP, *Regional Offices*, *at* http://www.mass.gov/dep/about/regional.htm (last visited July 3, 2007).
41. *Id*.
42. Stroman, *supra* note 8.
43. *Id*.
44. Massachusetts Department of Environmental Conservation, *MASSDep's Wetlands Circuit Rider Program*, *at* http://www.mass.gov/dep/water/compliance/cridr.htm (last visited July 3, 2007).
45. *Id*.
46. Personal Communication with Susan Figelman, Mass. Dep't of Envtl. Prot. Compliance and Enforcement Chief for the Bureau of Res. Prot. (March 27, 2007).
47. Mass. Dep't of Envtl. Prot., Massachusetts Estuaries Project, Embayment Restoration and Guidance for Implementation Strategies (2003), *available at* www.mass.gov/dep/water/resources/mamep.doc.

The MEP provides water quality, nutrient loading, and hydrodynamic information for use in a watershed model that will predict the water quality changes that will result from land use management decisions. Reports for each of the estuaries will evaluate several water quality conditions and how that relates to the health of the estuary, and the land use changes necessary to bring about that improvement.[48]

Wetlands Restoration Program, Massachusetts Office of Coastal Zone Management. Massachusetts was the first state to formally institute a Wetlands Restoration Program (WRP).[49] Founded in 1994, WRP is charged with restoring tidal and fresh water wetlands in the coastal zone.[50] The program conducts extensive regional planning to identify restoration opportunities, and prioritizes potential restoration projects according to a detailed set of criteria.[51] Through partnerships, WRP supports restoration projects by providing guidance, coordination, and in-house technical assistance from experienced project managers for project development and implementation.[52] Designated priority projects may also receive grants and private sector technical services funded with WRP resources.[53]

§401 certification

Section 401 water quality certification is coordinated with the order of conditions process under the WPA.[54] Most projects approved by a conservation commission under the WPA do not require further review under §401. These projects are automatically certified when they obtain an order of conditions. Projects impacting less than 5,000 square feet, that are in compliance with the WPA, do not require a §401 certification.[55] Projects impacting less than 5,000 square feet of isolated wetlands are exempt from certification requirements, as are beach nourishment projects, agriculture and aquaculture projects, and planning and design activities.[56] Projects with potentially large impacts and those that are not subject to the WPA also require §401 review, as well as those in outstanding resource waters, affecting rare and endangered species habitats, and subdivision projects.[57]

The number of certifications issued each year varies from 60 to 80, and the majority of applications are approved.[58] Certification applications are evaluated by an alternatives analysis, an avoidance and minimization requirement, an impact assessment, and a public interest evaluation.[59]

48. Massachusetts Department of Environmental Protection, *What Are Estuaries?*, *available at* http://www.mass.gov/dep/water/resources/brochure.htm (last visited July 5, 2007).
49. U.S. Fish and Wildlife Serv., Partners for Fish and Wildlife, Massachusetts (July 2001), *available at* http://www.fws.gov/northeast/partners/Documents/State%20Summaries/MA-needs.pdf.
50. Personal Communication with Tim Smith, Mass. Office of Coastal Zone Mgmt. Wetlands Restoration Program Project Manager/Wetlands Scientist (March 27, 2007).
51. Personal Communication with Hunt Dury, Mass. Office of Coastal Zone Mgmt. Wetlands Restoration Program Manager (May 3, 2007).
52. Massachusetts Office of Coastal Zone Management Wetlands Restoration Program, *WRP Mission, at* http://www.mass.gov/czm/wrp/about_us_pages/wrp_mission.htm (last visited July 5, 2007).
53. *Id*.
54. Stroman, *supra* note 8.
55. 314 Mass. Code Regs. 9.03(1).
56. 314 Mass. Code Regs. 9.03.
57. 314 Mass. Code Regs. 9.04.
58. Stroman, *supra* note 8.
59. 314 Mass. Code Regs. 9.06 – 9.08.

Statewide programmatic general permit

Massachusetts is currently operating under a statewide programmatic general permit (SPGP) that was issued on January 20, 2005 and is in effect until January 20, 2010.[60] Activities with minimal impacts and that meet certain conditions qualify for authorization under the SPGP in either Category 1 or Category 2.[61] Category 1 activities are known as non-reporting projects and may be authorized under the SPGP without notifying the Corps. Category 2 projects are known as reporting projects and an application to and written authorization from the Corps is required for these projects.[62]

Projects meeting the conditions for Category 1 activities require only an order of conditions from the local conservation commissions but no authorization from the Corps, though they must comply with other applicable federal law, and general conditions.[63] Projects meeting the conditions for Category 2 activities require written authorization from the Corps and an order of conditions under the WPA, as well as certifications or waivers concerning Water Quality Certification and Coastal Zone Management. Applicants must consult with the Corps and outside experts is to ensure compliance with all SPGP conditions, such as consultation with the Massachusetts Historical Commission and the appropriate Native American Indian tribes to ensure compliance with General Conditions. Any other projects that do not meet the conditions for Categories 1 or 2 require an individual permit.[64] If there are sufficient concerns for the aquatic environment or other threats to the public interest, the Corps can still require an Individual Permit for activities meeting the conditions in Category 1 or Category 2.

Category I activities include projects that impact less than 5,000 square feet and Category 2 is for activities that affect between 5,000 square feet and one acre, that also meet the detailed PGP conditions.[65]

Mitigation

Massachusetts wetland regulations set forth state mitigation requirements.[66] For projects that are less than 5,000 square feet, compensation must be at the ratio of 1:1.[67] In 2004, the governor authorized the creation of a pilot wetlands mitigation bank in the Taunton River Watershed as part of the Transportation Bond Bill (Section 89 of Massachusetts Acts Chapter 291).[68] The project is being carried out by a consulting firm, Blue Wave Strategies.[69] The purpose of the bank, in addition to offering mitigation opportunities for projects caus-

60. U.S. Army Corps, Dep't of the Army Programmatic General Permit Commonwealth of Mass. (Dec. 18, 2006), *available at* http://www.nae.usace.army.mil/reg/mapgp.pdf. .
61. *Id.*
62. *Id.*
63. *Id.*
64. *Id.* at 22.
65. *Id.*
66. 310 Mass. Code Regs. 10.55(4)(b); Mass. Dep't of Envtl. Prot., Massachusetts Inland Wetland Replication Guidelines (Mar. 1, 2002) *available at* http://www.mass.gov/dep/water/laws/replicat.pdf; Stroman, *supra* note 8.
67. Stroman, *supra* note 8.
68. Eric Las, et al., *A Pilot Wetlands Mitigation Bank in the Taunton Rivershed*, Association of Massachusetts Wetlands Scientists Newsletter, Oct. 2006, at 9, *available at* http://www.bluewavestrategies.com/pdfs/AMWSarticle.pdf.
69. Blue Wave Strategies, *Wetland Mitigation Banking, at* http://www.bluewavestrategies.com/wetlands_banking.htmls (last visited July 9, 2007).

ing impacts to wetlands, is to determine if mitigation efforts can be improved by establishing large area mitigation banks with significant oversight during the planning, construction and post-construction monitoring phases.[70] The 2004 legislation also required the creation of a wetlands Mitigation Banking Review Team (MBRT). Facilitated by Blue Wave Strategies, the team meets monthly and includes representatives from consultancies, state agencies, federal agencies, industry, an advocacy organization, and the local community.[71]

Compliance and enforcement

Massachusetts has a two-tiered structure for enforcement of wetlands protections. Local conservation commissions in each city and town are the first line of defense, both for wetlands permitting and for enforcement. MassDEP gets involved in appeals, superseding orders of conditions, complex enforcement cases, and guidance when a local conservation commission seeks enforcement assistance.[72]

MassDEP typically handles enforcement cases through the administrative enforcement process, with the exception of cases valued over $40,000.[73] MassDEP refers these larger cases to the state Attorney General for consideration. The Attorney General selects a few cases each year for civil or criminal prosecution in court and may seek civil penalties as well as criminal fines. The vast majority of MassDEP wetlands cases, however, are executed via MassDEP's administrative enforcement.

MassDEP classifies regulations into three categories according to the nature of the violation.[74] Reporting and other types of paperwork violations are considered Class III. Operation and maintenance violations, such as failing to install a silt fence, would be considered Class II.[75] The initial enforcement response for a Class III or Class II violation is a Notice of Noncompliance to prevent wetlands degradation. Once wetlands have been filled or damaged, the violation is considered Class I. Class I violations are the most serious and involve damage as a result of an unpermitted action, such as filling a wetland. Class I violations can also result from failure to comply with the terms of a permit or order of conditions, such as wetland siltation resulting from failure to prevent upland erosion.[76]

Administrative enforcement may follow different routes, depending on the case. The case may start with issue of a unilateral administrative order (UAO) which requires the violator to cease and desist activities, such as wetlands filling, immediately.[77] Next, the agency can issue a penalty assessment notice (PAN) or negotiate an administrative consent order with penalty (ACOP).[78] The PAN is an appealable document. The incentive for the violator to negotiate is that the penalty in the ACOP can be reduced or even suspended, resulting in

70. Massachusetts Department of Environmental Protection, *supra* note 17.
71. Blue Wave Strategies, *Wetland Banking Review Team, at* http://www.bluewavestrategies.com/wetlands_team.html (last visited July 9, 2007).
72. MassDEP, *Enforcement Response Guidance* (Apr. 26, 1997) *available at* http://www.mass.gov/dep/service/enf97001.pdf.
73. Figelman, *supra* note 9.
74. *Id*.
75. *Id*.
76. *Id*.
77. MassDEP, *supra* note 72.
78. *Id*.

an ACOP with no cash penalty, depending on the circumstances.[79] In return for the opportunity to negotiate, the violator agrees to waive the right to appeal. Most enforcement actions are resolved using this mutually beneficial ACOP process.[80]

The administrative penalties statute and regulations authorize the Department to issue civil administrative penalties of up to $25,000 per day for specific types of violations of the major environmental statutes the agency is charged with implementing.[81] Enforcement orders also include stipulated penalties that set out further penalties for violating the terms of the order, such as failing to mitigate wetlands damage.[82]

The penalty calculation for PANs and ACOPs begins with the base penalty for that violation, adjusted for the gravity of the damage assessment, good faith, public interest, and other variables.[83] Penalties can also be adjusted above the $25,000 limit per violation if the violator benefited economically from the violation. Many cases involve multiple violations, with penalties assessed for each violation added together.

In Fiscal Year 2006 MassDEP executed 131 wetlands enforcement cases valued at $537,000 in cash and suspended penalties.[84] Annually there are approximately 25 enforcement cases that address erosion controls.[85] An additional 80 cases require restoration, and a few cases require wetlands replication.[86] Over the past five years MassDEP has executed 370 wetlands enforcement cases valued at over $3.8 million in cash and suspended penalties.[87]

Massachusetts has had a more than five-fold increase in the number of wetlands enforcement cases during this time period, reflecting the impact of two new enforcement strategies, the Construction Initiative and the Wetlands Loss Project.

The Construction Initiative prevents and mitigates sedimentation of down-gradient resource areas by enforcing compliance with the erosion controls mandated by a project's order of conditions. MassDEP now takes enforcement measures at 20 to 30 building sites per year to ensure that permitted construction projects do not inadvertently result in illegal wetlands damage. Where the required erosion control methods have not been properly installed, MassDEP pursues enforcement to get proper controls in place. Where lack of controls is accompanied by evidence of sedimentation, MassDEP issues immediate orders to halt the damage, followed by penalties and orders to restore the resource areas impacted.[88]

79. Figelman, *supra* note 9.
80. *Id*.
81. Mass. Gen Laws ch. 21A § 16; 310 Mass. Code Regs. 5.
82. Figelman, *supra* note 9.
83. *Id*.
84. SFY 2006 Wetlands Protection Update, (on file with author).
85. Figelman, *supra* note 9.
86. *Id*.
87. SFY 2006 Wetlands Protection Update, (on file with author).
88. *Id.*

Tracking systems

The Wetland Program currently has multiple data systems in place to track permitting, compliance, enforcement, and mitigation efforts. MassDEP is currently undertaking a long-term assessment of data needs and redesign as part of a three-year EPA Demonstration Pilot Grant. The goal of integrating data will involve: the review and consolidation of traditional paper file databases used to track filing and permitting information obtained through the Wetland Protection Act; use of eDEP for electronic filing of permit applications under the Wetlands Protection Act; development of a compliance and enforcement tracking system; data (digital photography) from wetland change maps; and a public access portal designed to offer environmental information to the regulated community using a GIS interface.[89]

Massachusetts is pioneering a new method for tracking wetland changes, called the Wetlands Loss Initiative.[90] The agency is compiling aerial maps by conducting flyovers every other year, comparing wetland cover from 10 years ago and to the present, and cross-referencing with information about permits.[91] Information is used for assessment, enforcement and deterrent purposes.

In the autumn of 2003, MassDEP began using these aerial photographs and sophisticated analyses to launch a crackdown on unpermitted filling of wetlands. MassDEP has now executed thirty "wetlands loss" cases, requiring restoration of nearly 50 acres of wetlands in total and $1,857,350 in penalties. Most of the largest cases were executed in SFY 2004 and SFY 2005, accounting for the peak in penalty dollars those years. With the initial set of cases winding down in 2006, analysis of data from the second set of flyovers is underway, revealing few new large-scale violations.[92] This preliminary analysis would appear to indicate that the project is indeed deterring illegal wetlands destruction, the project's most important measure of success.[93]

III. Water Quality Standards

Massachusetts applies surface water quality standards to wetlands and designated uses and antidegradation standards also default to open water designated uses.[94] The water quality standards and associated designated uses relate to wetland functions including fish and wildlife habitat[95] and water quality[96].

89. Stroman, *supra* note 8.
90. Figelman, *supra* note 9.
91. *Id*.
92. SFY 2006 Wetlands Protection Update, (on file with author).
93. Personal Communication with Susan Figelman, Mass. Dep't of Envtl. Prot. Compliance and Enforcement Chief for the Bureau of Res. Prot. (May 3, 2007).
94. 314 Mass. Code Regs. 4.05.
95. 314 Mass. Code Regs. 4.05(3)(b), 4.05(3)(c), 4(b).
96. 314 Mass. Code Regs. 4.05(3)(a).

IV. Monitoring and Assessment

Monitoring and assessment for wetlands

Massachusetts is currently developing a wetland assessment methodology based on EPA's guidance for the monitoring and assessment of wetlands.[97] It is aiming to participate in EPA's national goal of developing a condition assessment for wetlands by 2011.[98] Massachusetts plans to follow EPA's suggested three-tiered monitoring program that incorporates landscape assessments through GIS images and photography for Level 1, a Rapid Assessment Methodology (RAM) with limited fieldwork for Level 2, and Intensive Site Assessments for Level 3.[99]

Conservation assessment and prioritization system

In March 2006, MassDEP issued the Massachusetts Wildlife Habitat Protection Guidelines for Inland Resource Areas.[100] During the development of the guidance, MassDEP adopted the Conservation Assessment and Prioritization System (CAPS) developed by the University of Massachusetts in Amherst (UMass) as the approach to mapping wildlife habitat of potential regional or statewide importance.[101] The CAPS is an objective, dynamic, and flexible computer model designed to evaluate the baseline ecological integrity of lands and waters and to identify and prioritize land for habitat conservation.[102] Through funding from the EPA, the MassDEP Wetlands Program has supported UMass in creating CAPS maps that identify potentially important wetland habitat to determine which areas need more detailed evaluation.[103] Currently, 90 towns have been or are in the process of being mapped using the CAPS system.[104] MassDEP's goal is to conduct mapping for all municipalities in the state.

CAPS will be used for MassDEP's Level 1 wetland assessment. The assessment will be based on landscape-level indicators that incorporate anthropogenic impacts on ecological integrity. The results of CAPS are essentially predictions about the ecological condition of an area over time. CAPS does not assess ecological condition on the ground, nor does it typically use field-based information in the CAPS models. MassDEP and UMass are developing a RAM that will provide information about ecological condition for a large number and wide range of wetlands that are essential for testing and validating CAPS predictions and modifying the CAPS models. Another purpose for the RAM is to identify wetlands that do not meet quality standards and that therefore should be the focus of additional protection, remediation or restoration efforts through policy, regulation or outreach. It is generally expected that wetlands in more developed landscapes will have lower condition scores than wetlands in more natural landscapes. Therefore, to identify particular wetlands for addi-

97. Wetlands Divisions, Office of Wetlands, Oceans and Watersheds, EPA, Application of Elements of a State Monitoring and Assessment Program for Wetlands (April 2006), *available at* http://www.epa.gov/owow/wetlands/pdf/Wetland_Elements_Final.pdf.
98. Personal Communication with Lisa Rhodes, MassDEP Monitoring and Assessment (Apr. 24, 2007).
99. *Id*.
100. Mass. Dep't of Envtl. Prot., Bureau of Res. Prot., Wetlands and Waterways Program, *supra* note 24.
101. Massachusetts Department of Environmental Protection, *supra* note 17.
102. Rhodes, *supra* note 98.
103. University of Massachusetts, Amherst, *Habitat of Potential Regional and Statewide Importance*, *at* http://www.umass.edu/landeco/research/caps/data/dep/dep.html (last visited July 5, 2007).
104. Rhodes, *supra* note 98.

tional protection or restoration, the relationship between wetland condition and land use in the surrounding landscape will be determined. Wetlands that deviate from such a relationship could be the focus of additional protection or restoration measures. Using CAPS and an appropriately designed RAM, the relationship between landscape context (CAPS scores) and wetland condition (RAM scores) will be plotted for each wetland type to identify wetlands that should be the focus of additional protection, remediation or restoration. Other goals of the monitoring and assessment program include: assessment of buffer zone disturbance; wetland condition changes over time; and wetland mitigation.[105]

The CAPS system uses many different data sources including MassDEP Wetlands and Land Use/Land Cover maps. To the extent that these maps change as a result of MassDEP's wetland loss mapping, future CAPS analyses would reflect those losses. The DEP is also working with the Massachusetts Office of Coastal Zone Management (MCZM). The MCZM has developed a draft RAM for salt marshes that will be used as a model to develop MassDEP's RAM and which may ultimately be tested against CAPS predictions. MassDEP also participates in the New England Biological Assessment of Wetlands Working Group (NEBAWWG) to share information with other states on the development of the wetland monitoring and assessment program. Results of the MassDEP and UMass wetland monitoring and assessment program will ultimately be incorporated into the regular updates of the *Water Quality Monitoring Strategy for the Commonwealth of* Massachusetts, most recently updated in September 2005.[106]

V. Restoration and Partnerships

Wildlife habitat protection

The Wetlands Protection Act authorized wildlife habitat protection which, in practice, includes wetlands restoration. These activities are conducted under the Wildlife Habitat Protection Guidance.[107]

Coastal Zone Management – Wetlands Restoration Program

The Massachusetts Office of Coastal Zone Management, Wetlands Restoration Program (WRP) targets degraded tidal and fresh water coastal wetlands for restoration.[108] The program develops regional wetlands restoration plans that identify and prioritize areas for restoration using many sources of information. Some are technical and computer-based, such as the use of geographic information systems (GIS), while others are basic, common sense approaches that tap the knowledge of local area officials, organizations, and residents. Combined with on-the-ground field assessments, these sources can generate a comprehensive picture of potential restoration sites within a study area.[109]

105. *Id*.
106. *Id*.
107. Mass. Dep't of Envtl. Prot., Bureau of Res. Prot., Wetlands and Waterways Program, *supra* note 24.
108. Massachusetts Office of Coastal Zone Management, *Wetland Restoration Program, at* http://www.mass.gov/czm/wrp/index.htm (last visited July 5, 2007).
109. *Id*; Massachusetts Office of Coastal Zone Management, *Great Marsh Coastal Wetlands Restoration Plan*, *at*: www.mass.gov/czm/wrp/planning_pages/gmplan/home.htm (last visited July 5, 2007).

The WRP provides extensive technical assistance, resources, and overall coordination to help project partners achieve their wetland restoration goals.[110] Many projects are located on public property and involve, for example, replacing a stream crossing culvert to restore tidal influence to a coastal wetland.[111] The mission of the WRP is to help people voluntarily restore the state's degraded and former coastal wetlands and the services they provide.[112]

The WRP works with the Massachusetts Corporate Wetland Restoration Partnership to match cash and in-kind contributions with wetland restoration projects.[113] They also receive support for project planning and implementation from federal partners including the U.S. Fish and Wildlife Service, U.S. Geological Survey, U.S. Army Corps of Engineers, NOAA National Marine Fisheries Service and Restoration Center, EPA, Natural Resources Conservation Service, and National Park Service.[114]

VI. Education and Outreach

Circuit Rider Program

The MassDEP Circuit Rider program provides direct technical assistance and training to the conservation commissions on the administration of the Wetlands Protection Act.[115] There are seven regional circuit riders and a coordinator based in Boston.[116]

Massachusetts Estuaries Project

Volunteers collect water quality information as part of the Massachusetts Estuaries Project and learn about problems facing water quality through the project.[117]

Partnership to Restore Massachusetts Aquatic Habitats

In the mid-1990's partner organizations came together to form the Partnership to Restore Massachusetts Aquatic Habitats in order to enhance coordination and collaboration of organizations involved in aquatic habitat restoration.[118] Partners meet biannually and communicate regularly to discuss science, policy, planning, funding, and project implementation. The Partnership is coordinated by the Wetlands Restoration

110. Dury, *supra* note 51.
111. Smith, *supra* note 50.
112. *Id*.
113. Corporate Wetland Restoration Partnership, *at* http://www.coastalamerica.gov/text/cwrp.html (last visited July 5, 2007).
114. Massachusetts Office of Coastal Zone Management, *Restoration Partnerships*, *at* http://www.mass.gov/czm/wrp/partnerships_pages/partnerships.htm (last visited July 5, 2007).
115. Massachusetts Department of Environmental Conservation, *supra* note 44.
116. *Id.*
117. Massachusetts Department of Environmental Protection, *supra* note 48.
118. *Partnership to Restore Massachusetts Aquatic Habitat* (on file with author).

Program and includes representatives from state[119] and federal[120] restoration and regulatory programs, the Corporate Wetlands Restoration Partnership, and non-profit conservation groups.[121]

VII. Coordination among State and Federal Agencies

In addition to coordination on permitting, mitigation banking (i.e., MBRT), and restoration, the state also participate and administers many other formal agreements and collaborative efforts. State and federal agencies are working on reaching an agreement regarding mosquito control work as a part of forestry and dam removal efforts.[122] MassDEP is also developing guidance and other publications regarding wildlife that cross different jurisdictions, as well as pro-active river and wetland restoration projects.[123] There are monthly meetings with the U.S. Army Corps New England District Office on dredging issues and quarterly meetings with the Corps, EPA, and the New England State Wetlands Managers to give program updates for the states.[124] Periodic meetings are also conducted with the Association of State Wetland Managers. In addition, regulatory coordination meetings for aquatic habitat restoration projects are currently being held in the MassDEP Southeast Region, and include participants from state and federal restoration and regulatory programs.[125]

VIII. Acronyms and Abbreviations

BVW – Bordering Vegetative Wetlands

FWS – U.S. Fish and Wildlife Service

MACC – Massachusetts Association of Conservation Commissions

MassDEP – Massachusetts Department of Environmental Protection

MBRT – Mitigation Banking Review Team

MEP – Massachusetts Estuary Project

NOAA – National Oceanic and Atmospheric Administration

119. Wetlands Restoration Program, Riverways Program, Aquatic Invasive Species Working Group, Massachusetts Bays National Estuary Program, Division of Marine Fisheries, Lakes and Ponds Program, Natural Heritage and Endangered Species Program, Department of Environmental Protection, Office of Water Policy, Natural Resources Damages Assessment & Restoration Program, Reclamation and Mosquito Control Board, and Areas of Critical Environmental Concern Program.
120. NOAA, National Marine Fisheries Service, U.S. Army Corps, EPA, NRCS, FWS, USGS, and the NPS.
121. Massachusetts Audubon Society, Advocates for Wetlands & Watersheds, The Trustee of Reservations, The Nature Conservancy, Ducks Unlimited, Trout Unlimited, American Rivers, Massachusetts Watershed Associations, and the Gulf of Maine Council on the Marine Environment.
122. Stroman, *supra* note 8.
123. *Id*.
124. *Id*.
125. Dury, *supra* note 51.

OCZM – Office of Coastal Zone Management

RAM – Rapid Assessment Methodology

SMAST – School of Marine Science and Technology at the Univ. of Massachusetts, Dartmouth

SPGP – Statewide Programmatic General Permit

USGS – U.S. Geological Survey

WPA – Wetlands Protection Act

WRP – Massachusetts Office of Coastal Zone Management Wetlands Restoration Program

Minnesota

I. Overview

Minnesota retains approximately half of its historic wetland acreage, with approximately 10 million acres of wetlands[1] including peatlands and bogs, shallow and deep marshes, prairie potholes, shrub and wooded swamps, wet meadows, and seasonal flats.[2] Most of the wetlands that were lost were drained for agriculture, although significant acreage also has been filled for transportation, commercial, and residential development. Today, this loss is beginning to subside as people become more aware of the value of wetlands.[3] This reduction in regulatory loss has been documented in periodic wetland reports published by the Minnesota Board of Water and Soil Resources (MNBWSR).[4] The *Minnesota Wetland Report 2001–2003* identified a regulatory loss of 450 acres per year.[5]

Minnesota has extensive programs in place to protect wetlands. The state legislature passed the Wetlands Conservation Act (WCA) in 1991. This Act establishes a "no net loss" wetlands policy. The state, in partnership with the federal government, also developed the Minnesota Wetlands Conservation Plan (MWCP) and is in the process of developing a State Wetlands Restoration Plan. Various government agencies have regulatory programs in place as well.

II. Regulatory Programs

Wetland definitions and delineations

Minnesota's Water Pollution Control Act defines "waters of the state" as "...all streams, lakes, ponds, marshes, watercourses, waterways, wells, springs, reservoirs, aquifers, irrigations systems, drainage systems, and all other bodies or accumulations of water, surface, or underground, natural or artificial, public or private, which are contained within, flow through, or border upon the state or any portion thereof."[6]

1. Based on a variety of sources, including the National Wetlands Inventory, the National Resources Inventory, and J. Anderson & W. Craig, Growing Energy Crops on Minnesota's Wetlands: the Land Use Perspective (1984).
2. Minnesota Department of Natural Resources, *Types of Wetlands*, *at* http://www.dnr.state.mn.us/wetlands/types.html (last visited July 2,, 2007).
3. Minnesota Department of Natural Resources, *Benefits of Wetlands*, *at* http://www.dnr.state.mn.us/wetlands/benefits.html (last visited July 2, 2007); Personal communication with Doug Norris, Minn. Dep't of Natural Res. (Apr. 9, 2007).
4. Minnesota Board of Water and Soil Resources, Minnesota Wetlands Report 2001-2003 (Aug. 2005), available at http://www.bwsr.state.mn.us/wetlands/publications/wetlandreport.pdf.
5. Personal communication with Dave Weirens, Minn. Board of Water and Soil Res. (Apr. 9, 2007).
6. Minn. Stat. § 115.01(22).

Public water wetlands are defined as "all types 3, 4, and 5 wetlands, as defined in United States Fish and Wildlife Service [U.S. FWS] Circular N[umber] 39 (1971 edition), not included within the definition of public waters, that are ten or more acres in size in unincorporated areas or 2-1/2 or more acres in incorporated areas."[7] Public water wetlands subject to regulation are identified on Public Water Inventory maps on a county basis.[8]

The WCA defines wetlands as:

> (a) 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. For purposes of this definition, wetlands must have the following three attributes: (1) have a predominance of hydric soils; (2) are inundated or saturated by surface or ground water at a frequency and duration sufficient to support a prevalence of hydrophytic vegetation typically adapted for life in saturated soil conditions; and (3) under normal circumstances support a prevalence of such vegetation.[9]

WCA rules also provide definitions for wetlands, such as isolated,[10] tributary,[11] shoreland,[12] floodplain,[13] and nondegraded wetlands.[14]

Minnesota's water quality standards define wetlands similarly to the WCA:

> [A]reas that are inundated or saturated by surface water or groundwater 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. Constructed wetlands designed for wastewater treatment are not waters of the state...[15]

The definition also includes a provision that wetlands must have two of the three attributes listed in the WCA definition.

7. Minn. Stat. § 103G.005(15a).
8. Personal communication with Bruce Gerbig, Minn. Dep't of Natural Res. (Apr. 4, 2007).
9. For the purposes of regulation under this chapter, the term wetlands does not include public waters wetlands as defined in subdivision 15a. Minn. Stat. § 103G.005(19).
10. An isolated wetland is defined in Minnesota Board of Water and Soil Resources (MNBWSR) regulations as "wetland[s] without well defined inlets or outlets, including tile systems, ditches, or natural watercourses." *See* Minn. R. 8420.0110(28).
11. A tributary wetland is defined in MNBWSR regulations as "a wetland with a well defined outlet, including tile systems, ditches, or natural watercourses, but without a well defined inlet." *See* Minn. R. 8420.0110(48).
12. A shoreland wetland is defined in MNBWSR regulations as "a wetland located in the shoreland wetland protection zone." *See* Minn. R. 8420.0110(44a).
13. A floodplain wetland is defined in MNBWSR regulations as "a wetland located in the floodplain of a watercourse, with no well defined inlets or outlets, including tile systems, ditches, or natural watercourses. This may include the floodplain itself when it exhibits wetland characteristics." *See* Minn. R. 8420.0110(19).
14. A nondegraded wetland is defined in MNBWSR regulations as "a wetland that has not been degraded by human activities." *See* Minn. R. 8420.0110(32).
15. Minn. R. 7050.0130(F).

Wetland delineations for purposes of the WCA are conducted in accordance with the criteria outlined in the U.S. Army Corps of Engineers' 1987 *Wetlands Delineation Manual*.[16] Wetland type determinations are made based on the U.S. Fish and Wildlife Service (FWS) 1971 Circular Number 39.[17] Delineations usually are conducted by consultants or local governments. Public water wetlands are delineated based on the statutory boundary for public waters, which is the ordinary high water level mark.[18] MNDNR area hydrologists make these determinations.[19]

Wetland-related law and regulation

In Minnesota, the primary tools for regulating wetlands are the Public Waters Permit Program (PWPP) and the WCA. In addition, state water quality regulations confer responsibility for assuring compliance with state water quality standards in wetlands through §401 certifications and issuance of National Pollutant Discharge Elimination System/State Disposal System (NPDES/SDS) permits.

Public Waters Permit Program.[20] Minnesota's Public Waters Law gives the MNDNR statutory authority to regulate public waters in the state. MNDNR regulates these waters through public waters work permits. Related statutes also establish the Public Waters Inventory Program administered by the MNDNR,[21] outline permitting guidelines, describe permitting activities, and designate enforcement authorities.

Public waters work permits are issued for projects that will impact public waters including public waters wetlands.[22] Actions requiring this permit[23] include construction or removal of dams, reservoirs, or obstructions and any activity that may impact or reduce the "course, current, or cross section" of public waters such as fill or excavation.[24] Draining public water wetlands is prohibited unless wetlands are replaced by wetlands of equal or greater public value.[25] Filling to create upland areas and road construction in public water wetlands

16. U.S. Army Corps of Eng'rs, Wetlands Research Program Technical ReportY-87-1, Corps of Engineers Wetlands Delineation Manual (1987), *available at* http://www.mvn.usace.army.mil/ops/regulatory/wlman87.pdf.
17. Minn. Stat. § 103G.2242(2a); Minn. R. 8420.0110(52D).
18. Ordinary high water level is defined as "an elevation delineating the highest water level that has been maintained for a sufficient period of time to leave evidence upon the landscape, commonly the pint where the natural vegetation changes from predominantly aquatic to predominantly terrestrial." Minn. Stat. § 103G.005(14).
19. Personal Communication with Doug Norris, Minn. Dep't of Natural Res. (Feb. 13, 2007).
20. Minn. Stat §§ 103G *et seq*.
21. Minn. Dep't of Natural Res., History of Water Protection, *available at* http://www.dnr.state.mn.us/waters/watermgmt_section/pwpermits/history.html (last visited July 2, 2007).
22. In 2000 and 2001, the state legislature granted the Minnesota Department of Natural Resources (MNDNR) authority to waive public waters work permits for public water wetlands that are regulated under the Wetland Conservation Act (WCA) as well. Minn. Stat § 103.G245(5b).
23. Various activities are exempt from permit requirements, such as certain activities related to public drainage systems. Minn. Stat. § 103G.245(2); Minn. R. 6115.0210(4).
24. Minn. Stat. §§ 103G.245(1)(1)-(2).
25. Minn. Stat. § 103G.221. "The public values of wetlands must be determined based upon the functions of wetlands for: (1) water quality, including filtering of pollutants to surface and groundwater, utilization of nutrients that would otherwise pollute public waters, trapping of sediments, shoreline protection, and utilization of the wetland as a recharge area for groundwater; (2) floodwater and stormwater retention, including the potential for flooding in the watershed, the value of property subject to flooding, and the reduction in potential flooding by the wetland; (3) public recreation and education, including hunting and fishing areas, wildlife viewing areas, and nature areas; (4) commercial uses, including wild rice and cranberry growing and harvesting and aquaculture; (5) fish, wildlife, native plant habitats; (6) low-flow augmentation; and (7) other public uses." Minn. Stat § 103B.3355(a).

also is prohibited by the MNDNR except in limited instances.[26] Public waters work permits may be issued only if the project results in "a minimum encroachment, change, or damage to the environment, particularly the ecology of the waterway."[27] The MNDNR issues approximately 700 to 800 public water permits[28] per year depending on the state's economic activity. Of these, about 10 percent are public water wetland permits. Because the MNDNR works with the applicant to ensure that resource concerns are addressed early in the application process, only three percent of permit applications are denied.[29]

Public Waters Law also requires that the MNDNR develop and maintain a Public Water Inventory (maps and lists) of all the state's public waters, including public water wetlands.[30] The Public Waters Inventory Maps identify the waters and wetlands regulated under the PWPP for landowners, regulators, and other interested parties.[31] However, exact permit jurisdiction boundaries are not shown on these maps, but are subject to a field determination of the ordinary high water level[32] for purposes of regulatory limits.[33]

Wetlands Conservation Act.[34] In 1991, the state legislature passed the WCA in recognition that wetlands not protected under a federal or state program were being lost throughout the state. To curb the destruction, the Act establishes a no net loss policy for all wetlands in the state[35] and calls for an increase in quality, quantity and biodiversity of wetlands.[36] The primary requirement of the WCA is that"[w]etlands must not be drained or filled, wholly or partially, unless replaced by restoring or creating wetland areas of at least equal public value under [an approved] replacement plan."[37] Local Government Units (LGU)[38] administer the WCA, the MNBWSR provides oversight and promulgates rules to implement the Act,[39] and the MNDNR has enforcement authority over all provisions of the WCA.[40]

26. Minn. R. 6115.0190(3)(B), 6115.0190(3)(F).
27. Minn. Stat. § 103G.245(7)(a); Minn. R. 6115.0190(1)(A), 6115.0200(1)(A), 6115.0270(4)(B).
28. This does not include the general permits the MNDNR has issued to seventy-five percent of the state's counties for building bridges and culverts that impact public waters. Personal communication with Bruce Gerbig, Minn. Dep't of Natural Res. (Feb. 15, 2007).
29. *Id.*
30. The state legislature recently revised statutes relating to this inventory requirement to allow the MNDNR to reclassify certain public water wetlands as public waters or wetlands as defined under the WCA. Minn. Stat. §§ 103G.201(a)-(d).
31. Personal communication with Doug Norris, Minn. Dep't of Natural Res. (Apr. 9, 2007).
32. Minn. Stat. § 103G.005(14).
33. Gerbig, *supra* note 8.
34. Minn. Stat. §§ 103G.222-.2372.
35. The no net loss policy also has been adopted by the State of Minnesota via Executive Order, originally issued in 1991 by Governor Arne Carlson and reissued by every elected governor since. Norris, *supra* note 31.
36. Minn. Stat. § 103A.201(2)(b).
37. Minn. Stat. § 103G.222(1a).
38. Local Government Units are defined in state statutes as "(1) outside of the seven-county metropolitan area, a city council, county board of commissioners, or a soil and water conservation district or their delegate; (2) in the seven-county metropolitan area, a city council, a town board under section 368.01, a watershed management organization under section 103B.211, or a soil and water conservation district or their delegate; and (3) on state land, the agency with administrative responsibility for the land." Minn. Stat. § 103G.005(10e).
39. Minn. R. 8420.0102.
40. Minn. Stat. § 103G.2372(1a).

The WCA requires that LGUs issue a "determination" for any project that will result in fill, drainage, or excavation of wetlands.[41] Although a determination is not a permit per se, a project applicant must apply to the appropriate LGU for the determination prior to commencing any work. Upon receipt of the applications, LGUs determine: the wetland boundaries and/or type(s) affected by the project;[42] if the project will result in no loss of wetlands;[43] if the project is exempt from replacement requirements;[44] if replacement is required (and of so, whether the replacement plan adequate);[45] and if wetland banking is an acceptable form of replacement (compensatory mitigation).[46] The MNBWSR developed rules regarding replacement plan standards and requirements and the approval process that LGUs must follow in reviewing replacement plans.[47] The WCA and MNBWSR rules specify that a sequence of avoidance, minimization, and replacement must be followed.[48] LGUs may develop comprehensive wetland protection and management plans as an alternative to implementing MNBWSR rules.[49]

Organization of state agencies

Multiple agencies regulate wetlands in the state. Primary mechanisms for wetland regulations are MNDNR public waters work permits and LGU determinations issued in accordance with the WCA and MNBWSR rules. In addition, the MPCA is responsible for making §401 determinations on projects required to obtain § 404 permits from the Corps.

Minnesota Department of Natural Resources. The MNDNR Division of Waters' hydrologists are responsible for issuing public waters work permits and are the primary points of contact for any public waters-related issues such as water appropriation and flood plain management. They work in field offices throughout the state, which is administratively divided into four regions: Northwest, Northwest, Central, and Southern.[50] The Division of Waters is also responsible for administering the Public Waters Inventory Program and Project WET, an educational program on water-related issues. Approximately 30 hydrologists work for the Division. They spend roughly one-third of their time on public waters permits of which approximately 10 percent deal with

41. Minn. R. 8240.0105.

42. Minn. Stat. § 103G.2242(2a).

43. Minn. R. 8240.0220.

44. Minn. Stat. §§ 103G.2241 *et seq.* Exemptions from the replacement plan requirement include certain activities relating to: agriculture, drainage, incidental wetlands; wetland restoration, utilities/ public works, forestry, approved development and wildlife habitat. Additionally, activities requiring certain federal approvals are exempt. The WCA also includes de minimis exemptions for activities impacting 400, 2,000, 5,000, or 10,000 square feet or less of wetlands, depending on the wetland type and location.

45. Minn. Stat. §103G.2242(1a).

46. Minn. R. 8240.0200(1).

47. The WCA requires that MNBWSR rules "address the criteria, procedure, timing, and location of acceptable replacement of wetland values; may address the state establishment and administration of a wetland banking program for public and private projects, which may include provisions allowing monetary payment to the wetland banking program for alteration of wetlands on agricultural land; the administrative, monitoring, and enforcement procedures to be used; and a procedure for the review and appeal of decisions under this section." Minn. Stat. §103G.2242-1a. Rules are found in Minn. R. 8240.0510, 8240.0630.

48. Minn. Stat. § 103G.222-1b; Minn. R. 8240.0520 *et seq*.

49. Minn. Stat. § 103G.2243-1a.

50. Minnesota Department of Natural Resources, *Administrative Organization*, *at* http://www.dnr.state.mn.us/waters/orgchart.html (last visited July 2,, 2007).

public waters wetlands.[51] The Division's budget is approximately $10 million per biennium and is derived primarily from state general funds. Of its budget, 28 percent goes to the Public Waters Permit Program.[52]

The MNDNR Division of Ecological Services, Wetlands Program is responsible for coordinating review of replacement plans required under the WCA for the MNDNR, provides technical assistance on wetlands mitigation to landowners and local agencies, and supplies scientific recommendations on wetland policy and program decisions.[53] The Wetlands Program also oversees the development and revision of the MWCP and portions of the Minnesota Wetland Monitoring Project. There are two full-time equivalents (FTE) dedicated to the Wetlands Program, and its budget is approximately $400,000, which is derived from state general funds.[54]

The MNDNR, Division of Enforcement is responsible for enforcing natural resource laws including those pertaining to wetlands. The Division has five full-time wetland enforcement officers, and other conservation officers also spend a time on wetlands and water-related violations.[55]

Minnesota Board of Water and Soil Resources. The MNBWSR is responsible for protecting the state's soil and water resources by working with LGUs to implement state soil and water laws, policies, and management plans.[56] The board administers the WCA by promulgating rules and works with LGUs to interpret these rules, to issue determinations, and to process replacement plan requests. MNBWSR employees also oversee a monitoring and tracking program for wetlands regulated under the WCA; administer the state's wetlands banking program; work with local governments, engineers, contractors, and landowners to replace wetlands impacted by local road projects;[57] and coordinate wetland-related activities among the different state agencies and the Corps.[58]

Staff members work in nine offices throughout the state: St. Paul (headquarters office), Rochester, Marshall, New Ulm, Mankato, Brainerd, Bemidji, Fergus Falls, and Duluth. Two managers oversee MNBWSR's Wetlands Program, and 28 staff are engaged in all aspects of implementing the WCA, including working with LGUs to implement the WCA, wetland banking, local government road mitigation, and administer the monitoring program. The board's overall budget is $25 million, of which approximately 80 percent funds conservation and program administration by local governments. In addition to staff time, $2.1 million is dedicated annu-

51. Gerbig, *supra* note 29.
52. Personal communication with Bruce Gerbig, Minn. Dep't of Natural Res. (Apr. 11, 2007).
53. Minnesota Department of Natural Resources, *Wetlands Review and Conservation Program*, *at* http://www.dnr.state.mn.us/ecological_services/wetlands/index.html (last visited July 2,, 2007)
54. Norris, *supra* note 31.
55. Norris, *supra* note 19.
56. Minnesota Board of Water and Soil Resources, *About the Board of Water and Soil Resources*, *at* http://www.bwsr.state.mn.us/aboutbwsr/whatbwsr.html (last visited July 2, 2007).
57. The legislature provides funding to MNBWSR to replace wetland impacts that result from city, county, and township road improvements, rehabilitation, construction, or replacement. Minnesota Board of Water and Soil Resources, *Road Replacement Question and Answer*, *at* http://www.bwsr.state.mn.us/wetlands/wca/roadreplacement.html (last visited July2, 2007).
58. Personal Communication with Dave Weirens, Minn. Board of Water and Soil Res. (Feb. 27, 2007).

ally to assist LGUs in implementing the WCA.[59] The Local Roads Program is appropriated approximately $4.5 million every two years ($4.2 million was appropriated for fiscal years 2006/2007 and 2007/2008). Most funding for these programs is derived from state general funds; however, funding for some administrative and general tasks may come from state bond money, particularly for the Local Roads Program. The wetland banking programs use fees to cover a portion of administrative costs.[60]

Minnesota Pollution Control Agency. The MPCA administers the state's §401 water quality certification program, develops water quality standards (WQS) and the state's antidegradation policy, and monitors and assesses water quality including ambient wetland quality. Between 2001 and 2006, 0.1 full-time equivalents (FTE) were dedicated to the §401 program; however, in late 2006, a wetlands coordinator position assumed responsibility for the §401 program. Three FTEs administer the MPCA's monitoring and assessment program for wetlands. Various other MPCA programs relate to wetlands, such as basin planning, impaired waters, and water quality remediation programs, making it difficult to estimate the total amount of time staff spends on wetland-specific activities. The §401 certification program has no dedicated funding, and the monitoring program's budget is approximately $150,000, which is supported in part through federal wetland program development grants and state general funds.[61]

§401 certification

In 2001, the MPCA §401 water quality certification program was scaled back, due to budget constraints, and between 2001 and 2006, most federal applications needing §401 certification were waived. The MPCA receives an annual average of 60 to 70 applications for projects requiring individual §404 certification, and so roughly 300 applications for §401 certification were received during this five-year period. Only one application was denied. The MPCA no longer intends to waive all §401 certifications and, in allocating resources to the wetlands coordinator position, plans to review individual Corps' §404 permit applications, and make §401 determinations accordingly, for projects within areas that: (a) are hydrologically connected and directly drain to Impaired Waters/Total Maximum Daily Load (TMDL) areas, Outstanding Resource Value Waters (ORVWs), and trout waters; (b) affect more than three acres of private project and five acres of public road wetlands within a half mile of listed Impaired Waters; (c) have the potential to inundate or deepen by excavation greater than two acres of wetland or otherwise not regulated by the WCA; and (d) result in typically large wetland fills or drainage (e.g., linear projects, mining activities, etc.).[62]

Nationwide permits

In 2000, the Corps' St. Paul District replaced the Nationwide Permits (NWP) in Minnesota with a combination of regional general permits (GP) and letter of permission (LOP) evaluation procedures (GP/LOP-98-MN).[63] The

59. Weirens, *supra* note 5.

60. Weirens, *supra* note 58.

61. Personal communication with Kevin Molloy, Minn. Pollution Control Agency (Feb. 21, 2007); Personal communication with Mark Gernes, Minn. Pollution Control Agency (Apr. 24, 2007).

62. Personal communication with Kevin Molloy, Minn. Pollution Control Agency (Feb. 21, 2007).

63. U.S. Army Corps of Engineers St. Paul District, *Overview of Corps Permit Program*, *at* http://www.mvp.usace.army.mil/regulatory/default.asp?pageid=799 (last visited July2, 2007).

GP/LOP-98-MN expired in July 2006, and in August 2006, the Corps issued two "separate and distinct" GP and LOP procedure documents (RGP-003-MN and LOP-05-MN).[64] Most applications eligible for authorization under a GP or LOP are posted on the Corps' website, affording state and federal agencies and the public ten to thirty days to comment.[65]

Statewide programmatic general permit

The St. Paul District also has issued a statewide programmatic general permit (GP-01-MN) for certain MNDNR-regulated activities that also require a Clean Water Act (CWA) §404 permit or a Rivers and Harbors Act §10 authorization from the Corps. Activities that impact more than three acres of water or wetlands (including those not under the Corps' jurisdiction) cannot be permitted under the GP-01-MN. Proposed projects must be coordinated with various agencies including the MPCA and the U.S. Fish and Wildlife Service. The GP-01-MN has been in effect since 1985 and is reissued approximately every five years.[66]

Mitigation

MNDNR public waters regulations and WCA and MPCA rules require permit and certification applicants to demonstrate compliance with sequencing: avoid, minimize, and mitigate.[67] In addition, the MNDNR public waters regulations requires applicants to demonstrate that the project will avoid and minimize all harmful direct or indirect actions to public waters and provide for restoration or repair of public waters if there are impacts.[68] The MNDNR requires mitigation when permits are issued that authorize a major change in the resource. The mitigation must include provisions to compensate for the detrimental aspects of the change.[69]

The WCA wetland mitigation rules outline replacement plan requirements and standards.[70] Replacement plans must include the type, location, and size of wetlands to be replaced.[71] Mitigation ratios under the WCA range from 1:1 to 2.5:1, depending on the relative location and type of the impact and replacement wetlands.[72] Wetland banking is authorized under the WCA, and credits are purchased from the MNBWSR-operated state bank.[73] WCA rules outline guidelines for deposits and withdrawals,[74] auditing and monitor-

64. U.S. Army Corps of Engineers, St. Paul District, Public Notice: Issuance of Regional General Permit RGP-03-MN in the State of Minnesota Except within the Exterior Boundaries of Indian Reservations (Aug. 1, 2006), *available at* http://www.mvp.usace.army.mil/docs/regulatory/special%20notices/2005006862rgp-003-mn.pdf; U.S. Army Corps of Engineers, St. Paul District, Public Notice: Issuance of Letter of Permission Procedures, LOP-05-MN, Applicable within the State of Minnesota Except within the Exterior Boundaries of Indian Reservations (Jul. 31, 2006), *available at* http://www.mvp.usace.army.mil/docs/regulatory/special%20notices/2005000825LOP05mn.pdf.

65. Norris, *supra* note 19; Personal communication with Kevin Molloy, Minn. Pollution Control Agency (Apr. 5, 2007).

66. U.S. Army Corps of Engineers, St. Paul District, Public Notice: Extension of GP-01-MN (May 12, 2006), *available at* http://www.mvp.usace.army.mil/docs/regulatory/special%20notices/ext-gp-01-mn.pdf.

67. Minn. R. 6115.0240(3C)(5), 8420.0540(1), 7050.0186(2).

68. Minn. R. 6115.0240(3C)(5).

69. Minn. Stat. § 103G.245(7)(b).

70. Minn. Stat. §§ 103G.222(1)(b)(1)-(2).

71. Minn. R. 8420.0530.

72. Minn. R. 8420.0546.

73. Minn. Stat. § 103G.2242(1).

74. Minn. R. 8420.0740 *et seq.* All wetlands must be restored or created based on a wetlands banking plan that is approved by an LGU before being deposited into the bank. *See* Minn. R. §8420.0740(1)(F).

ing,[75] and enforcement and corrective action provisions.[76] LGUs are responsible for reviewing and approving wetland banking plans, and the MNBWSR provides technical support and guidance.

MPCA water quality standards[77] require wetland compensatory mitigation to replace the designated uses (wetland functions) for any approved/certified unavoidable impacts to wetlands caused by filling, draining, excavation or inundation. The MPCA will typically coordinate with the Corps and LGUs to develop a compatible determination of an adequate compensatory wetland mitigation plan. In instances where the MPCA finds these other wetland regulatory determinations do not adequately mitigate the wetland impacts, the MPCA has historically issued a §401 certification condition or NPDES/SDS permit condition that will satisfy water quality requirements for replacement. The MPCA policy is to require a minimum of a 1:1 wetland replacement ratio for wetland compensatory mitigation.[78]

Since 1991, each Minnesota Governor has issued and reissued a State Governor's Executive Order directing state departments to operate to the fullest extent of their authority under the strict concept of "No-Net Loss" of wetlands in regards to projects under their jurisdiction. The current (2007) executive order is numbered 03-04 (directing reissuing of 00-02).[79]

A Mitigation Banking Review Team (MBRT) operates in the state, usually in combination with the Technical Evaluation Panel (TEP) required under the WCA.[80] The TEP advises LGUs regarding determinations, wetland replacement plans, and wetlands banking plans.[81] Although a TEP is comparable to a MBRT, it goes through a more in depth review process for banks.[82]

Compliance and enforcement

The MNDNR Enforcement Division is the primary enforcement authority for all water law in Minnesota including public water wetlands and WCA-regulated wetlands. However, LGU licensed peace officers are authorized to enforce WCA provisions; approximately 15 percent of all enforcement actions are initiated by local law enforcement.[83] Usually when there is any type of violation, a MDNR conservation officer[84] will first issue a cease and desist order.[85] For violations that go through the administrative appeals process and remain a vio-

75. Minn. Stat. §§ 8420.0750 *et seq*.
76. Minn. Stat. §§ 8420.0760 *et seq*.
77. Minn. R. 7050.0186 *et seq*.
78. Personal communication with Lawrence Zdon, Minn. Pollution Control Agency (Apr. 24, 2007).
79. *Id.*
80. A Technical Evaluation Panel is "composed of a technical professional employee of the board, a technical professional employee of the local soil and water conservation district or districts, a technical professional with expertise in water resources management appointed by the local government unit, and a technical professional employee of the Department of Natural Resources for projects affecting public waters or wetlands adjacent to public waters." *See* Minn. Stat. § 103G.2242(2)(a).
81. *Id.*
82. Weirens, *supra* note 58.
83. *Id.*
84. Five conservation officers are dedicated entirely to wetland-related violations; however, many other officers may spend time on wetland-related violations as well. Norris, *supra* note 19.
85. Minn. Stat. § 103G.2372(1)(a).

lation, a restoration or replacement order is issued. Although the MNDNR may impose civil[86] or criminal[87] penalties for wetland-related violations, typically only restoration and replacement is required.[88] From 2001 to 2003, approximately 314 cease and desist orders were issued and 41 appeals were filed.[89]

Tracking systems

The MNDNR tracks all permits issued under its state water program, including public waters work permits for wetlands. Information tracked includes: (1) permit issuance or denial, (2) date of permit issuance, (3) who received a permit, and (4) location of the permitted project.[90] Mitigation is rarely required for MNDNR permits due to its avoidance and minimization requirements and its prohibition on fill for private development; thus, there is little mitigation to track.[91] The department maps and inventories all public waters through its Public Water Inventory Program.

LGUs have a system for tracking determinations and replacement plans; however, the systems vary by LGU. The MNBWSR requires all LGUs report their WCA-related activities on a yearly basis. Information tracked includes number of replacement plans, acres impacted, and acres replaced, among other program activity information.[92] Using this information, the MNBWSR determines whether the no net loss of wetlands policy is being achieved.[93] The MNBWSR also is working on developing a system where LGUs can enter data into a centralized system when issuing determinations.[94] The MNBWSR also tracks deposits and debits from the state mitigation bank.[95]

III. Water Quality Standards

MPCA rules outline designated uses provided by state waters including wetlands. Specifically, wetlands provide uses under class 2D Aquatic Life/Recreation, class 3D Industrial Consumption, and 4C Agricultural and Wildlife Needs.[96,97] Additionally, class 5 Aesthetic Enjoyment and Navigation, class 6 Other Uses, and class 7 Limited Use Waters can relate to wetlands.[98] Minnesota's WQS define wetlands; outline a mitigation sequence of avoid, minimize, and mitigate to address nondegradation; and establish narrative standards specific to wetlands. Chemical-based numeric WQS were primariliy developed for application to lakes and streams

86. Minn. Stat. § 103G.2372(3).
87. Minn. Stat. § 103G.2372(2).
88. Norris, *supra* note 19.
89. Minnesota Board of Water and Soil Resources, Minnesota Wetland Report 2001-2003, *supra* note 4.
90. Gerbig, *supra* note 29; Norris, *supra* note 19.
91. *Id.*
92. Weirens, *supra* note 58.
93. Association of State Wetland Managers, *State Wetland Programs: Minnesota*, *at* http://aswm.org/swp/minnesota9.htm (last updated May 14, 2004).
94. Weirens, *supra* note 58.
95. Association of State Wetland Managers, *supra* note 93.
96. Minnesota Pollution Control Agency, Minnesota Wetlands Water Quality Standards, Water Quality/Surface Water fact sheet #6.02 (Mar. 2005), *available a*t http://www.pca.state.mn.us/publications/wq-s6-02.pdf.
97. Personal communication with Greg Gross, Minn. Pollution Control Agency (Mar. 5, 2007).
98. Association of State Wetland Managers, *supra* note 93.

though limited chemical parameters apply to wetlands, including dissolved oxygen, temperature, and chloride concentration levels. For these few parameters, rather than specific numeric limits, background conditions or concentration are used as target criteria.[99] MPCA rules also address nondegradation for all waters, including physical alteration of wetlands and require that project applicants follow the mitigation sequencing if the project has the potential for an adverse impact to a wetland designated use.[100]

IV. Monitoring and Assessment

Minnesota has developed a Comprehensive Wetlands Assessment, Monitoring, and Mapping Strategy (CWAMMS) for the state,[101] as well as various wetland assessment methodologies.

Wetland assessment

The WCA requires that drained or filled wetlands be replaced by wetlands of at least equal public value.[102] To assess wetland functions and values to be replaced, the Minnesota Routine Assessment Method for Evaluating Wetland Functions (MNRAM) was developed and has been revised several times by an interagency group (state, federal, local and tribal). The most recently published version is Version 3.0, released in 2004 (Version 3.1 will be available in the spring of 2007).[103] The MNRAM was designed based on the Wisconsin Rapid Wetland Assessment Methodology. A Recommended Wetland Classification System has been developed to accompany MNRAM. This classification system is used by local governments to classify wetlands as a part of their local wetland conservation plans.

The St. Paul District of the Corps is preparing to develop hydrogeomorphic (HGM) wetland assessment methodology guidebooks for Minnesota wetlands, in cooperation with the Minnesota state agencies.[104]

The MPCA has developed an Index of Biological Integrity (IBI) for assessing and monitoring wetland water quality across the state. IBIs for both plants and macroinvertebrates have been developed for depressional wetlands in all applicable Minnesota ecoregions.[105] The MPCA also has developed a preliminary IBI for plants

99. Personal communication with Mike Gernes, Minn. Pollution Control Agency, (Apr. 24, 2007).

100. Minn. R. 7050.0185(9).

101. Minnesota Pollution Control Agency, A Comprehensive Wetland Assessment, Monitoring, and Mapping Strategy for Minnesota (Jul. 2006), *available at* http://files.dnr.state.mn.us/ecological_services/wetlands/wetland_monitoring.pdf.

102. Under the WCA, the public value of wetlands is based on their functions for preventing floods, protecting water quality, recreation, commercial uses, habitat, low flow augmentation and other functions. *See* Minn. R. 8420.0103.

103. The MNBWSR lists five assessment methodologies that may be used to assess wetlands under the WCA: Minnesota Wetland Evaluation Methodology, hydrogeomorphic, Oregon Freshwater Wetland Assessment Method, New Hampshire Method for Evaluation of Nontidal Wetlands, and Minnesota Routine Assessment Method. *See* Minnesota Board of Water and Soil Resources, *Wetland Assessment, at* http://www.bwsr.state.mn.us/wetlands/mnram/index.html (last visited July 2, 2007). Of these, the MNRAM is the primary assessment methodology used. Norris,*supra* note 19.

104. Norris, *supra* note 19.

105. Minnesota Pollution Control Agency, *Biological Monitoring Wetlands: Monitoring Plants*, *at* http://www.pca.state.mn.us/water/biomonitoring/bio-wetlands-plants.html (last updated Oct. 18, 2006); Minnesota Pollution Control Agency, *Biological Monitoring Wetlands: Monitoring Aquatic Invertebrates*, *at* http://www.pca.state.mn.us/water/biomonitoring/bio-wetlands-invert.html (last updated Oct. 18, 2006); Gernes, *supra* note 99.

in riparian wetlands located in the St. Croix Basin in east-central Minnesota. Data from the IBIs can be used for monitoring wetland status and trends and wetland mitigation effectiveness. Data also is beginning to be used for setting selected wetland TMDLs and listing and delisting impaired wetland waters.[106]

The MPCA also uses IBIs to monitor and assess water quality in the state's 92,000 miles of streams.[107] IBIs for fish have been developed for streams in various river basins including the Minnesota, Red, St. Croix, and Upper Mississippi.[108] Aquatic invertebrate IBIs also are used.[109] The MPCA is still in the process of refining an algal IBI, but metrics for measuring algae include "[d]ominant phylum, [i]ndicator taxa, and [n]umber of genera' and the metrics for diatoms include "[d]iversity index, [p]ollution index, [s]iltation index and [s]imilarity index."[110] Data from fish and aquatic invertebrate IBIs can be used for long-term condition monitoring, issuing NPDES permits and their five-year review process, and effectiveness monitoring.[111] Fish IBI data also is used for developing TMDL 303(d) lists and 305(b) reports. [112]

Wetland monitoring

The CWAMMS was completed in 2006 through a collaborative effort of the MPCA, MNBWSR, MNDNR, Minnesota Department of Agriculture, and the U.S. Fish and Wildlife Service.[113] An EPA State Wetland Program Development Grant (104b) was used to develop the plan. An EPA Wetland Demonstration Pilot Grant was awarded to the MPCA. This grant will provide $300,000 per year to fund implementation of the plan through September 2008, and the MPCA will provide $100,000 in-kind match. The Michigan legislature has appropriated $250,000 per year in funding to be administered by the MNDNR Ecological Services Division. These funds also are used as match for the EPA grant[114]

Portions of the Strategy are currently being implemented, including a random sampling program for assessing wetland status and trends. Under this program, nearly 5,000 one-square mile plots have been established randomly throughout the state. Aerial photographs are acquired for each of the plots on a three-year sampling cycle. The photos are then interpreted and digitized to assess the amount of wetlands lost and gained.[115] The MPCA plans to begin a systematic evaluation of wetland quality in the spring of 2007.

106. *Id.*
107. Minnesota Pollution Control Agency, *Biological Monitoring Streams, at* http://www.pca.state.mn.us/water/biomonitoring/bio-streams.html (last updated Jun. 13, 2006).
108. Minnesota Pollution Control Agency, *Biological Monitoring Streams: Fish Monitoring*, *at* http://www.pca.state.mn.us/water/biomonitoring/bio-streams-fish.html (last updated Apr. 12, 2007).
109. Minnesota Pollution Control Agency, *Biological Monitoring Streams: Aquatic Invertebrate Monitoring, at* http://www.pca.state.mn.us/water/biomonitoring/bio-streams-invert.html (last updated Jun. 13, 2006).
110. Minnesota Pollution Control Agency, *Biological Monitoring Streams: Algae Monitoring*, *at* http://www.pca.state.mn.us/water/biomonitoring/bio-streams-algae.html (last updated Jun. 13, 2006).
111. Minnesota Pollution Control Agency,*supra* note 108; Minnesota Pollution Control Agency, *supra* note 109.
112. Minnesota Pollution Control Agency, *supra* note 107.
113. Minnesota Pollution Control Agency, *supra* note 101.
114. *Id.*
115. Norris, *supra* note 19.

The MPCA also cooperates in administration of a citizen wetland monitoring program. The program began as a pilot project in 1996 when the MPCA and the Minnesota Audubon Society received a grant from the U.S. Environmental Protection Agency (EPA) to develop biological community sampling and analysis techniques and training materials for citizens. The program has grown into the Wetland Health and Evaluation Program (WHEP). Seventeen communities or local organizations in two metropolitan counties participate in the program with support from state and local agency efforts. The MPCA trains the volunteers and provides technical oversight. Cities provide funding for team leaders, equipment, and profession quality control, and counties coordinate and administer the local program. Due to sound techniques and training, data collected through this program is used by local governments to make water quality planning decisions.[116]

The MNBWSR is initiating a field monitoring program to evaluate wetland replacement sites so that the board will be able to assess the long-term maintenance and quality of the sites. Over the long-term, LGUs will be included in implementing this monitoring effort. Under the current WCA rule local governments are responsible for monitoring replacement sites for their first five years, and BWSR thereafter.[117]

V. Restoration and Partnerships

Restoration in Minnesota is guided by the state's policy to increase the quantity, quality and biological diversity of the wetlands in the state. In addition, the Minnesota Wetland Conservation Plan (MWCP) (1997) contains the following goal (in part): "The goal for wetland conservation in Minnesota is to maintain and restore the quality and diversity and increase the overall quantity of wetlands in the state . . ."[118]

As a part of the WCA, the state established the Permanent Wetland Preservation Program, which is administered by MNBWSR. Through this program, landowners may enroll certain types of at-risk wetlands[119] into a permanent easement. MNBWSR provides funding to landowners to acquire the lands. LGUs (primarily soil and water conservation districts) administer the program at a local level and receive funding from MNBWSR for technical and administrative activities. The program began enrolling wetlands into easements in 1992, and today, 11,459 acres of wetlands are protected by 294 easements.[120]

The Reinvest in Minnesota Program (RIM) was established in 1986 to protect water quality and fish and wildlife.[121] MNDNR administers the RIM Critical Habitat Match Program to acquire or enhance critical habitat,

116. Minnesota Pollution Control Agency, *Biological Monitoring, Citizen Monitoring*, *at* http://www.pca.state.mn.us/water/biomonitoring/bio-citizenmonitoring.html (last updated Jun. 13, 2007); Personal communication with Mike Gernes, *supra* note 99.. *See* Wetland Health Evaluation Program, *at* http://www.mnwhep.org/ (last visited Apr. 25, 2007).

117. Personal communication with Daniel Girolamo, Minn. Bd. of Water and Soil Res. (Feb. 27, 2007).

118. Minnesota Department of Natural Resources, Minnesota Wetlands Conservation Plan, Version 1.0 (Jan. 1997), *available at* http://files.dnr.state.mn.us/ecological_services/wetlands/wetland.pdf.

119. Eligible wetlands include "wetland types one, two, three, and six, as defined by the United States Fish and Wildlife Service *Circular 39* publication." Minnesota Board of Water and Soil Resources, *Permanent Wetlands Preserves Program Fact Sheet*, *at* http://www.bwsr.state.mn.us/easements/pwp (last visited July 2, 2007).

120. Weirens, *supra* note 5.

121. Minn. Stat. §§ 103F.501-.531.

which can include wetlands, [122] although the priority is purchasing lands for wildlife management.[123] MNBWSR administers the RIM Reserve Conservation Easement Program, which focuses on agricultural lands and drained wetlands.[124] The program is administered similarly to the Permanent Wetland Preservation Program (LGUs administer the program locally); however, MNBWSR provides cost-share dollars and technical assistance to landowners to help them establish and maintain conservation practices and the required conservation plan.[125] LGUs use a prioritization process for assessing applications. Annual inspections of easement sites are carried out by MNBWSR for the first five years of the easement. After five years, local soil and conservation districts inspect the sites on a three-year cycle.[126] The state legislature has appropriated $179 million to the RIM Reserve Program since its establishment.[127]

MNBWSR also has partnered with the U.S. Department of Agriculture's (USDA) Farm Services Agency (FSA) to combine its RIM program with its Conservation Reserve Program to form the federal/state Conservation Reserve Enhancement Program (CREP). Through this program, the state works to protect "environmentally sensitive crop lands."[128] Farmers are provided with funding from MNBWSR to put their environmentally sensitive lands, which can include wetlands, into conservation easements and to develop conservation practices.[129] The FSA provides 15 years of payments on the property. The first CREP in the Minnesota River Watershed resulted in protection of 100,000 acres. The state currently has a memorandum of understanding (MOU) with the FSA for another CREP.[130] MNBWSR also partners with the NRCS on its Wetland Reserve Program (WRP).[131] Since 1998, MNBWSR has been able to leverage $200 million from the USDA through the CREP I and II and the WRP.[132]

The Minnesota Department of Transportation (MNDOT) has developed guidelines for restoring and managing native wetland vegetation.[133] The guidelines are used by MNBWSR.[134] MNDOT and MNBWSR also have entered into a wetland replacement cooperative that unifies their efforts to identify and develop wetland

122. Minnesota Department of Natural Resources, *Reinvest in Minnesota Critical Habitat Match Program*, *at* http://www.dnr.state.mn.us/grants/land/rim.html (last visited July 2, 2007).
123. Norris, *supra* note 19.
124. Personal Communication with Kevin Lines, Minn. Bd. of Water and Soil Res. (Feb. 16, 2007).
125. Minnesota Board of Water and Soil Resources, *Reinvest in Minnesota Fact Sheet*, *at* http://www.BWSR.state.mn.us/easements/rim/factsheet.html (last visited Apr. 10, 2007); *Id.*
126. Lines, *supra* note 124.
127. Minnesota Board of Water and Soil Resources, *Wetland Assessment, at* http://www.bwsr.state.mn.us/wetlands/mnram/index.html (last visited July 2, 2007).
128. Minnesota Board of Water and Soil Resources, *Conservation Reserve Enhancement Program Fact Sheet*, *at* http://www.BWSR.state.mn.us/easements/crep/factsheet.html (last visited July 2, 2007).
129. Soil and Water Conservation Districts administer the program at the local level. *Id.*
130. Minnesota Board of Water and Soil Resources, *supra* note 128.
131. Lines, *supra* note 124.
132. *Id.*
133. Robert L. Jacobson, Restoring and Managing Native Wetland and Upland Vegetation (Jan. 2006), *available at* http://www.BWSR.state.mn.us/wetlands/publications/nativewetveg.pdf.
134. Personal communication with Sarma Staumanis, Minn. Dep't of Transp. (Feb. 16, 2007).

replacement sites for public road projects. The effort involves the pooling of existing wetland bank sites and funding for future sites.[135]

The state also operates a wetlands taxation exemption program. Wetlands that are exempt include public waters wetlands, wetlands in their natural condition that are of little value except for wildlife or water conservation, and wetlands in the MNBWSR Wetlands Preservation Program.[136] Counties are responsible for assessing the value of the wetlands, and landowners with wetlands in wetlands preserve areas must submit an application for tax exemption.[137]

Finally, five Minnesota state agencies—MNBWSR, MNDNR, MPCA, MNDOT, and Department of Agriculture—launched an initiative to develop a comprehensive wetland restoration strategy with a sharper focus on action and effectiveness. The project seeks to define restoration priorities and objectives for wetland types, diversity, and complexes; regional distinctions; and timeframes. One of the intended results of the program is to provide more quality habitat for permanent and seasonal fish and wildlife and for endangered species. A variety of key stakeholders will be asked to participate in developing the strategy. MNBWSR is providing GIS support and funding. MNDNR is providing the coordinator's office space and other indirect costs. All co-sponsoring state agencies are providing staff hours and leadership to the project.[138]

VI. Education and Outreach

The WCA requires public education and outreach, and one of the main components of the state's wetlands conservation plan specifically addresses education and outreach goals, tasks, and partners. Recognizing the importance of providing "information that is complete and acknowledges different perspectives," the plan targets its actions to different audiences from local governments to landowners to decision-makers.

The MNDNR occasionally holds Wonders of Wetlands (WOW)[139] workshops; however, they are only given upon request. MNDNR sponsors Project WET, a national water education program for K-12 teachers and students. Although the program does not focus specifically on wetlands, teacher workshops include wetlands information if applicable or upon request. The program involves setting up and facilitating workshops for formal and non-formal K-12 educators where participants receive and learn how to implement Project WET's Curriculum and Activity Guides with their students. Trained volunteers assist with this program as facilitators.

135. Personal communication with Sarma Straumanis, Minn. Dep't of Transp. (Apr. 4, 2007).
136. Minn. Stat. § 272.02(11).
137. Minnesota Department of Natural Resources, *Wetland Taxation*, *at* http://www.dnr.state.mn.us/wetlands/taxation.html (last visited July 2, 2007).
138. Minnesota Department of Natural Resources, *Creating a comprehensive strategy for Wetland Restoration in Minnesota, at* http://www.dnr.state.mn.us/nrplanning/wrs/index.html (last visited Sept. 14, 2007).
139. The Wonders of Wetlands is a teacher's guidebook/ curriculum on wetlands education in the classroom. Environmental Concern, Inc., *WOW!: The Wonders of Wetlands*, *at* http://www.wetland.org/wowteacher.html (last visited July 2, 2007).

In 2006, there were 86 trained volunteer facilitators statewide. Primary funding for this program comes through the workshop registration fees.[140]

MNBWSR provides formal WCA training to LGUs twice a year and more often through informal training sessions.[141] The MNDNR and local soil and water conservation districts provide landowners with information on the state's wetland permits and technical assistance.[142] The MNBWSR also led the development of a voluntary wetland delineator certification program. The purpose of this initiative is to ensure that individuals engaged in wetland work have appropriate skills. This program is currently administered by the University of Minnesota and MNBWSR and provides annual training and testing.[143]

VII. Coordination among State and Federal Agencies

Federal, state, and local agencies; professionals; and the public partnered to develop the Minnesota Wetlands Conservation Plan (MWCP). The plan calls for partnership between these entities on various issues including restoration, education and outreach, and monitoring. The MWCP also includes strategies for regional management, statewide management, and streamlining regulatory processes.[144] The state and federal agencies (MNDNR, MNBWSR, MPCA, MNDOT, EPA, Corps, and FWS) that developed the plan also signed an MOA to approve, implement, monitor, and update the MWCP.[145] To implement the plan, the Interagency Wetlands Group[146] developed an Action Planning Workbook[147] that sets out specific tasks, responsible parties, and a timeline for carrying out tasks.[148] The state also is beginning to develop a wetland restoration plan that will be considered a part of the MWCP.[149]

The state also has multiple memoranda of understanding (MOU) with federal and state agencies. For example, the state currently has an MOU with the Corps on wetlands mitigation banking standards.[150] Additionally, the state is working on another MOU with the Corps to consolidate wetland mitigation requirements.[151]

140. Personal communication with April Rust, Minn. Dep't of Natural Res. (Feb. 22, 2007).
141. Weirens, *supra* note 58.
142. Minnesota Department of Natural Resources, *Permits and Technical Assistance*, *at* http://www.dnr.state.mn.us/excavatedponds/techassistance.html (last visited July 2, 2007).
143. Weirens, *supra* note 5.
144. Minnesota Department of Natural Resources, *supra* note 118.
145. Memorandum of Agreement for Implementation of the Minnesota Wetlands Conservation Plan, (Aug. 1, 1998), *available at* http://files.dnr.state.mn.us/ecological_services/wetlands/memoagreement.pdf.
146. The Interagency Wetlands Group is "a collaborative network of staff from state and federal agencies who work on interagency coordination and cooperation issues relating to wetlands." Minnesota Department of Natural Resources, Minnesota Wetlands Conservation Plan: Action Planning Workbook (1998). Can request copy at http://www.dnr.state.mn.us/ecological_services/pubsrequest.html (last visited July 2, 2007).
147. *Id.*
148. Norris, *supra* note 19.
149. *Id.*
150. Weirens, *supra* note 58.
151. Norris, *supra* note 19.

The Minnesota Interagency Wetlands Group, comprising state, federal, local and tribal agencies involved in wetlands regulation and management meets monthly to share information and coordinate on wetlands issues.[152]

VIII. Acronyms and Abbreviations

Corps – U.S. Army Corps of Engineers

CREP – Conservation Reserve Enhancement Program

CWA – Clean Water Act

CWAMMS – Comprehensive Wetlands Assessment, Monitoring, and Mapping Strategy

LGU – Local Government Unit

EPA – U.S. Environmental Protection Agency

FSA – Farm Services Agency

FTE – Full-time Equivalent

FWS – U.S. Fish and Wildlife Service

GP – General Permit

HGM – Hydrogeomorphic

IBI – Index of Biological Integrity

LOP – Letter of Permission

MNBWSR – Minnesota Board of Water and Soil Resources

MNDNR – Minnesota Department of Natural Resources

MNRAM – Minnesota Routine Assessment Methodology

MOA – Memorandum of Agreement

MOU – Memorandum of Understanding

MPCA – Minnesota Pollution Control Agency

152. Weirens, *supra* note 5.

MWCP – Minnesota Wetlands Conservation Plan

NRCS – Natural Resources Conservation Service

NWP – Nationwide Permit

RIM – Reinvest in Minnesota

TMDL – Total Maximum Daily Load

WCA – Wetlands Conservation Act

WHEP – Wetland Health and Evaluation Program

WRP – Wetlands Reserve Program

Mississippi

I. Overview

Wetlands cover 13 percent of Mississippi's land surface and include both freshwater and estuarine wetlands.[1] Bottomland forests, swamps, and freshwater marshes are the most common wetland type in the state, and coastal marshes also are widespread.[2] Prior to the 1800s, Mississippi contained approximately ten million acres of wetlands. Today less than 40 percent of those wetlands remain. Most historical wetlands were lost to agriculture and timber harvest; however, more recently, development also has become a major threat to wetlands.[3] The state's regulatory efforts rely heavily on §401 water quality certification under the Clean Water Act for freshwater wetlands statewide. Coastal wetlands are regulated primarily by the Coastal Wetlands Protection Act (Wetlands Act).

II. Regulatory Programs

Wetland definitions and delineation

Mississippi's definition of state waters includes wetlands. The Mississippi Air and Water Pollution Control Law defines "waters of the state" as:

> all waters within the jurisdiction of this State, including all streams, lakes, ponds, wetlands, impounding reservoirs, marshes, watercourses, waterways, wells, springs, irrigation systems, drainage systems, and all other bodies or accumulations of water, surface and underground, natural or artificial, situated wholly or partly within or bordering upon the State, and such coastal waters as are within the jurisdiction of the State, except lakes, ponds, or other surface waters which are wholly landlocked and privately owned, and which are not regulated under the Federal Clean Water Act (33 U.S.C. 1251 *et seq*.).[4]

Coastal wetlands are defined in the Wetlands Act as "all publicly-owned lands subject to the ebb and flow of the tide; which are below the watermark of ordinary high tide; all publicly-owned accretions above the watermark of ordinary high tide and all publicly-owned submerged water-bottoms below the watermark of ordinary high tide and includes the flora and fauna on the wetlands and in the wetlands."[5]

1. Association of State Wetland Managers, *State Wetland Programs: Mississippi*, *at* http://www.aswm.org/swp/mississippi9.htm (last updated Feb. 7, 2006); U.S. Geological Survey, *National Water Summary on Wetland Resources, State Summary Highlights*, *at* http://water.usgs.gov/nwsum/WSP2425/state_highlights_summary.html (last modified Mar. 7, 1997).
2. *Id.*
3. Mississippi Department of Environmental Quality – Water Quality Certification Branch, *Wetlands Protection*, *at* http://www.deq.state.ms.us/MDEQ.nsf/page/WQCB_Steam_Wetland_Alteration03?OpenDocument (last modified Oct. 23, 2006).
4. Miss. Code Ann. § 49-17-5(1)(f).
5. Miss. Code. Ann. § 49-27-5.

The state uses the criteria set out in the U.S. Army Corps of Engineer's (Corps) 1987 *Wetlands Delineation Manual* to delineate wetlands.[6] However, many developers are beginning to hire consultants to make wetland determinations, which the Corps reviews and verifies.[7]

Wetland-related law and regulation

Mississippi's wetlands are regulated primarily through §401 water quality certifications statewide; however, additional laws govern coastal wetland use and protection.

§401 water quality certification. Any actions that require a federal permit or license, including §404 individual dredge and fill permits and nationwide permits, and will result in discharge into waters of the U.S., require a §401 water quality certification from the Mississippi Department of Environmental Quality (MDEQ), Office of Pollution Control, which administers the program for the state.[8] The MDEQ and the Corps have a joint application process; thus, a §404 permit application is considered an application for §401 water quality certification. The MDEQ begins reviewing §401 water quality certification applications after the Corps issues its public notice for a §404 permit application.[9] The Corps may not approve a §404 permit application until the MDEQ has issued its §401 water quality certification.[10] All §404/§401 permit applications are submitted directly to the Department of Marine Resources (MDMR), Wetlands Permitting Bureau when proposed projects are located in coastal wetlands. To facilitate the permit application review process, MDEQ and MDMR strongly recommend that applicants, particularly for large or complex projects, schedule a pre-application meeting.[11]

The MDEQ rarely waives §401 certifications and usually denies only one or two §401 applications a year. The number of certifications issued each year varies, often with the economy and current affairs (e.g., the continuing effects Hurricane Katrina). For example, between January and November 2006, the MDEQ had issued approximately 125 §401 certifications. Most §401 water quality certification applications are conditionally approved with specific terms that must be met by the applicant, such as measures to protect water quality.[12] Approval decisions are based on a combination of qualitative evaluations and best professional judgment of MDEQ staff. Factors the MDEQ considers when reviewing applications include the degree of physical, chemical, and biological impact on state waters; an applicant's compliance history; and the feasible alternatives to the project.[13]

Coastal Wetlands Protection Act. The MDMR has regulatory authority in the three coastal counties of Mississippi (Jackson, Harrison, and Hancock) in accordance with the Wetlands Act.[14] The Wetlands Act

6. U.S. Army Corps of Eng'rs, Wetlands Research Program Technical Report Y-87-1, Corps of Engineers Wetlands Delineation Manual (1987), *available at* http://www.saj.usace.army.mil/permit/documents/87manual.pdf.
7. Personal Communication with Robert Seyfarth, Miss. Dep't of Envtl. Quality (Nov. 7, 2006).
8. Mississippi Department of Environmental Quality, Water Pollution Control Regulations-1, Chapter 3, Section I.
9. *Id*.
10. Mississippi Department of Environmental Quality – Water Quality Certification Branch, *supra* note 3.
11. Personal Communication with Robert Seyfarth, Miss. Dep't of Envtl. Quality (Jan. 18, 2007).
12. Seyfarth, *supra* note 7.
13. Mississippi Department of Environmental Quality Water Pollution Control Regulations-1, Chapter 3, Setion IV (A).
14. Miss. Code Ann. §§ 49-27-1, 49-27-71.

requires the MDMR to review permits for all regulated activities[15] that affect coastal wetlands.[16] Generally, the Corps' Mobile and Vicksburg Districts issue Regional General Permits for minor structures and activities that impact waters of the United States in addition to their Nationwide Permits; however, the MDMR issues Regional General Permits on behalf of the Corps in the three coastal counties as established through a Memorandum of Agreement (MOA).[17] Permit applications are submitted directly to MDMR on a Joint Application and Notification form. For projects that do not meet the Regional General Permit guidelines and require an Individual Permit, the Corps issues a §404 permit and the MDMR issues a separate permit with a coastal consistency determination. Individual Permit determinations are made by the Commission on Marine Resources.[18] The MDMR coordinates application review with the Corps, the MDEQ, local governments, and adjacent landowners.[19] Both Regional General Permits and Individual Permits require a §401 water quality certification. If the MDMR determines a permit is not consistent with its regulations and programs, then the MDEQ and the Corps also will deny the permit without prejudice.[20] Additionally, if the MDEQ or Mississippi Department of Archives and History object to a project, then the MDMR must, by law, deny federal consistency without prejudice.[21]

Organization of state agencies

The majority of wetland-related, state-level activities in Mississippi are overseen by the MDEQ and the MDMR. The role of the MDEQ is exclusively regulatory, while the MDMR plays both a regulatory and non-regulatory role in regards to wetlands protection and management.

Mississippi Department of Environmental Quality. Under the Air and Water Quality Pollution Control Law, the MDEQ, Office of Pollution Control, Environmental Permits Division, Water Quality Certification Branch administers §401 water quality certifications statewide. This branch is responsible for reviewing, issuing, and tracking certifications; monitoring projects to ensure compliance with certification conditions; and enforcement. No formal monitoring or enforcement programs are in place due to funding restraints.[22] Regulatory activities take place in the main office in Jackson, but cover the entire state.[23] Four full-time equivalents (FTE) (three staff positions and one manager) are devoted to permitting and related activities. These staff are funded by state general funds and federal grants conferred from the U.S. Environmental Protection Agency (EPA).[24]

15. Miss. Code Ann. § 49-27-5(c). Regulated activities include dredging, filling or dumping, killing or damaging flora or fauna, and building any structure that would disrupt the tide's ebb and flow or structures on suitable sites for water dependent industries.
16. Miss. Code Ann. §§ 49-27-5(a), 49-27-9(1).
17. Memorandum of Understanding (MOU) is authorized. Miss. Code Ann. § 57-15-5(4), -6(4). *See also* Mississippi Department of Marine Resources, *Mississippi Coastal Zone Wetlands Permits*, *at* http://www.dmr.state.ms.us/Coastal-Ecology/Permitting/mississippi_coastal_zone_wetland.htm (last visited Mar. 22, 2007).
18. Personal Communication with Jan Boyd, Miss. Dep't of Marine Res. (Nov. 16, 2006).
19. Personal Communication with Jill Bockenstette, Miss. Dep't of Marine Res. (Nov. 15, 2006).
20. *Id.*
21. Personal Communication with Jan Boyd, Miss. Dep't of Marine Res. (Jan. 18, 2007).
22. Seyfarth, *supra* at 7.
23. *Id.*
24. *Id.*

The Field Services Division (FSD) provides scientific and technical assistance and support to the agency. Although the FSD is responsible for monitoring waters of the state, there are currently no FTEs devoted to wetlands monitoring. Within the FSD, the Surface Water Monitoring Section is responsible for monitoring surface waters, which have historically been focused on lakes, streams, and estuaries. Funding for these activities comes from state general funds and EPA grants.[25]

The Surface Water Division's Standards, Modeling, and TMDL Branch is responsible for developing and adopting the state's surface water designated uses, Water Quality Standards, and antidegradation policy as required by the Clean Water Act. It also is responsible for administering the triennial review of the Water Quality Standards.[26]

MDEQ's Office of Land and Water Resources, Monitoring and Permitting Division focuses mainly on water quantity and use issues, but within that role it receives and processes permit applications to divert, store, and withdraw waters of the state.[27] The Surface Water Division assists with surface water quality monitoring and conducting research on streams to determine minimum flow requirements.[28]

Mississippi Department of Marine Resources. The MDMR was established in 1994 by the state legislature to protect and manage the state's marine resources, public trust coastal wetlands, adjacent uplands, and waterfront lands for long-term public benefit. The MDMR operates under the authority of the Commission on Marine Resources.[29,30] The agency also is responsible for evaluating coastal wetlands, promoting coastal wetlands education,[31] and developing a Coastal Zone Management Plan for use of coastal wetlands as outlined in the federal Coastal Zone Management Act.[32] The MDMR manages coastal wetlands primarily through administration of the Wetlands Protection Act. The Bureau of Wetlands Permitting is responsible for reviewing all Regional General Permit and Individual Permit applications for projects in the three coastal counties. It also deals with compliance, enforcement, and mitigation issues. The number of full-time equivalents (FTE) at the Wetlands Permitting Bureau varies ranging from eight to ten people depending on the time of year. Most FTE work exclusively on permitting, but often one person is dedicated to mitigation.[33] This program is primarily funded through federal Coastal Zone Management Grants.[34]

25. Personal Communication with Henry Folmar, Miss. Dep't of Envtl. Quality (Nov. 14, 2006).
26. Mississippi Department of Environmental Quality – Standards, Modeling, and TMDL Branch, *Water Quality Standards*, *at* http://www.deq.state.ms.us/MDEQ.nsf/page/WMB_Water_Quality_Standards?OpenDocument (last modified Feb. 27, 2007).
27. Mississippi Commission on Environmental Quality Regulation LW-2*, Surface Water and Ground Water Use and Protection at* http://www.deq.state.ms.us/newweb/MDEQRegulations.nsf/RN/LW-2 (last visited June 28, 2007).
28. Department of Water Quality, Office of Land and Water, Surface Water Division*, at*http://www.deq.state.ms.us/MDEQ.nsf/page/L&W_Surface_Water?OpenDocument (last visited June 28, 2007).
29. Commission on Marine Resources was established by the Marine Resources Law to plan for the development, use, and study of coastal and marine resources and to enter into agreements with private, state, and federal agencies to carry out its polices. *See* Miss. Code Ann. §§ 57-15-3(1), 57-15-5(1), 57-15-5(4).
30. Mississippi Department of Marine Resources, *About Us*, *at* http://www.dmr.state.ms.us/DMR/about_the_mississippi__departmen.htm (last visited June 28, 2007).
31. Miss. Code Ann. § 49-27-65.
32. Miss. Code Ann. § 57-15-5(6).
33. Bockenstette, *supra* note 19.
34. Boyd, *supra* note 18.

The MDMR also administers the Coastal Preserves Program. This non-regulatory program was established in 1992 to protect, conserve, and restore coastal areas. Currently, 20 Coastal Preserves have been delineated, and they cover a total of 72,000 acres. The Preserves contain mainly estuarine marshes (85 percent), but also islands and upland areas. The state owns 35,000 acres, the federal government owns 10,000 acres, and the remaining area is privately-owned.[35] Five FTEs (four staff members and one manager) are dedicated to the Coastal Preserves Program. All FTEs are responsible for conducting monitoring activities, restoration activities, and public outreach and education programs. The four staff members are funded by Coastal Zone Management funding and the manager is funded by DMR programmatic funds. [36] The Mississippi Secretary of the State also provides some financial support for land management to this Program using Tidelands Funds through an MOA.[37] All MDMR employees are based in and work out of the main office in Biloxi, Mississippi.[38]

Mississippi Department of Wildlife, Fisheries, and Parks. The Mississippi Department of Wildlife, Fisheries, and Parks (MDWFP) has no regulatory authority in regards to wetlands, but it may review §404/401 applications and provide comments to the MDEQ. The MDWFP also allows applicants for these permits to carry out restoration work on MDWFP lands that contain degraded wetlands. However, this is not an established program.[39] It also administers the Landowner Incentive Program (for more detail see *V. Restoration and Partnerships*) and the Natural Science Museum, which has a wetlands education program as a part of its larger education program. The Museum staffs this Program with one coordinator, three full-time staff for K-12 programs, one full time staff person for pre-K, and one part-time staff person.[40]

Nationwide permits

The MDEQ reviews and issues a §401 water quality certification for the Corps' Nationwide Permits (NWP).[41] It has conditionally approved all 2002 NWPs except NWP # 21 (Surface Coal Mining Activities) and # 44 (Mining Activities). Both were denied certification. For 28 conditionally approved NWPs, the MDEQ established a list of four §401 water quality certification conditions applicable to each permit.[42] For 13 NWPs, the MDEQ established specific conditions.[43]

35. Personal Communication with Jeff Clark, Miss. Dep't of Marine Res. (Nov. 2, 2006).

36. *Id.*

37. Memorandum of Understanding Mississippi Department of Marine Resources, Coastal Preserves Program*, available at* http://www.dmr.state.ms.us/Coastal-Ecology/Preserves/Laws/MemorandumofUnderstanding.pdf (last visited June 28, 2007).

38. Boyd, *supra* note 18.

39. Personal Communication with John Tindall, Miss. Dep't of Wildlife, Fisheries, and Parks (Nov. 7, 2006).

40. Personal Communication with Georgia Spencer, Miss. Dep't of Wildlife, Fisheries, and Parks, Natural Science Museum (Nov. 13, 2006).

41. The Nationwide Permits are issued for five years and are currently under review for re-issuance.

42. The Nationwide Permits that the MDEQ has conditionally approved with four general conditions are: NWP #1 – Aids to Navigation; NWP #2 – Structures in Artificial Canals; NWP #3 – Maintenance; NWP #4 – Fish and Wildlife, Harvesting, Enhancement and Attraction Devices and Activities; NWP # 5 –Scientific Measurement Devices; NWP #6 – Survey Activities; NWP # 7 – Outfall Structures and Maintenance; NWP #8 – Oil and Gas Structures; NWP #9 – Structures in Fleeting and Anchorage Areas; NWP # 10 – Mooring Buoys; NWP #11 – Temporary Recreation Structures; NWP #13 – Bank Stabilization; NWP # 15 – U.S. Coast Guard Approved Bridges; NWP #16 –Return Water From Upland Contained Disposal Areas; NWP #17 – Hydropower Projects; NWP #19 – Minor Dredging; NWP #20 – Oil Spill Clean Up; NWP #22 – Removal of Vessels; NWP #23 – Approval Categorical Exclusions; NWP #24 – State Administered Section 404 Programs; NWP #25 – Structural Discharges; NWP #30 – Moist Soil Management for Wildlife; NWP #32 – Completed Enforcement Actions; NWP #33 – Temporary Construction Access, and Dewatering; NWP #34 – Cranberry Production Activities; NWP #35 – Maintenance Dredging of Existing Basins; NWP #37 – Emergency Watershed Protection and Rehabilitation; NWP #38 – Cleanup of Hazardous and Toxic Waste. See U.S. Army Corps of Eng'rs, Vicksburg Dist.,

The MDMR also reviews NWPs to determine consistency with the Mississippi Coastal Program. It determined that NWPs #18 (Minor Discharges), #29 (Single-Family Housing), and #44 (Mining Activities) were not consistent the Coastal Program; therefore, all applicants must seek a consistency or a waiver from MDMR before beginning any work on a proposed project. The MDMR has given unconditional coastal zone consistency for 29 NWPs.[44] It also has asked that Regional General Permits be used in place of NWP # 2, 4, 9, 13, 19, 31, and 36.[45]

Although the Corps has reissued the NWPS in March 2007, regional conditions were not finalized as of early 2007.[46]

Mitigation

The State of Mississippi has not adopted legislation regarding compensatory mitigation for wetlands, and the MDEQ generally defers to the Corps for wetland-related jurisdictional and mitigation issues. The Corps also has sole responsibility for stream mitigation standards and procedures.[47]

However, the MDEQ has a policy that requires wetland impacts be mitigated within the same stream basin where the impact occurred.[48] The MDMR has in-house guidelines related to mitigation requirements, such as specific ratios when carrying out wetland preservation or restoration work, and the MDMR develops criteria to evaluate mitigation construction and performance.[49] It also works closely with the Corps' Mobile District on mitigation-related activities.[50]

There are numerous mitigation banks in Mississippi. Several are owned and managed by non-profit organizations such as The Nature Conservancy, but most are privately owned. The Mississippi Department of Transportation (MDOT) is the only state agency authorized to help establish and oversee banks; however, MDOT does not manage the banks.[51] The MDEQ, the MDMR, and the MDWFP are active participants on the interagency Alabama/Mississippi Mitigation Banking Review Team in coordination with the Corps' Mobile

Regional Conditions for Nationwide Permits in Mississippi*, available at* http://www.mvk.usace.army.mil/offices/od/odf/REGION%20CONDS%20FOR%20NWP%20MS.doc (last visited June 28, 2007).

43. The Nationwide Permits that the MDEQ has conditionally approved with specific conditions for each permit are: NWP #12 – Utility Line Activities; NWP #14 – Linear Transportation Crossings; NWP #18 – Minor Discharges; NWP #27 – Stream and Wetland Restoration Activities; NWP #28 – Modification of Existing Marinas; NWP #29 – Single-Family Housing; NWP #31 – Maintenance of Existing Flood Control Facilities; NWP #36 – Boat Ramps; NWP #39 – Residential, Commercial and Institutional Developments; NWP #40 – Agricultural Activities; NWP #41 – Reshaping Existing Drainage Ditches; NWP #42 – Recreational Activities; NWP #43 – Storm Water Management Facilities. *Id.*

44. The Mississippi Department of Marine Resources (MDMR) has given unconditional coastal zone consistency for the following NWPs: 1, 3, 5-8, 10-12, 14-17, 20-23, 25, 27, 30, 32, 33, 35, 37-43. *Id.*

45. *Id.*

46. U.S. Army Corps of Engineers, Vicksburg District, *Regulatory Program*, *at* http://www.mvk.usace.army.mil/offices/od/odf/main.htm (last visited June 28, 2007).

47. Seyfarth, *supra* note 7.

48. Personal Communication with Robert Seyfarth, Miss. Dep't of Envtl. Quality (Nov. 14 2006).

49. Boyd, *supra* note 18.

50. Bockenstette, *supra* note 19.

51. Miss. Code Ann. § 65-1-51; Personal Communication with Wes Stafford, Miss. Dep't of Transp. (Nov. 14, 2006).

and Vicksburg Districts.[52] The MDEQ has researched in-lieu fee programs, but currently has no established programs.[53]

Tracking systems

The MDEQ has a tracking system called *enSite* that tracks permitting and compliance activities for agency permits including §401 certifications. Information such as public notices and issued §401 certifications are made available to the public through an online version of the database called *enSearch*. A record of complaints also is available on the MDEQ website. The MDEQ is in the process of determining how to incorporate GIS data into the database to map project locations and determine their proximity to potential mitigation sites.[54]

The MDMR permitting and mitigation tracking databases were destroyed during Hurricane Katrina. The agency is rebuilding a database that will house both permitting and mitigation tracking information,[55] such as impacts from projects, mitigation activities, and site inspections.[56]

Compliance and enforcement

Enforcement actions under the state's Air and Water Pollution Control Law apply but are not specific to wetlands. Enforcement options under this law include civil actions and injunction proceedings, enforceable by the MDEQ. Civil penalties may be up to up to $25,000 per violation per day and include the cost of restoration and restocking any water body where fish or wildlife has been destroyed.[57] The MDEQ Water Quality Certification Branch may use these enforcement options to correct or prevent water quality impacts that result from construction or operations where a §401 certification has been issued. However, the Corps usually takes administrative action on §404/401 violations or refers the case to the EPA.[58]

Enforcement actions under the Wetlands Act include criminal prosecution and penalties and civil penalties for violations to any provision of the Act, regulations promulgated pursuant to the Act, or any permit terms and conditions. Civil penalties may not exceed $500 per day and violators are responsible for restoring the coastal wetland to the condition prior to the violation. If a violation is considered a misdemeanor, criminal penalties may range from $100 to $1,000, or more than 30 days imprisonment, or both.[59] Additionally, if work is performed in coastal wetlands prior to obtaining appropriate permits, then the applicant may be fined between $500 and $1,000 for residential work and between $1,000 and $10,000 for commercial and industrial work.[60] In practice, enforcement options are rarely pursued.[61]

52. Seyfarth, *supra* note 7; Clark, *supra* note 35; Tindall, *supra* note 39.
53. Seyfarth, *supra* note7.
54. *Id.*
55. Bockenstette, *supra* note 19.
56. Boyd, *supra* note 18.
57. Miss. Ann. Code §§ 49-17-43(1), 49-17-43(2), 49-17-43(8).
58. Seyfarth, *supra* note 7. *See also* Mississippi Department of Environmental Quality Regulations, Water Pollution Control-1, Chapter 3, Section V.
59. Miss. Ann. Code §§ 49-17-55, 49-17-57.
60. Miss. Ann. Code § 49-17-51(1).
61. Personal Communication with Jan Boyd, Miss. Dep't of Marine Res. (Nov. 17, 2006).

III. Water Quality Standards

Mississippi has not adopted water quality standards (WQS) specific to wetlands, although state standards do apply to surface waters. Surface WQS outline numeric and narrative water quality standards.[62] Regulations do not identify designated uses specifically for wetlands, but do classify waters for fish and wildlife, which by default can encompass wetlands.[63] The state antidegradation policy also is not specific to wetlands, but does prohibit "degradation of water quality [that may] interfere with or become injurious to existing instream water uses." The policy also provides that, where "high quality waters constitute an outstanding National resource, such as waters of National and State parks and wildlife refuges and waters of exceptional recreational or ecological significance, that water quality shall be maintained and protected."[64]

IV. Monitoring and Assessment

Mississippi does not have a formal, statewide wetlands monitoring and assessment program. The MDEQ FSD has a water quality assessment program for state surface waters; however, the methodologies were developed specifically for streams, lakes, and bays.[65] Basic standards for water quality assessment methodologies include biological, physical, and chemical standards,[66] and most monitoring data are primarily used for developing 305(b) reports.[67] Wetlands monitoring is a recognized need; however, it is not an immediate priority. For wetlands monitoring to occur, the MDEQ needs to develop water quality standards for wetlands, and the FSD needs to develop monitoring protocols that would allow for assessments based on these criteria.[68]

The MDEQ Water Quality Certification Branch is authorized to inspect sites to ensure compliance with §401 certification conditions,[69] but the monitoring that takes place is informal and not necessarily specific to wetlands.[70]

The MDMR currently uses two wetland assessment methodologies: the Wetlands Rapid Assessment Procedures (WRAP) and the Hydrogeomorphic (HGM) Approach. HGM is used for pine savannahs and was

62. Miss. Comm'n on Envtl. Quality Regulation, Water Pollution Control-2: Water Quality Criteria for Intrastate, Interstate and Coastal Waters (June 27, 2003), *available at* http://www.deq.state.ms.us/newweb/MDEQRegulations.nsf/RN/WPC-2.
63. Seyfarth, *supra* note 7.
64. Mississippi Commission on Environmental Quality Regulation Water Pollution Control-2: Water Quality Criteria for Intrastate, Interstate and Coastal Waters, § I(1) (June 27, 2003), *available at* http://www.deq.state.ms.us/newweb/MDEQRegulations.nsf/RN/WPC-2.
65. Folmar, *supra* note 25.
66. Mississippi Commission on Environmental Quality Regulation, Water Pollution Control-2: Water Quality Criteria for Intrastate, Interstate and Coastal Waters, *supra* note 62.
67. Folmar, *supra* note 25.
68. Personal Communication with Henry Folmar, Miss. Dep't of Envtl. Quality (Jan. 18, 2007).
69. Mississippi Department of Environmental Quality, Water Pollution Control Regulations-1, Chapter 3, Section I (7)- Water Quality Certification.
70. Seyfarth, *supra* note 7.

developed with funding from an EPA grant.[71] The MDMR has worked with the Corps, Alabama, and the U.S. Fish and Wildlife Agency to develop two new functional assessment tools: the tidal fringe HGM and headwaters slope riverine HGM.[72]

V. Restoration and Partnerships

Mississippi does not operate a formal, state-level, wetland restoration program; however, the MDMR conducts restoration activities through its Coastal Preserves Program. The Program works with other state, local, federal, private, and public entities to preserve and restore wetlands within the 20 Coastal Preserves. Specific activities include restoring native species in areas that have been damaged by ditching and filling. The Program has a prioritization plan for restoring wetlands and uses the state's GIS program, called MARIS, to assist with this process. Most projects, however, are implemented based on available funding opportunities. The Program also is actively working with private landowners to acquire more land within the 20 Preserves. Although the Coastal Preserve Program has no formal partnership with private landowners, staff members may provide private landowners with information on issues such as invasive species or carry out activities for landowners such as prescribed burnings and herbicide applications.[73]

The MDMR also will receive funding from the Coastal Impact Assistance Program (CIAP), which was created by the Energy Policy Act of 2005 through an amendment to the Outer Continental Shelf Lands Act.[74] Mississippi will be given an estimated $120 million beginning in the fall of 2007 for a variety of uses including "projects and activities for the conservation, protection, or restoration of coastal areas, including wetland." The MDMR and the local governments of Jackson, Hancock, and Harrison counties are developing a *4-Year Coastal Impact Assistance Plan*, which is required to receive CIAP funding.[75]

The MDWFP administers a Landowner Incentive Program (LIP) that focuses on conserving and restoring wildlife and habitats on private lands in three key regions throughout the state. One of the three regions is the Delta hardwood bottomlands, which are wetland and riparian habitats.[76] The primary goal of the LIP is to place lands into conservation easements; however, the Program also has projects focused on converting agriculture or harvested lands back into bottomlands.[77] The MDWFP works with Wildlife Mississippi, a nonprofit organization, to administer this cost-share program. Funds are granted to projects based on a series of criteria such as number of acres, protections for threatened and endangered species, and willingness to roll

71. Boyd, *supra* note 18.
72. Bockenstette, *supra* note 19.
73. Clark, *supra* note 35.
74. 43 U.S.C. § 1356a.
75. Miss. Dep't of Marine Res., Mississippi Coastal Impact Assistance Program, *available at* http://www.dmr.state.ms.us/ciap/State-CIAP-INTRO-packet.pdf (last visited June 28, 2007)
76. Miss. Dep't of Wildlife, Fisheries, and Parks, Landowner Incentive Program Brochure, *available at* http://www.mdwfp.com/Level2/Wildlife/Lip/Brochure.pdf (last visited June 28, 2007).
77. Personal Communication with Russ Walsh, Dep't of Wildlife, Fisheries, and Parks (Nov. 13, 2006).

land into a permanent easement.[78] All easements are managed by the Mississippi Land Trust.[79] The MDWFP monitors all projects for compliance and project success.[80]

The MDEQ has partnered with Mississippi Wildlife Federation to carry out an Adopt-A-Stream Program. Although not focused specifically on wetlands, this Program includes streamside restoration, water quality monitoring, and watershed-wide surveying and monitoring.[81] All these activities potentially benefit wetlands.[82]

VI. Education and Outreach

The MDMR Coastal Preserves Program is responsible for the majority of the MDMR's education activities. Staff carries out several outreach programs for the general public and develops education posters and brochures. The Program also developed a citizen's guide to protecting wetlands, but it was destroyed during Hurricane Katrina.[83] The MDMR also is working on a permitting brochure and has an active public affairs office.[84] The Grand Bay National Estuarine Research Reserve (GBNERR),[85] which is co-managed by the MDMR and the National Oceanic and Atmospheric Administration (NOAA), has a variety of educational programs that target K-12 students, college-level students, and the public. It also offers training programs for professionals whose actions impact how state coastal resources are managed.[86]

MDWFP's Natural Science Museum has an extensive natural science education program, part of which is a wetlands program for fourth grade and older students. This program takes a hands-on approach. Students identify soil and plant types and test a variety of factors such as soil pH, dissolved oxygen content, and temperature.[87]

78. Miss. Dep't of Wildlife, Fisheries, and Parks, *supra* note 76.
79. Walsh, *supra* note 77.
80. Miss. Dep't of Wildlife, Fisheries, and Parks, *supra* note 76.
81. Mississippi Wildlife Federation, *Adopt-A-Stream, at* http://www.mswildlife.org/education/adopt_a_stream.html (last visited June 28, 2007).
82. Personal Communication with Robert Seyfarth, Dep't of Envtl. Quality (Nov. 6, 2006).
83. Clark, *supra* note 35.
84. *Id*.
85. The GBNERR is a functional unit within the MDMR and considered a component of the National Estuarine Reserve Research System. This marine protected area was established not only to protect tidal and non-tidal wetlands as well as other important coastal habitats, but also to encourage and support education, research, and stewardship. *See* Grand Bay National Estuarine Reserve, *Administration*, *at* http://grandbaynerr.org/admin/ (last visited Mar. 23, 2007). *See also* Grand Bay National Estuarine Reserve, *Our Estuary*, *at* http://grandbaynerr.org/aboutus/ (last visited Mar. 23, 2007).
86. *See* Grand Bay National Estuarine Research Reserve, *Education*, *at* http://grandbaynerr.org/education/ (last visited Mar. 23, 2007). *See also* Grand Bay National Estuarine Research Reserve, *Coastal Training Program*, *at* http://grandbaynerr.org/education/ctp/ (last visited Mar. 23, 2007).
87. Spencer , *supra* 40.

The MDEQ has an education and outreach program for its §401 certification application process that targets developers and consultants. This program is designed to facilitate rebuilding from Hurricane Katrina. Although the program is not specific to wetland-related issues, the MDEQ stresses the importance of protecting wetlands to the developers through this program.[88]

VII. Coordination among State and Federal Agencies

The MDEQ and the MDMR coordinate extensively on the coastal wetland permitting process and both agencies work closely with the Corps on §404/ §401 permitting issues. Both agencies participate on the MBRT. The MDMR also partners with NOAA to jointly manage the GBNERR.[89]

VIII. Acronyms and Abbreviations

CIAP – Coastal Impact Assistance Program

CWA– Clean Water Act

EPA – U.S. Environmental Protection Agency

FTE – Full-time Equivalent

FSD – Field Services Division

GBNERR – Grand Bay National Estuarine Research Reserve

HGM – Hydro-geomorphic Approach

LIP – Landowner Incentive Program

MBRT – Mitigation Bank Review Team

MDEQ – Mississippi Department of Environmental Quality

MDMR – Mississippi Department of Marine Resources

MDOT – Mississippi Department of Transportation

MDWFP – Mississippi Department of Wildlife, Fisheries, and Parks

88. Seyfarth, *supra* note 82

89. Grand Bay National Estuarine Reserve, *Administration*, *at* http://grandbaynerr.org/admin/ (last visited Mar. 23, 2007).

NOAA – National Oceanic and Atmospheric Administration

NWP – Nationwide Permit

WQS – Water Quality Standards

WRAP – Wetlands Rapid Assessment Procedures

Nevada

I. Overview

More than half of Nevada's historic wetland acreage has been lost to: diversion of flow for agricultural, municipal, and industrial water uses; filling and draining for development; and stream channel erosion and modification.[1] In some areas, such as the terminal basins of the Truckee, Carson, and Humboldt Rivers, more than 80 percent of wetlands have been lost. The state's remaining wetlands are threatened by non-native plant invasions (e.g., tamarisk, perennial pepperweed, and hoary cress); discharges from irrigated farmland, abandoned mines, and urban stormwater containing high levels of salts and metallic compounds; and livestock and wild horse grazing.[2]

Wetlands and riparian areas cover a relatively small portion of land in Nevada, but they are an important ecological feature in the state.[3] Of the 700-plus taxa tracked by the Nevada Natural Heritage Program (NNHP), approximately 230 are wetland dependent. Moreover, of the 69 highest priority sites identified by the NNHP, 53 include wetland-dependent taxa.[4] Thus, Nevada agencies are undertaking a variety of restoration, conservation, and planning efforts intended to improve wetland management in the state.

II. Regulatory Programs

Wetland definitions and delineation

Wetlands in Nevada are protected along with other open waters. Nevada defines "waters of the state" as:

> all waters situated wholly or partly within or bordering upon this State, including but not limited to: (1) All streams, lakes, ponds, impounding reservoirs, marshes, water courses, waterways, wells, springs, irrigation systems and drainage systems; and (2) All bodies or accumulations of water, surface and underground, natural or artificial.[5]

"Wetlands" are defined as land that has:

> (1) A predominance of hydric soil; (2) Is inundated or saturated by surface water or groundwater at a frequency and duration sufficient to support a prevalence of hydrophytic vegetation typically adapted for life in sat-

1. State of Nevada, *Nevada Natural Resources Status Report: Wetlands, at* http://dcnr.nv.gov/nrp01/bio07.htm (last visited Sept. 19, 2007).
2. *Id*.
3. *Id*.
4. Nevada Natural Heritage Program, *Application for Nevada Q1 Grant, Round 5, HCP Category* (Sept. 28, 2006) (on file with author).
5. Nev. Rev. Stat. 445A.415.

urated soil conditions; and (3) Under normal conditions does support a prevalence of hydrophytic vegetation typically adapted for life in saturated soil conditions.[6]

Nevada relies on the U.S. Army Corps of Engineers' 1987 *Wetland Delineation Manual* for delineation of regulated wetlands.[7]

Organization of state agencies

Nevada regulates, monitors, and restores wetlands through a variety of agencies and offices, including the Nevada Department of Conservation and Natural Resources (NDCNR) and the Nevada Department of Wildlife (NDOW). While the state's only FTE dedicated to wetland-related activities is housed in the NNHP, several other agencies have staff that spend a portion of their time working on issues related to wetlands. Much of the wetland activities in Nevada are funded through federal grant programs.

Nevada Department of Conservation and Natural Resources. The Nevada Department of Conservation and Natural Resources oversees several divisions and programs that have jurisdiction over wetlands. These include the Division of Environmental Protection (DEP), the Natural Heritage Program (NNHP), and the Division of Water Resources (DWR).

NDCNR-DEP, Bureau of Water Quality Planning oversees development and implementation of water quality standards, §401 water quality certification, monitoring, and wetlands education, among other activities.[8] NDCNR-DEP, Bureau of Water Pollution Control issues discharge permits, enforces the state's water pollution control laws and regulations, and provides technical and financial assistance to dischargers.[9]

NNHP maintains an inventory and databases on the locations, biology, conservation, and management status of all threatened, endangered, sensitive, and at-risk species, biological communities, and noxious weed infestations in the state. NNHP also supplies information and technical services to meet diverse conservation, planning, development, land management, and research needs.[10]

NDCNR-DWR conserves, protects, manages, and enhances water resources for the state through the appropriation and reallocation of the public waters. In addition, DWR is responsible for quantifying existing water rights, monitoring water use, distributing water, and other tasks related to water allocation.[11]

6. *Id*. 244.388(3)(e).
7. Personal communication with Glen Gentry, Bureau of Water Quality Planning, Monitoring Branch Supervisor (July 12, 2007). *See* U.S. Army Corps of Engineers, Wetlands Research Program Technical Report Y-87-1, Corps of Engineers Wetlands Delineation Manual (1987), *available at* http://el.erdc.usace.army.mil/elpubs/pdf/wlman87.pdf.
8. Nevada Division of Environmental Protection Bureau of Water Pollution Control, *at* http://ndep.nv.gov/bwpc/bwpc01.htm (last visited Sept. 19, 2007).
9. *Id*.
10. *See* Nevada Department of Conservation and Natural Resources Natural Heritage Program, http://heritage.nv.gov/index.htm (last visited Sept. 19, 2007).
11. *See* Nevada Department of Conservation and Natural Resources Division of Water Resources, http://water.nv.gov/ (last visited Sept. 19, 2007).

Nevada Department of Wildlife. NDOW is charged with the preservation, protection, management, and restoration of wildlife and its habitat, which often includes wetlands. The department prioritizes wetland resources for acquisition and management and preserves and restores wetland habitat throughout the state.

NDOW acquires or leases land and water for the establishment of Wildlife Management Areas (WMAs), which are managed to protect habitats for game fish, waterfowl, and furbearing mammals, as well as protected and at-risk species. Ten of the state's twelve WMAs contain aquatic wetland habitats totaling almost 60,000 acres. Wetland types mainly entail valley bottom riparian and marsh habitats, some with maintained diversions and reservoirs. The wetland policy plan applicable to WMAs recommends development of wetland management plans for each. Nevada Conservation Bonds have provided substantial funding to acquire wetland areas and water rights for WMAs.[12]

NDOW also administers the Habitat Proliferation Permit program for dredging in any river, stream, or lake. As part of the permitting process, biologists review the proposed operation and ensure that activities are not deleterious to fish or aquatic life.[13]

§401 certification

Nevada regulates wetlands primarily through §401 certification under the Clean Water Act.[14] The state makes an estimated 70-100 certifications decisions annually. An estimated 90 percent of the applications are approved, less than 5 percent are waived, and less than 5 percent are denied.[15] Decisions are based on quantitative and qualitative methodology, as well as the state's anti-degradation rule.[16] The certification process is described in the state's water quality provisions.[17]

Nationwide permits

NDCNR-DEP certifies, waives, and denies certification of nationwide permits (NWPs) in order to protect beneficial uses of state waters.[18] Certification with notification has been granted for several NWPs.[19] Permittees must notify the NDCNR-DEP, Bureau of Water Quality Planning at least 15 days prior to commencing work on the proposed activity.[20] Nevada has waived certification for several NWPs: oil and gas structures on the outer continental shelf (NWP #8); surface coal mining operations (NWP #21); Indian Tribe administered §404 pro-

12. Nevada Natural Heritage Program, Nevada Wetlands Priority Conservation Plan Technical Review Draft 5-21 (Ed Skudlarek ed.) (2006).
13. *Id.,* 5-22.
14. Bureau of Water Quality Planning, *401 Water Quality Certification*, at http://ndep.nv.gov/bwqp/401cert.htm (last visited Sept. 19, 2007).
15. Gentry, *supra* note 7.
16. Bureau of Water Quality Planning, *supra* note 14.
17. Nev. Rev. Stat. 445A.620.
18. Nevada Division of Environmental Protection - Bureau of Water Quality, *State of Nevada 401 Water Quality Certification Status for Current Nationwide Permits*, *at* http://ndep.nv.gov/bwqp/401cert_2.htm (last visited Sept. 19, 2007).
19. Certification with notification has been granted for: aids to navigation (NWP #1); fish and wildlife harvesting, enhancement, attraction devices and activities (NWP #4); scientific measurement devices (NWP #5); survey activities (NWP #6); structures in fleeting and anchorage areas (NWP #9); mooring buoys (NWP #10); temporary recreational structures (NWP #11); oil spill cleanup (NWP #20); removal of vessels (NWP #22); modifications of existing marinas (NWP #28); moist soil management for wildlife (NWP #30); completed enforcement actions (NWP #32); and cleanup of hazardous and toxic waste (NWP #38). *Id.*
20. *See Id.*

grams (NWP 24); cranberry production activities (NWP #34); existing commercial shellfish aquaculture (NWP #48); coal mining activities (NWP #49); and underground coal mining activities (NWP #50).[21] Finally, certification was denied for those NWPs most applicable in Nevada in order to allow the state to provide a close review on an individual permit basis.[22,23]

Mitigation

Nevada law authorizes county commissions to establish mitigation banks. The banks must use federal standards and are authorized to cooperate with nonprofits or public agencies.[24] There are several operational wetland mitigation banks in Nevada, including one associated with the Nevada Wash (described below) and another run by the Nevada Department of Transportation.

Compliance and enforcement

Nevada requires permits for discharges pollutants into waters of the state.[25] To maintain the quality of the state's waters, NDCNR-DEP, Bureau of Water Pollution Control issues permits for discharges; enforces permit conditions; and enforces law that prohibits unauthorized discharges.[26] Permits can be revoked, modified or suspended in whole or in part during its term for cause.[27] For enforcement purposes the Bureau can enter private property to inspect for possible violations.[28] They also may issue compliance orders, commence a civil action, or request that the Attorney General initiate criminal proceedings against a person found to be violating the Nevada Water Pollution Control Law.[29]

Violators to the state's water quality provisions are liable for civil penalties of up to $25,000 for each day of the violation.[30] Damages may include compensation for any loss or destruction of wildlife, fish or aquatic life.[31] Criminally negligent violators are guilty of gross misdemeanors and are punishable by a fine of up to

21. *Water Quality Certification Status, supra* note 18.

22. Gentry, *supra* note 7.

23. Nevada requires individual permits for structures in artificial canals (NWP #2); maintenance (NWP #3); outfall structures and associated intake structures (NWP #3); utility line activities (NWP #12); bank stabilization (NWP #13); linear transportation projects (NWP #14); U.S. Coast Guard approved bridges (NWP #15); returned water from upland contained disposal areas (NWP #16); hydropower projects (NWP #17); minor discharges (NWP #18); minor dredging (NWP #19); approved categorical exclusions (NWP #22); structure discharges (NWP #23); aquatic habitat establishment, enhancement, and restoration activities (NWP #27); residential developments (NWP #29); maintenance of existing flood control facilities (NWP #31); temporary construction access and dewatering (NWP #33); maintenance dredging of existing basins (NWP #35); boat ramps (NWP #36); emergency watershed protection and rehabilitation (NWP #37); commercial and institutional developments (NWP #39); agricultural activities (NWP #40); reshaping existing drainage ditches (NWP #41); recreational facilities (NWP #42); stormwater management facilities (NWP #43); mining activities (NWP #44); repair of uplands damaged by discrete events (NWP #45); discharges in ditches (NWP #46); and pipeline safety program designated time sensitive inspections and repairs (NWP #47). *Water Quality Certification Status, supra* note 18.

24. Nev. Rev. Stat. 244.388.

25. *Id*. 445A.775, 445A.780.

26. Nevada Division of Environmental Protection- Bureau of Water Pollution Control, *More About Water Pollution Control, at* http://ndep.nv.gov/bwpc/more.htm (last visited Sept. 19, 2007).

27. Nev. Rev. Stat. 445A.600.

28. *Id*. 445A.655.

29. *Id*. 445A.675.

30. *Id*. 445A.700.

31. *Id*. 445A.700(b).

$25,000 for each day of the violation or by imprisonment in the county jail for not more than one year, or by both fine and imprisonment.[32]

As part of NDOW's Habitat Proliferation Permit program, the Department may invoke enforcement provisions that make the deposit of substances deleterious to fish a misdemeanor.[33]

III. Water Quality Standards

Nevada's surface water quality standards apply to wetlands because wetlands are included in the definition of waters of the state. Standards are narrative and biological. The state's anti-degradation rule also applies to wetlands. Open water designated uses that relate to wetlands include wildlife propagation and water quality.[34]

IV. Monitoring and Assessment

Nevada monitors wetlands as part of the state's surface water monitoring program that tracks chemical and biological criteria. The surface water quality monitoring program is funded by the U.S. Environmental Protection Agency (EPA).[35]

NNHP also is developing the Nevada Habitat Conservation Plan for Springs of Biodiversity Significance ("Springs HCP") in collaboration with The Nature Conservancy, Desert Research Institute, and NDOW. This statewide information system will contain wetland geographic and attribute data (e.g., physical, biological, ecological community, hydrological, and land use features, as well as conservation/management status). Specific project objectives include: developing a database of locations, site characteristics, ecological attributes, and occurrences of rare and at-risk species or communities; developing a mechanism for making the data available to the public; developing a set of key attributes for measuring the health of spring ecosystems; ranking threats to the springs; and providing public land managers and private landowners with strategies for managing springs. The total project cost is $325,120: $275,120 from the Question One Nevada Conservation Bond Initiative (see also *V. Restoration and Partnerships*, below) and $50,000 from EPA.[36] NNHP currently has two years of funding from EPA for a wetland ecologist. The project is intended to be long-term and continuous. Data will be obtained from a survey of 200 spring wetlands where rare or at-risk species have been found and from other knowledgeable biologists and ecologists.[37]

32. *Id*. 445A.705.
33. Nevada Natural Heritage Program, *supra* note 12.
34. Nev. Admin. Code § 445A.124.
35. Nevada Division of Environmental Protection- Bureau of Water Quality Planning, *Water Quality Monitoring Branch, at* http://www.ndep.nv.gov/bwqp/monitor.htm (last visited Sept. 19, 2007).
36. Nevada Natural Heritage Program*, supra* note 4.
37. Personal Communication with Ed Skudlarek, Wetland Planner, Nev. Natural Heritage Program (July 17, 2007).

The Desert Research Institute also maintains and occasionally updates a spring survey database for approximately 1,400 springs. Reconnaissance-scale field surveys were conducted during the 1990s, providing baseline data that will be used to assess changes in biological, ecological, disturbance, use and management characteristics.[38]

V. Restoration and Partnerships

A variety of wetland conservation and improvement projects are underway throughout the state. For example, wetlands are included in broader environmental restoration efforts undertaken by the conservation districts.[39]

Another program, the $200 million Question One Nevada Conservation Bond Initiative, authorizes the state to issue bonds for projects to protect and preserve natural resources in Nevada, including wetlands. NDOW is working with the public to determine how to best use its $27.5 million portion of those bonds.[40] Through the initiative, NDOW works to create partnerships and leverage funds such as Fish and Wildlife Restoration Federal Aid monies, state motorboat fuel taxes, donations, and volunteer services. Funds are used to purchase land or acquire interest in real or personal property for the enhancement, protection, and management of wildlife and habitat, as well as some related recreational opportunities. Allocations also may be used for the development and renovation of facilities or the improvement of existing habitats for fish and wildlife. Acquisition projects are selected based on NDOW plans, plans of partner organizations, and specific criteria, including potential for wetland protection and development.[41] As of 2007, nine pending or completed enhancement projects, and seven pending or completed acquisitions, have been selected for their wetland value.[42]

In 1998, NDOW completed an EPA-funded project to develop a Wetland Conservation Plan for the state WMAs.[43] The plan is an overall strategy that is intended to direct implementation plans on more specific topics.[44] For example, the Springs HCP, described above, was developed under this initiative. In addition, the State Board of Wildlife Commissioners adopted policies addressing the plan's concern regarding increased demands for limited water resources and the importance of strategies to keep wetlands and other water-related habitats viable and functioning.[45]

38. Nevada Natural Heritage Program, *supra* note 12.
39. Nev. Rev. Stat. 458.355.
40. Nevada Department of Wildlife, *Conservation – Nevada Conservation Bond History*, *at* http://www.ndow.org/wild/conservation/q1/history.shtm (last visited Sept. 19, 2007).
41. *See* Nevada Department of Wildlife, *Conservation – Nevada Conservation Bond Criteria, at* http://www.ndow.org/wild/conservation/q1/criteria.shtm (last visited Sept. 19, 2007).
42. *See* Nevada Department of Wildlife, *2002 Nevada Conservation Bond Project Summaries, at* http://www.ndow.org/wild/conservation/q1/project_sum.shtm#acq (last visited Sept. 19, 2007).
43. Personal communication with Larry Neel, Nev. Dep't of Wildlife Action Plan, Coordinator and Nongame Biologist (Aug. 20, 2007)
44. *Id.*
45. Nevada Natural Heritage Program, *supra* note 12.

In 2006, the Nevada Wildlife Action Plan was completed, providing a comprehensive wildlife conservation strategy to both examine the health of wildlife and prescribe actions to conserve wildlife and vital habitat, before they become more rare and costly to protect.[46] The plan identifies habitat types that will be the focus of implementation plans, including wetlands. For example, the plan identifies springs and springbrooks as key habitat for maintaining wildlife diversity and describes actions aimed at preventing the loss of spring habitats and restoring their natural functions and ecological communities.[47] Ultimately, each identified habitat type will be the focus of an application plan that will contain a prioritization of actions.[48]

The state also participates on the Intermountain West Joint Venture (IWJV), a public-private partnership dedicated to the conservation of bird habitat in selected portions of the 11 western states stretching from Canada to Mexico.[49] The IWJV implements the North American Waterfowl Conservation Act, which supports projects to protect and restore wetlands. NDOW seeks funding to implement Wetland Conservation Plan priorities through the IWJV.[50] The Nevada steering committee, coordinated by the U.S. Fish and Wildlife Service, includes representatives from federal and state agencies and conservation organizations such as: Bureau of Land Management, Bureau of Reclamation, NDOW, Nevada Highway Patrol, USDA Forest Service, Audubon Society, local waterfowl associations, and Ducks Unlimited.[51] The steering committee meets several times each year to rank projects to propose to the larger IWJV.[52]

Finally, Nevada coordinates with the USDA Natural Resources Conservation Service (NCRS), city and regional authorities, utilities, and citizens' groups on a large-scale wetlands restoration project called the Las Vegas Wash.[53] The Wash is a restored wetland that filters stormwater runoff, reclaimed water, and urban runoff and provide recreational and educational opportunities within Las Vegas.[54] Citizen organizations, local utilities, and federal and state agencies are cooperating to implement a comprehensive plan that focuses on erosion control, environmental monitoring, and wetland construction. Primary benefits include improvement of: Lake Mead water quality, outdoor recreation opportunities for Las Vegas Valley residents and visitors, and habitats for Mojave Desert wildlife.[55]

46. Nevada Wildlife Action Plan Summary, *available at* http://www.teaming.com/summary_reports/Nevada.pdf (last visited Sept. 19, 2007).
47. *See* Nevada Department of Wildlife, *Conservation Plans – Nevada Wildlife Action Plan, at* http://www.ndow.org/wild/conservation/cwcs/index.shtm (last visited Sept. 19, 2007).
48. Neel, *supra* note 43.
49. *See* Intermountain West Joint Venture, http://www.iwjv.org/about.htm (last visited Sept. 19, 2007).
50. *Id.*
51. *Id*.
52. *Id.*
53. Skudlarek, *supra* note 37.
54. Las Vegas Wash Coordination Committee, *What is the Wash?, at* http://www.lvwash.org/wash/main_thewash.html (last visited Sept. 19, 2007).
55. State of Nevada, *supra* note 1.

VI. Education and Outreach

NDCNR-DEP, Bureau of Water Quality Planning has conducted Project WET (Water Education for Teachers) since 2001. Project WET is an interdisciplinary water education program designed to supplement K-12 curriculum by integrating water education into any subject in the classroom. In Nevada, workshops are available throughout the state for educators. The curriculum includes an introduction to water in Nevada, highlighting surface water and groundwater resources, basic hydrology, water uses, Nevada water law, water issues in the state, and pollution prevention.[56] Workshop and training materials also include *Wow! The Wonders of Wetlands*, an instructional guide for teachers developed by Environmental Concern, Inc., and *Explore Nevada's Amazing Wetlands*, a curriculum developed by the University of Nevada Cooperative Extension.[57]

VII. Coordination among State and Federal Agencies

As described above, Nevada collaborates with state and federal agencies on a variety of restoration projects, as well as mapping and monitoring and assessment.

NNHP is preparing the Nevada Wetland Priority Conservation Plan in association with the Nevada Division of State Parks and NDOW. The plan is financed through a planning grant from the National Park Service under the provisions of the Land and Water Conservation Fund Act of 1965, as well as an EPA Wetland Program Development Grant.[58] The plan, which replaces a 1988 wetlands plan, includes: a description of the conservation status of Nevada's wetlands; data on wetland quality (e.g., ecosystem functions and socioeconomic services provided by the state's wetlands); information on threats to Nevada wetlands; plans and priorities for the conservation of wetlands in Nevada; and management strategies for the state's wetland resources.

VIII. Acronyms and Abbreviations

DEP – Division of Environmental Protection

DWR – Division of Water Resources

56. Nevada Division of Environmental Protection- Bureau of Water Quality Planning, *Project Wet*, *available at* http://ndep.nv.gov/bwqp/wet01.htm (last visited Sept. 19, 2007).

57. The Cooperative Extension has been providing trainings for K-12 teachers since 2005. While the curriculum targets middle schoolers, it has broader applicability. It is written for use by teachers and includes nine lessons, some in the classroom and some for use in the field. The curriculum includes sample data for teachers who are unable to take the students to the field. The curriculum was written by Susan Donaldson, Associate Professor and Water Quality Education Specialist, University of Nevada Cooperative Extension, Melody Hefner, NEMO Nevada Program Assistant, and Mae Gustin, Associate Professor Department of Environmental and Resource Sciences,
University of Nevada. Personal Communication with Susan Donaldson, Associate Professor and Water Quality Educ. Specialist, Univ. of Nev. Coop. Extension (July 18, 2007).

58. Nevada Natural Heritage Program, *supra* note 12.

EPA – U.S. Environmental Protection Agency

IWJV – Intermountain West Joint Venture

NDCNR – Nevada Department of Conservation and Natural Resources

NDOW – Nevada Department of Wildlife

NNHP – Nevada Natural Heritage Program

NRCS – USDA Natural Resources Conservation Service

NWP – Nationwide Permit

Springs HCP – Nevada Habitat Conservation Plan for Springs of Biodiversity Significance

USDA – U.S. Department of Agriculture

(Project) WET – Water Education for Teachers

WMA – Wildlife Management Area

New Hampshire

I. Overview

New Hampshire has lost approximately 20,000 acres, or 9 percent, of its original 220,000 acres of historic wetlands.[1] The state's diverse wetlands include tidal marshes, mud flats, freshwater swamps, rivers, lakes, bogs, and wet meadows.[2] New Hampshire began regulating tidal wetlands under the Fill and Dredge in Wetlands Act in 1967.[3] The New Hampshire Department of Environmental Services (NHDES), Water Division, Wetlands Bureau administers the state's wetland regulatory program.

II. Regulatory Programs

Wetland definitions and delineation

New Hampshire's Water Pollution and Waste Disposal Act defines "surface waters of the state" as "perennial and seasonal streams, lakes, ponds, and tidal waters within the jurisdiction of the state, including all streams, lakes, or ponds bordering on the state, marshes, water courses, and other bodies of water, natural or artificial."[4] Regulations further state that "the term includes wetlands and 'waters of the United States'" as defined under the Clean Water Act.[5] Wetlands are defined in the state's Fill and Dredge in Wetlands Act.[6]

New Hampshire regulations prescribe wetland delineation based on hydrophytic vegetation, hydric soils, and wetlands hydrology, in accordance with the U.S. Army Corps of Engineers' 1987 *Wetland Delineation Manual*.[7]

Wetland-related laws and regulations

New Hampshire regulates impacts to wetlands primarily under the Fill and Dredge in Wetlands Act.[8] In addition, the Comprehensive Shoreland Protection Act regulates indirect impacts to certain uplands adjacent to fourth-order streams and public waters.[9]

1. *See* Association of State Wetland Managers, *State Wetland Programs: New Hampshire*, *at* http://aswm.org/swp/newhampshire9.htm (last visited Sept. 20, 2007).
2. New Hampshire Department of Environmental Services, The Wetlands Resource, *at* http://www.des.state.nh.us/factsheets/wetlands/wb-7.htm (last visited Sept. 20, 2007).
3. *Id*.
4. N.H. Rev. Stat. Ann. § 485A:2.
5. The term does not include nontidal drainage ditches which were designed, built and used to convey wastewater or stormwater. The term also does not include constructed wetlands, cooling ponds, lagoons, and other treatment systems designed and built solely as wastewater or stormwater treatment systems, provided such facilities were not initially constructed in surface waters of the state or were not constructed to serve other mitigation purposes. N.H. Code Admin. R. Ann. [Env-ws] 401.03(t).
6. N. H. Rev. Stat. Ann. §482-A:2.
7. N.H. Code Admin. R. Ann. [Env-ws] 301.01.
8. N.H. Rev. Stat. Ann. § 482.
9. *Id*. § 483-B:6.

Under the New Hampshire Endangered Species Act, the Fish and Game Department (NHFGD) may comment on wetland permits to ensure that impacts to endangered and threatened species have been considered.[10] The Native Plant Protection Act provides a similar opportunity to the New Hampshire Department of Resources and Economic Development (NHDRED), Natural Heritage Bureau.[11]

Fill and Dredge in Wetlands Act. Under the Fill and Dredge in Wetlands Act, NHDES requires a permit for dredge, fill, or construction in wetlands or other waters of the state.[12] The law also protects sand dunes and upland tidal buffer zones (100 feet above the highest observable tideline).[13] Although the law was adopted in 1967 to protect tidal wetlands and waters, it was extended in 1969 to regulate activities in freshwater bodies. There is no minimum threshold of size for wetlands or wetland impacts under the Act; NHDES has jurisdiction over tidal wetlands, nontidal wetlands, and tidal buffer zones.[14]

In addition, municipalities may designate wetlands as "prime wetlands,"[15] which receive higher level protection under the Act. NHDES also has jurisdiction over areas within 100-feet of prime wetlands.[16,17]

Comprehensive Shoreland Protection Act. Under the Comprehensive Shoreland Protection Act, also administered by NHDES, projects and activities located within regulated shoreland areas are subject to Minimum Shoreland Protection Standards. Protected shorelands include all land within 250-feet of waters listed in the state's *Official List of Public Waters*, as well as fourth-order and higher streams (except the Saco and Pemigewasset Rivers).[18] In 2007, the state legislature authorized the development of a permitting program for construction, excavation, and filling within protected shorelands.[19]

Organization of state agencies

New Hampshire Department of Environmental Services. The New Hampshire Department of Environmental Services, Water Division, Wetlands Bureau administers the state's wetland regulatory program. The Bureau employs approximately 33 full time equivalents (FTEs) that work on permitting, compliance and enforcement, and outreach related to wetlands. Funding for the program, approximately $1.8 million annually, primarily comes from state general appropriations, permit fees, and enforcement fines. The Bureau also receives

10. *Id*. § 212-A.
11. *Id*. § 217-A:9-X.
12. *Id*. § 482-A:3.
13. *Id*. § 482-A:3-VI, § 482-A:4, I. Specifically, the act protects: "waters and adjacent areas ... wherever the tide ebbs and flows, ... all lands submerged or flowed by mean high tide as locally determined, any sand dune or vegetation thereon in the state of New Hampshire, and, ... those areas within 100 feet of the highest observable tide line which border on tidal waters, such as, but not limited to, banks, upland areas, bogs, salt marsh, swamps, meadows, flats or other lowlands subject to tidal action." *Id*.
14. Personal Communication with Sandy Crystall, N.H. Dep't of Envtl. Services (Feb. 5, 2007).
15. N.H. Code Admin. R. Ann. [env-wt] 701.02.
16. N.H. Rev. Stat. Ann. § 482-A:11-VI.
17. As a result of changes made to the wetlands law in New Hampshire's 2007 legislative session, the 100-foot area adjacent to municipally designated prime wetlands, which has been considered jurisdictional by the agency since 1979, now has been legislatively defined (effective August 24, 2007). H.B. 252-FN, 2007 Sess. (N.H.).
18. N.H. Rev. Stat. Ann. § 483-B:4.
19. H.B. 663-FN-A, 2007 Sess (N.H.), 0857.

a small amount of funding from federal grants (e.g., one staff member's position is fully funded by the U.S. Environmental Protection Agency). The Bureau maintains a main office in Concord and a regional office in Portsmouth.[20]

New Hampshire Department of Fish and Game. NHFGD participates in the regulatory review process and implements the state wildlife action plan,[21] which includes measures to conserve and protect wetland habitat. A number of staff members work on wetland-related activities (approximately two to three FTEs combined), including: commenting on wetland permits, implementing the state wildlife action plan, and wetland restoration on state, municipal, and private lands. These activities are funded by state wildlife grants provided by the federal government, proceeds from the sale of wildlife licenses, and matching funds provided by partner agencies. NHFGD is headquartered in Concord and maintains regional offices in Durham, Keene, Lancaster, and New Hampton.[22]

Wetland permits and §401 certification

The Fill and Dredge in Wetlands Act[23] and the Comprehensive Shoreland Protection Act [24] are New Hampshire's primary forms of state level wetland regulation. However, NHDES also occasionally relies on §401 certification to protect wetlands by approving, conditioning, or denying federal §404 permits.[25]

Wetland permits. The state's wetland permit program, authorized under the Fill and Dredge in Wetlands Act,[26] receives approximately 2,600 applications per year. Program staff members closely review applications to ensure that projects meet the current rules. During the review process, which is subject to statutory timeframes, the scope of projects may be reduced or changed in order to meet approval standards. As a result, very few applications are denied outright, although many may be modified. Approximately 95 percent are approved, and 5 percent are denied. Denials include: withdrawn applications after NHDES has prescribed major modifications; applications that do not incorporate modifications recommended by NHDES after review; and proposed development that is unsuitable or exceeds specific standards.[27] Approximately 100 acres of fill are permitted in a given year.[28]

The greatest consideration for NHDES staff that are reviewing permit applications is avoidance and minimization of impacts (requirements are codified in state regulations).[29] Applicants are required to have a delin-

20. Crystall, *supra* note 14. Personal Communication with Sandy Crystall, N.H. Dep't of Envtl. Services (Mar. 16, 2007).
21. For more information on the state's wildlife action plan, *see* New Hampshire Fish and Game Department, *New Hampshire Wildlife Action Plan, at* http://www.wildlife.state.nh.us/Wildlife/wildlife_plan.htm (last visited Sept. 21, 2007).
22. Personal Communication with Michael Marchand, N.H. Dep't of Fish and Game (Mar. 19, 2007); Personal Communication with Ed Robinson, N.H. Dep't of Fish and Game (Apr. 17, 2007).
23. N.H. Rev. Stat. Ann. § 482.
24. *Id*. § 483-B:6.
25. N.H. Code Admin. R. Ann. [env-ws] 451-455; Personal Communication with Paul Piszczek, N.H. Dep't of Envtl. Services (Feb. 13, 2007).
26. N.H. Rev. Stat. Ann. § 482.
27. Personal Communication with Craig Rennie, N.H. Dep't of Envtl. Services (Mar. 22, 2007).
28. Personal Communication with Mark Kern, U.S. Envtl. Prot'n Agency (Oct. 2007).
29. N.H. Code Admin. R. Ann. [Env-wt] 302.03(a).

eation conducted by a state-certified wetland scientist. Project applicants may also submit a wetland function and value assessment with their applications.[30] Permit reviewers may also require a site inspection.[31]

NHFGD also comments during the permitting process. As authorized by New Hampshire's Endangered Species Act, NHFGD staff review all wetland permits that include areas with rare species.[32] NHFGD then suggests how applicants might reduce or avoid impacts to threatened or endangered species.[33]

NHDES Wetlands Bureau, NHFGD Non-Game Program, and NHDRED Natural Heritage Bureau have worked collaboratively to develop a web-based tool through which permit applicants can enter information about a proposed project (e.g., type of project and geographic boundaries) and then, by comparing rare species data from the Natural Heritage Bureau, receive information about potential impacts of the project to rare species and habitat and options for potential mitigation. Permit applicants are required to use the online tool or request the information in hard copy before an application may be submitted. Revealing concerns about impacts to threatened species and habitat at the front end of the permit application process allows applicants to design projects accordingly.[34]

Alteration of Terrain Permit. In addition to the wetland permit, an Alteration of Terrain Permit ("site-specific permit") is required for projects that disturb over 100,000 square feet of land or over 50,000 square feet of land within shorelands protected under the Comprehensive Shoreland Protection Act.[35] This process ensures that, for larger projects, applicants have designed storm water management controls and erosion controls appropriate for the scale of the impact. The state receives an estimated 380 site-specific permit applications per year.[36]

§401 certification. NHDES's Watershed Management Bureau is responsible for issuing §401 certifications. The Corps determines whether a proposed project qualifies for certification under the statewide programmatic general permit (SPGP) or if it requires individual certification from NHDES. If a project qualifies under the SPGP, the Watershed Management Bureau determines whether additional conditions are required (e.g., hydrological modifications, large subdivisions, or impacts to impaired water bodies).[37]

Section 401 certification is required for every Corps §404 permit, as well as very large projects.[38] The Watershed Management Bureau typically issues less than ten in a given year. In 2006, the Bureau issued six

30. *Id*. 302.04(a).
31. Rennie, *supra* note 27; Personal Communication with Sandy Crystall, N.H. Dep't of Envtl. Services (Aug. 17, 2007).
32. N.H. Rev. Stat. Ann. § 212-A.
33. Marchand, *supra* note 22.
34. Personal Communication with Lori Sommer, N.H. Dep't of Envtl. Services (Feb. 16, 2007); Personal Communication with Mary Ann Tilton, N.H. Dep't of Envtl. Services (Apr. 17, 2007); Crystall, *supra* note 31.
35. N.H. Rev. Stat. Ann. § 483-B:6.
36. Rennie, *supra* note 27.
37. Piszczek, *supra* note 25.
38. The state is also working on a program under which Bureau staff would examine water quality concerns for all projects located within one mile of impaired waters. Kern, *supra* note 28.

certifications. Bureau staff examine water quality concerns as best they can for the majority of the remaining projects (over 2,000).[39]

Because wetland permits often indirectly address water quality concerns, §401 certification for wetland impacts is somewhat streamlined. Applicants for §401 certification typically have already obtained a wetland permit; however, in some cases, project timelines require the two permitting processes to take place concurrently. In these cases, the Wetlands Bureau and Watershed Management Bureau coordinate closely.[40]

Section 401 certification applications are typically approved, but almost always include conditions. The Watershed Management Bureau relies on NHDES' consolidated assessment and listing methodology (both quantitative and qualitative) to determine whether projects comply with state water quality standards. The Bureau also looks closely at runoff for projects that impact over 100,000 square feet of land through their site-specific program.[41]

Statewide programmatic general permit

New Hampshire operates under a statewide programmatic general permit (SPGP) (thus, nationwide permits do not apply in the state).[42] NHDES works with the Corps when the SPGP is due for re-issue to address any changes that should be made.[43] The most recent SPGP was issued on June 28, 2007.[44]

Mitigation

New Hampshire's wetland permit program requires applicants to demonstrate that potential impacts have been avoided to the maximum extent practicable and that any unavoidable impacts have been minimized.[45,46]

For remaining impacts, state regulations guide compensatory mitigation.[47] Compensatory mitigation requirements are based on the size of the impact and project classification.[48] Impacts greater than 10,000 square feet require mitigation.[49] Mitigation proposals must include a functional assessment using the Corps' methodology and data on the surrounding area (e.g., land use, soils, habitat, and endangered species).[50]

39. Kern, *supra* note 28; Piszczek, *supra* note 25.
40. Piszczek, *supra* note 25.
41. Kern, *supra* note 28; Piszczek, *supra* note 25.
42. U.S. Army Corps of Engineers, New England District, Issuance of the Department of the Army New Hampshire Programmatic General Permit (June 2, 2007), *available at* http://www.nae.usace.army.mil/reg/NHPGPpermit.PDF.
43. Crystall, *supra* note 14.
44. U.S. Army Corps of Engineers, *Issuance of the Department of the Army New Hampshire Programmatic General Permit*, *available at* http://www.nae.usace.army.mil/reg/NH%20PGP%20-%20Final%20PN%20&%20PGP%20for%20Website.pdf (last visited Sept. 21, 2007).
45. N.H. Code Admin. R. Ann. [Envt-wt] 302.03(a).
46. *See* New Hampshire Department of Environmental Services, Guidebook for Wetland Permits (2007), *available at* http://www.des.state.nh.us/wetlands/Guidebook/.
47. N.H. Code Admin. R. Ann. [Envt-wt] 800, 703.02; Criteria and procedures for required compensatory mitigation plans can be found in Env-wt 801.01; Compensatory mitigation is required by N.H. Code Admin. R. Ann. [Envt-wt] 302.03.
48. Crystall, *supra* note 14.
49. N.H. Code Admin. R. Ann. [Envt-wt] 302.03.
50. *Id*. 803.02.

Mitigation options include restoration, preservation, creation, and, if no other option is feasible, payment to the state's newly created in-lieu fee (ILF) program. Preservation is the most commonly selected option.[51]

NHDES uses standard monitoring protocols and performance standards from the Corps to evaluate mitigation construction and performance. The agency relies on monitoring reports, field inspections, vegetative success rates, and an examination of invasive species control efforts to assess mitigation sites.[52]

NHDES was granted authority to create the state's ILF program in 2006.[53] Interim rules for the program became effective on November 18, 2006; new rules became effective on June 20, 2007.[54] The program addresses both wetland and stream mitigation. NHDES collaborates with state agencies (NHFGD, NHDRED, and the New Hampshire Office of Energy and Planning) and non-governmental organization (The Nature Conservancy, Society for the Protection of New Hampshire Forests, New Hampshire Association of Natural Resource Scientists, and New Hampshire Association of Conservation Commissions) to administer this program. Eligible applicants contribute to the watershed-based Aquatic Resource Mitigation Fund. Third parties (often state agencies, non-governmental organizations, or municipalities) may apply for funds to complete projects that replace or protect wetland resource values (restoration, creation, and protection). All collaborating organizations and agencies review applications and approve fund disbursals.[55] Proposed project locations are considered in this review, using NHFGD's maps of high quality habitat as published in the state wildlife action plan.[56]

New Hampshire currently has no mitigation banks. However, NHDES, the Corps, and the U.S. Environmental Protection Agency (EPA) do encourage a watershed or landscape approach to mitigation site selection and often unofficially either pool mitigation resources or locate them next to other protected lands. (Water quality-related efforts are often located on-site; however, habitat-related efforts may be planned off-site after taking into account habitat connectivity, habitat diversity, and other ecological concerns.) The agencies also often require an experienced easement holder to protect the site.[57]

Compliance and enforcement

NHDES Wetlands Bureau administers a compliance and enforcement program with respect to wetlands and other jurisdictional areas protected under the Fill and Dredge of Wetlands Act. The program receives an estimated 450 new complaints each year that are investigated by compliance staff. Minimal violations may be resolved informally through restoration requests, notices of past violation, and letters of deficiency. In cases

51. In the last 20 years, New Hampshire has seen the proliferation of small, geographically isolated wetland creation and preservation projects, often located next to roads and parking lots with little potential for long-term success. In addition, state stakeholders (watershed groups, government agencies, etc.) have identified few valuable restoration options. Thus, regulators hold the view that preservation in key locations may be the most ecologically meaningful choice available. Kern, *supra* note 28.

52. Sommer, *supra* note 34.

53. N.H. Rev. Stat. Ann. § 482-A:30, § 482-A:28.

54. N.H. Code Admin. R. Ann. [Envt-Wt] 801.03, 803.02, 803.07, 803.8.

55. Crystall, *supra* note 14; Sommer, *supra* note 34; Rennie, *supra* note 27.

56. Marchand, *supra* note 22.

57. Crystall, *supra* note 14; Personal Communication with Lori Sommer, N.H. Dep't of Envtl. Services (June 29, 2007); Kern, *supra* note 28.

where the impact is exceptionally large or environmentally damaging, the violator has a prior enforcement history, or the violator is unwilling to work with the program to correct deficiencies, more formal action may be taken, such as Administrative Orders, referral to the Department of Justice, and/or imposition of administrative or civil penalties. Remedial actions, including restoration, frequently require that the violator hire a state-certified wetland scientist or a state-certified erosion control specialist to develop and submit a plan to bring the site into compliance.[58]

In 2006, the program issued 29 administrative orders, 177 letters of deficiency, 89 informal restoration requests, and 14 notices of past violations, as authorized by department regulations.[59,60] One-hundred and seventy five cases were concluded ("restored or complied") in 2006, but most of these cases were initiated in prior years.[61]

State law and rules authorize administrative fines in amounts up to $2,000 per violation per day.[62] Administrative fines are pursued and negotiated within the department. NHDES issued nine notices of proposed administrative fines in 2006.[63] State law also allows the program to seek civil penalties of up to $10,000 per day of violation.[64]

Cases in which civil or criminal penalties may be levied are referred to the Department of Justice. In 2006, six cases were referred to the Department of Justice, which in turn filed injunctions in three of these cases and sought civil penalties in five. The typical amount of penalty assessed varies by case. Five civil enforcement cases were concluded that year, some of which had been initiated in previous years. One case was pursued criminally by the Department of Justice.[65]

Tracking systems

NHDES maintains a database of permitting, enforcement, and mitigation information. Much of the permit data is accessible to the public online, in the form of a one-stop data query that allows users to look up submitted permit applications and status of reviews by town, file number, assigned staff member, or application type. Additional data is managed and used, but not available online, such as: acreage of mitigation (including creation, restoration, and protection), enforcement information (including identities of violators and complainants), characteristics of a site (including its status in the Natural Heritage Program or designation as a prime wetland, if applicable), and overlapping statutes applicable to the site.[66]

58. Personal Communication with Tracey Boisvert, N.H. Dep't of Envtl. Services (June 6, 2007).
59. Personal Communication with Tracey Boisvert, N.H. Dep't of Envtl. Services(Mar. 15, 2007).
60. N.H. Rev. Stat. Ann. § 482-A.
61. These numbers do not reflect enforcement actions under the Comprehensive Shoreland Protection Act.
62. N.H. Rev. Stat. Ann. § 482-A:13.
63. Boisvert, *supra* note 59.
64. N.H. Rev. Stat. Ann. § 482-A:14.
65. Boisvert, *supra* note 58.
66. Crystall, *supra* note 14; Crystall, *supra* note 31.

Mitigation data is compiled by staff members that conduct monitoring and follow-up with mitigation projects, including site inspections to ensure that projects are in compliance (e.g., whether the project meets thresholds and deadlines for success so that NHDES can determine project success rates; legal recognition of preservation parcels; boundary demarcation; terms of the easement; and field monitoring results). Staff members also track monitoring reports.[67]

Finally, NHDRED's Natural Heritage Bureau maintains the Natural Heritage Inventory, which includes outstanding wetlands.[68]

Coordination with watershed program

NHDES' Wetlands Bureau coordinates with the Watershed Management Bureau during the permitting process for projects that require both a wetland permit and a §401 certification. In addition, review of permit applications for certain projects located near impaired waters has recently been added to the §401 certification review process.[69]

The Wetlands Bureau is also working with EPA on several projects that examine impacts to streams and wetlands on the watershed level. For example, under an EPA grant, NHDES is working with NHFGD to assess permitted project sites in the Ashuelot River Watershed using the EPA protocol on stream crossings to see if projects meet EPA thresholds. The Wetlands Bureau will then use this information to improve its decision-making process on permits for stream crossings. The Wetlands Bureau is also working with EPA and the NHDES Watershed Management Bureau to improve its decision-making process for wetland permitting.[70]

III. Water Quality Standards

New Hampshire has not adopted water quality standards specific to wetlands. NHDES, Watershed Management Bureau relies on surface water quality standards in issuing §401 certifications for impacts to wetlands.[71] New Hampshire regulations state that "wherever the naturally occurring conditions of the wetlands are different from the criteria listed in [state water quality] rules, the naturally occurring conditions shall be the applicable water quality criteria."[72] However, this condition has never been incorporated in to the §401 certification process.[73]

67. Sommer, *supra* note 34.
68. N.H. Rev. Stat. Ann. § 217-A:1.
69. New Hampshire Department of Environmental Services, *Impaired Waters Review Information*, *at* http://des.nh.gov/WMB/Section401/ImpairedWatersReviewInformation.htm (last visited Sept. 21, 2007); Crystall, *supra* note 31.
70. Tilton, *supra* note 34.
71. Personal Communication with Paul Piszczek, N.H. Dep't of Envtl. Services (Feb. 15, 2007).
72. N.H. Code Admin. R. Ann. [Envt-Ws] 1703.02(b).
73. Piszczek, *supra* note 71.

New Hampshire does not specifically reference the designated uses of wetlands in its water quality certifications, defaulting to the open water designated uses.[74] Anti-degradation provisions are applicable to wetlands.[75]

If a project will result in point source discharges to wetlands, then the project applicant must obtain a National Pollutant Discharge Elimination System (NPDES) permit. Discharges to wetlands are treated in the same way as discharges to other waters of the state. For wetland related permits, Wastewater Engineering Bureau staff strongly encourage applicants to shift their discharge location to a connecting river or stream in order to obtain better dilution of the discharge. If this is not possible, and since the discharge would be to a non-flowing water body, the applicant would be given limits at the end of the pipe that are equal to the water quality standards. Applications for discharges to wetlands are relatively rare.[76]

IV. Monitoring and Assessment

NHDES regulations require compensatory mitigation proposals to include a functional assessment using the Corps methodology and data on the surrounding area, such as land use, soils, habitat, and endangered species.[77]

NHDES regulations also provide a local option to allow municipalities to assess wetlands greater than two acres in size to determine if they qualify for extra regulatory protection as prime wetlands.[78] For nontidal wetlands, municipalities may use the *Method for Comparative Evaluation of Nontidal Wetlands in New Hampshire* ("New Hampshire Method")[79] or some other wetland assessment method (e.g., the Corps of Engineers' Highway Methodology Workbook Supplement). For tidal wetlands, municipalities may use the *Method for the Evaluation and Inventory of Vegetated Tidal Marshes in New Hampshire* ("Coastal Method"). As of August 2007, 26 municipalities have designated prime wetlands for additional protection.[80]

New Hampshire Method. The New Hampshire Method was developed to help municipalities evaluate the functions and values of their wetland resources for planning, education, and wetland inventory purposes. The method provides a way for municipalities to compare the relative values of multiple wetlands. It was not designed for an impact analysis on individual wetlands. The method provides for the ranking of each wetland on 10 of the following 14 functional values: ecological; wetland wildlife habitat; finfish habitat; educational potential; visual/aesthetic quality; water based recreation; flood control potential; ground water use potential; sediment trapping; nutrient attenuation; shoreline anchoring and dissipation of erosive forces; urban

74. N.H. Rev. Stat. Ann. § 485-A:8.
75. Piszczek, *supra* note 25.
76. Personal Communication with Jeff Andrews, N.H. Dep't of Envtl. Services (Mar. 21, 2007).
77. N.H. Code Admin. R. Ann. [Envt-Wt] 803.02.
78. *Id*. § 807.
79. *See* Alan P. Ammann and Amanda Lindley Stone, Method for the Comparitive Evaluation of Nontodal Wetlands in New Hampshire (1991).
80. Crystall, *supra* note 31.

quality of life; historical site potential; and noteworthiness.[81] The methodology was developed by NHDES, Audubon Society of New Hampshire, and U.S. Department of Agriculture (USDA).[82]

Coastal Method. The Coastal Method is a site-specific method that coastal communities can use to inventory and evaluate their vegetated tidal marshes. The method, which was developed by the Audubon Society, is not designed to provide definitive site evaluations, but instead to provide a tool for planning, educating, and inventorying.[83] In addition to evaluating wetlands for designation of prime wetlands, many communities have started doing natural resource inventories and wetland evaluations for master plans or open space planning purposes.[84]

305(b)/303(d) assessments. As of February 2007, NHDES had not conducted any 305(b)/303(d) assessments of wetlands. The department is developing a *Wetlands Classification, Assessment, and Monitoring Strategy* that will in part inform the 305(b)/303(d) assessments.[85]

Wetland species monitoring. NHFGD is initiating species-specific monitoring efforts as part of the implementation of the state wildlife action plan. The agency is also identifying healthy habitat complexes, including wetlands, as part of its implementation of the plan.[86]

V. Restoration and Partnerships

While there is no formal wetland restoration program in New Hampshire, various efforts are underway.

NHDES prioritization efforts. NHDES worked with NHFGD on habitat inventories for the state wildlife action plan, which provides information about restoration opportunities. Additionally, as of February 2007, NHDES expects funding from EPA to work with The Nature Conservancy (TNC) to assess habitat quality in waterways and determine how streamflow restrictions affect habitat. The outcome of this project will be a list of areas in the Ashuelot River Watershed that may be improved by removing streamflow barriers. NHDES hopes that this study and the prioritization of areas with restoration potential may serve as a model for other watersheds in the state.[87]

NHDES Coastal Program. The NHDES Coastal Program runs a Coastal Restoration Program that focuses on salt marsh and river restoration. Funding for this work is provided primarily by the National Oceanic and

81. *See* Amman, *supra* note 79.
82. *Id*.
83. Audubon Society of New Hampshire, Method for the Evaluation and Inventory of Vegetated Tidal Marshes in New Hampshire (Coastal Method) *(1993)*.
84. Crystall, *supra* note 14.
85. Personal Communication with Ken Edwardson, N.H. Dep't of Envtl. Services (Feb. 8, 2007).
86. Marchand, *supra* note 22.
87. Sommer, *supra* note 34.

Atmospheric Administration (NOAA), as well as some §319 funds from EPA. Although the Coastal Restoration Program does not prioritize lands and waters for restoration, it does prioritize types of projects, such as tidal restrictions in salt marshes. The program also recently funded TNC to compile a list of restoration opportunities. As of February 2007, the program was developing prioritization criteria for the areas identified by TNC. The program also has done some inventorying of river and salt marsh habitat and aquatic species such as eelgrass and shellfish. Program staff members work closely with the University of New Hampshire (UNH) Estuaries Program, USDA Natural Resources Conservation Service (NRCS), and TNC on these inventory efforts.[88]

The Coastal Program monitors the success of its restored salt marshes using the Gulf of Maine Protocol. Program staff conduct pre- and post-restoration inspections and monitor the site every five years. Inspections examine salinity, vegetation, and fish life. Program staff are developing assessment procedures for barrier removal in river restoration projects.[89]

NHFGD. Under the Great Bay Resource Protection Partnership, NHFGD often partners with federal agencies (e.g., EPA, U.S. Fish and Wildlife Service, NRCS), non-profit organizations (e.g., Ducks Unlimited, TNC, Audubon, Society for the Protection of New Hampshire Forests), and the Great Bay Estuarine Reserve, a quasi-state-federal program, to conduct restoration as part of its open water marsh management of salt marshes. These efforts are part of the agency's wildlife management work and often relate specifically to waterfowl. Funding for waterfowl work may be provided by Ducks Unlimited, local communities, and the state.[90]

NHFGD does not prioritize areas for restoration. However, salt marsh habitat is minimal in New Hampshire, all salt marshes are considered to be priority habitat.[91] Projects are initiated as funds become available and, in cases when restoration is conducted on private property, permission is granted by the landowner. Monitoring restoration success is usually done in an ad-hoc, cursory manner.[92]

NHFGD also works on freshwater wetland restoration projects that support wildlife species and natural communities. Projects may involve partnerships with outside entities; for example, one project is being funded by NRCS, and pre-and post construction monitoring is being conducted by UNH and the Great Bay National Estuarine Research Reserve.[93]

Coordination with USDA. NHDES' Coastal Program works with USDA on coastal issues, as well as restoration projects in inland parts of the state. The two agencies have started an invasive species management program and have funds from the USDA's Wildlife Habitat Incentives Program (WHIP) to fund restoration work. They

88. Personal Communication with Ted Diers, N.H. Dep't of Envtl. Services (Feb. 15, 2007).
89. *Id*.
90. Robinson, *supra* note 22.
91. *Id*.
92. *Id*.
93. Personal Communication with Rachel Stevens, N.H. Dep't of Fish and Game (July 9, 2007).

also have used funds from the Wetland Reserve Program and WHIP for salt marsh projects. The Coastal Program has also used NRCS field services for site design work, surveying, and hydrologic monitoring.[94]

Corporations. The New Hampshire Corporate Wetland Restoration Partnership provides funding for state restoration projects. The Coastal America Foundation created a corporate group whose board of directors solicits donations from member corporations.[95]

Citizen monitoring groups. NHDES' Coastal Program administers a volunteer salt marsh monitoring program. The information collected by these volunteers is being used to develop restoration success indicators for salt marshes.[96]

VI. Education and Outreach

New Hampshire Department of Environmental Services

Each year, NHDES conducts 30 to 40 wetland-related outreach programs that reach an estimated 5,000 people. Topics include: permitting processes, land resource management, stream crossings, and wetland delineation. The science of wetlands is often included to provide a foundation for explanations of NHDES' regulatory programs. Audiences include: professional organizations, planners, town conservation commissions, municipal public works agencies, and the general public. NHDES measures program effectiveness with participant evaluation forms and targets audiences based upon observed needs. The department also offers several fact sheets on permitting and provides a general email address for questions from the public.[97]

The NHDES Drinking Water and Groundwater Bureau conducts educational programs with wetland components, such as those from Environmental Concern, Project WET (Water Education for Teachers), and Ducks Unlimited. The Bureau also uses *WOW! The Wonders of Wetlands*, a wetland curriculum developed by Environmental Concern and Project WET, and Project Webfoot, created by Project WET and Ducks Unlimited.[98]

New Hampshire Fish and Game Department

NHFGD runs an aquatic education program which includes a wetland component. The program focuses on wetland functions and values. Program staff have written a study guide, *The New England Guide to Freshwater Wetlands*, which includes background information on wetlands, a hands-on section that may be used in the field to evaluate wetlands, and additional reading and questions regarding community planning. Aquatic educators use the guide and its accompanying video, *The Wonders of Wetlands,* to train middle school and high school teachers and in a graduate-level watershed ecology course that NHFGD runs in conjunction with

94. Diers, *supra* note 88.

95. New Hampshire Department of Environmental Services, *Corporate Wetlands Restoration Partnership Fact Sheet*, *at* http://www.vhb.com/bellamy/CWRP_Fact_Sheet.pdf (last visited Sept. 21, 2007).

96. Diers, *supra* note 88.

97. Personal Communication with Sandy Crystall, N.H. Dep't of Envtl. Services (Feb. 5, 2007).

98. Personal Communication with Jessica Morton, N.H. Dep't of Envtl. Services (Mar. 22, 2007).

the UNH Cooperative Extension.[99] NHFGD also runs the Wonders of Wildlife Program, through which trained docents visit elementary schools to conduct presentations on wetlands. These docents often use Project WILD activities.[100] NHFGD also has produced and revised the publication *Identification and Documentation of Vernal Pools in New Hampshire,* which is modeled on the Massachusetts certification program.[101] Finally, NHFGD works with the UNH Cooperative Extension to create habitat brochures that cover various wetland types, including marsh and shrub wetlands, peatlands, and vernal pools. The brochures, which are targeted at the general public, summarize habitat assessments from the state wildlife action plan into easily digestible descriptions of habitats, species, threats to wetlands, and habitat maintenance.[102]

VII. Coordination among State and Federal Agencies

Coordination among state agencies

NHDES has a memorandum of understanding with NHFGD and NHDRED-Natural Heritage Bureau, under which the agencies share information relating to species that are threatened, endangered, or of special concern. NHDES scans data from wetland permit applications to see if projects that impact these species should be given special attention. As July 2007, NHDES no longer accepts applications unless the applicant has already screened the project for these impacts using the NHFGD's online tool or by hard copy request (see *II. Regulatory Programs*).[103]

NHDES collaborates with NHFGD, NHDRED-Natural Heritage Bureau, and the New Hampshire Office of Energy and Planning to administer the state's ILF program.[104]

NHDES also collaborates with two other bureaus at NHDRED—the Trails Bureau (in the Division of Parks and Recreation) and the Forest Protection Bureau (in the Division of Forests and Lands)—to address permitting and enforcement issues and needs for the forestry and trails communities. Coordinated efforts have contributed to the development of several streamlined permitting processes with related Best Management Practices Manuals. A special Trails Notification may be used to create or maintain trails that cross wetlands or surface waters.[105] Best management practices for timber harvest and forest management have been estab-

99. The graduate course spends a couple of days on wetlands exclusively, during which instructors teach students how to conduct wetland classification, read inventory maps, and conduct field evaluations of local wetlands. Students in the course include middle school and high school teachers, members of conservation commissions, foresters, and graduate and undergraduate students. Participants receive a significant amount of written materials related to the course. Participants are also asked to give their feedback on the program through a post-training evaluation. Past evaluations show that approximately 80 percent of the materials (which include wetland materials) are being used. Personal Communication with Laura Ryder, N.H. Dep't of Fish and Game (May 29, 2007).

100. *Id*.

101. This newly updated 70-page book, published by the New Hampshire Fish and Game Department's Nongame and Endangered Wildlife Program, explains vernal pools and their inhabitants. It is a crucial tool in documenting these important wildlife habitats. Crystall, *supra* note 31.

102. Marchand, *supra* note 22.

103. Tilton, *supra* note 34.

104. Sommer, *supra* note 34.

105. New Hampshire Trails Bureau, *Best Management Practices Manual, at* http://www.nhtrails.org/Trailspages/BMP.html (last visited Sept. 21, 2007).

lished to ensure the protection of water quality. Under a cooperative arrangement, forest rangers in the Forest Protection Bureau may cite loggers who are in violation of wetlands laws.[106]

NHDES' Coastal Program coordinates with the agency's Wetlands Bureau, Wastewater Engineering Bureau, NHFGD, NHDRED, and the Pease Development Authority - Division of Ports and Harbors to administer the federal consistency provision of the Coastal Zone Management Act.[107]

Finally, NHDES is examining the treatment of vernal pools in the regulatory process and is leading a committee to explore if and how vernal pools should be addressed specifically by department rules.[108] The committee includes NHFGD, Corps, EPA, various consultants, nongovernmental organizations, and the New Hampshire Wetlands Council.[109]

Coordination with federal agencies

NHDES participates in regular monthly meetings with federal resource agencies (e.g., Corps, NOAA's National Marine Fisheries Service, U.S. Fish and Wildlife Service, and EPA) to: discuss regulatory issues such as stream crossings and habitat protection; access shared data; and review newly received permit applications based upon areas of interest, such as Essential Fish Habitat.[110]

NHDES also participates in quarterly meetings of the New England Interstate Water Pollution Control Commission, composed of EPA, Corps, and the New England state governments. States use these meetings to update each other on programs related to pollution control, discuss upcoming issues (such as federal funding and new initiatives), and identify opportunities for states to collaboration.[111]

NHDES' Coastal Program chairs the New Hampshire Dredge Management Task Force (DMTF), an interagency work group that meets quarterly to review existing and proposed dredging and dredged material management projects and to develop policies and guidelines for dredging activities in New Hampshire's coastal waters. The DMTF provides technical and regulatory expertise to ensure that dredging projects are conducted in a manner consistent with state and federal rules. Regular participants in the DMTF include the Coastal Program, NHDES' Wetlands Bureau and Waste Management Division, NHFGD, Pease Development Authority - Division of Ports and Harbors, Corps, EPA, National Marine Fisheries Service, UNH, and New Hampshire congressional delegation staff.[112]

106. New Hampshire Division of Forests and Lands, *Forest Law Enforcement, at* http://www.dred.state.nh.us/divisions/forestandlands/bureaus/forestprotection/law.htm (last visited Sept. 21, 2007).
107. Personal Communication with Ted Diers, N.H. Dep't of Envtl. Services (June 6, 2007).
108. Vernal pools currently are protected as surface waters or wetlands.
109. Marchand, *supra* note 22.
110. Tilton, *supra* note 34; Personal Communication with Sandy Crystall, N.H. Dep't of Envtl. Services (Feb. 5, 2007).
111. Tilton, *supra* note 34.
112. Personal Communication with Ted Diers, N.H. Dep't of Envtl. Services (June 6, 2007).

VIII. Acronyms and Abbreviations

Corps – U.S. Army Corps of Engineers

DMTF – Dredge Management Task Force

EPA – U.S. Environmental Protection Agency

FTE – Full-time Equivalent

ILF – In-Lieu Fee

NHDES – New Hampshire Department of Environmental Services

NHDRED – New Hampshire Department of Resources and Economic Development

NHFGD – New Hampshire Fish and Game Department

NOAA – National Oceanic and Atmospheric Administration

NPDES – National Pollution Discharge Elimination System

NRCS – USDA Natural Resources Conservation Service

SPGP – Statewide Programmatic General Permit

TNC – The Nature Conservancy

UNH – University of New Hampshire

USDA – United States Department of Agriculture

(Project) WET – Water Education for Teachers

WHIP – Wildlife Habitat Incentives Program

North Dakota

I. Overview

North Dakota is well known for the small, pothole-like, semi-permanent wetlands that cover approximately two-thirds of the state.[1] Estimated to have 4,927,500 acres of wetlands in 1780, acreage has been depleted by approximately 49 percent.[2] These prairie potholes, an important resource to the people, agriculture, and wildlife of North Dakota, provide habitat, irrigation needs, and hunting grounds, as well as farmland in the dry season.[3] However, the state's small population and expansive area present unique challenges for wetland protection efforts.

North Dakota regulates wetlands primarily through §401 water quality certification under the Clean Water Act (CWA). North Dakota Department of Health's Division of Water Quality (DWQ) is the state's primary permitting agency and is building a bioassessment program to develop wetland-specific state water quality standards.[4] Wetland surveys and assessments have also been conducted for the state's wetland resources.[5] Public and private partnerships also play a role in the state's wetland activities, with a tax incentive program for landowners who actively conserve their wetlands. In addition, the Office of the State Engineer oversees permitting for any drainage of basin that has a drainage area exceeding 80 acres.[6]

II. Regulatory Programs

Wetland definitions and delineation

In North Dakota, "waters of the state" are defined as:

> all waters within the jurisdiction of [the] state including all streams, lakes, ponds, impounding reservoirs, marshes, watercourses, waterways, and all other bodies or accumulations of water on or under the surface of the earth, natural or artificial, public or private, situated wholly or partly within or bordering upon the state, except those private waters that do not combine or effect a junction with natural surface or underground waters just defined.[7]

1. Scott Gomes, *A Closer Look: Wetlands*, 60 N.D. Outdoors, 12 (1998), *reprinted in* US Dep't of the Interior, US Geological Survey, *available at* http://www.npwrc.usgs.gov/resource/wildlife/closlook/wetlands.htm (last modified Aug. 3, 2006).
2. North Dakota State Water Quality Factsheet. The Clean Water Network (2004), *available at* http://www.cwn.org/docs/publications/factsheets/states/nd.pdf.
3. Personal communication with Steve Dyke, Conservation Section Supervisor, N.D. Game and Fish Dep't (Dec. 6, 2006).
4. N.D. Cent. Code § 61-32-03; Personal communication with Mike Ell, N.D. Dep't of Health, Div. of Water Quality (Nov. 7, 2006).
5. Personal communication with Jill Minter, U.S. Envtl. Prot'n Agency (Oct. 2007).
6. Personal Communication with Jim Lindseth, State Water Comm'n, Permitting Programs (Apr. 22, 2007).
7. N.D. CenT. Code § 61-28-02(11).

Wetlands are defined in the Administrative Code as "water bodies, including isolated ponds, sloughs, and marshes, [that] are to be considered waters of the state and will be protected under [general water quality standards]."[8]

North Dakota delineates wetlands in accordance with the criteria outlined in the U.S. Army Corps of Engineers 1987 *Wetlands Delineation Manual.*[9]

Organization of state agencies

North Dakota's wetland activities are spread across multiple agencies and divisions.

North Dakota Department of Health. The North Dakota Department of Health (NDDOH) – Division of Water Quality (DWQ) conducts §401 certification from its office in Bismarck. The DWQ is also conducting a regional wetland survey using a probabilistic sampling design and Level I, II, and III assessment methods. DWQ employs one full-time equivalent (FTE), comprising one part-time § 401 official and one part-time water quality official. Annual funding for DWQ's wetland-related activities is less than $20,000, derived from U.S. Environmental Protection Agency (EPA) §106 and §104(3b) grants.[10]

North Dakota Game and Fish Department. North Dakota Game and Fish Department (NDGFD) acts as a commenting agency through the §404 process. Comments are submitted in biweekly meetings and through formal letters to the U.S. Army Corps of Engineers' Bismarck office. The NDGFD reviews approximately 300 §404 projects annually for levels of habitat degradation and loss of native grasslands or woody areas that provide habitat to rare or sensitive species. The agency dedicates 1.5 FTEs to this effort and receives additional input from personnel in eight field offices. Staff members that review §404 projects are funded primarily by grants from the U.S. Fish and Wildlife Service (FWS) under the Sport Fish Restoration Act (Dingell-Johnson) and Wildlife Restoration Act (Pitman-Robertson). The annual budget is approximately $150,000.[11]

Office of the State Engineer. The Office of the State Engineer (OSE) oversees permitting for the draining of any water resource, including wetlands, and watershed projects that have an area greater than 80 acres. A permit applicant must first file with the OSE, then await a determination as to whether or not the project will have statewide or interdistrict (water district) significance.[12] If the project is deemed not to have statewide significance, it is sent to the jurisdictional Water Resource District Board, of which there are 60 statewide, to be reviewed. The Water Resource District Board may require conditional criteria for approval of a project that

8. N.D. Admin. Code 33-16-02.1-09.

9. Envtl. Lab.,U.S. Army Corps of Eng'rs, Wetlands Research Program Technical Report Y-87-1, Corps of Engineers Wetlands Delineation Manual (1987), *available at* http://www.mvn.usace.army.mil/ops/regulatory/wlman87.pdf.

10. Personal communication with Mike Ell, N.D. Dep't of Health, Div. of Water Quality (Nov. 7, 2006).

11. Personal communication with Steve Dyke, Conservation Section Supervisor, N.D. Game and Fish Dep't (Dec. 5, 2006).

12. Statewide or interdistrict significance of wetland or watershed drain determinations are based on six criteria: 1: impacts to property of the state or political subdivisions, or highway authority property; 2: Drainage of sloughs, ponds, or lakes having recognized fish and wildlife values. (based on SWC engineer's discretion); 3: impacts (drainage or partial drainage) to meandered lakes; 4: impacts that will have a substantial effect on another district; 5: Drainage which would convert previously non-contributing areas into contributing areas; 6: For good cause, the state engineer may classify any proposed drainage as having statewide or interdistrict significance, or the state engineer may determine that certain proposed drainage is not of statewide or interdistrict significance. N.D. ADMIN. CODE 89-02-01-09; Personal Communication with Jim Lindseth, State Water Comm'n, Permitting Programs (Apr. 22, 2007).

relate to: downstream impacts; impacts on related ponds, sloughs, streams or lakes; impacts on recognized fish and wildlife populations; impacts on interdistrict, interstate, and international land; and other factors unique to the project. If the project is deemed to have statewide or interdistrict significance, it must still undergo review by the District Water Board, which is required to conduct a hearing. It is also subject to "re-review" and informational hearings by the OSE. However, permits are rarely given this determination; typically, permits are granted if the applicant complies with the conditions set during the re-review hearings. Twelve to thirty permits are granted each year; permits are rarely denied.[13,14]

North Dakota Department of Agriculture. The North Dakota Department of Agriculture operates a private landowner incentive program called Waterbanks. Waterbanks is funded collectively by the NDGFD, SWC, DWQ, and USFWS and employs 0.5 FTE.[15] The program is idle as of April 2007 due to lack of state funds.[16]

§ 401 certification

North Dakota relies on §401 water quality certification as its primary form of state-level wetlands regulation. The §401 program is administered by the North Dakota Department of Health, Division of Water Quality.[17] However, NDGFD serves as a commenting agency when appropriate, usually when endangered species are involved or potentially involved.[18] Approximately 100 certifications are made each year, including Nationwide Permits (NWPs). No certifications are waived, and some permits may be pre-certified with conditions. When permits are initially denied, they are sent back to the permittee with conditions. If the permittee then meets the prescribed conditions, they may re-submit for certification.[19]

In making certification decisions, the NDDOH is primarily concerned with the construction and environmental disturbance requirements pertaining to soils, surface waters, and fill materials. A non-regulatory agency policy document requires that "[f]ragile and sensitive areas such as wetlands, riparian zones, delicate flora, or land resources will be protected against compaction, vegetation loss, and unnecessary damage."[20] If a project does not meet this and other minimum requirements of the NDDOH, the permit is denied, and necessary conditions are communicated before re-application.[21]

Nationwide permits

As of April 2, 2007, North Dakota had responded to the final notice for reissuance and modification of NWPs.[22] NWPs #8, #24, and #34 were not applicable in North Dakota. All remaining NWPs were issued §401 certifica-

13. Lindseth, *supra* note 6.
14. N.D. Cent. Code § 61-28-03.
15. Personal communication with Judy Carlson, N.D. Dep't of Agric. (Nov. 9, 2006).
16. Voicemail message from Judy Carlson, N. D. Dep't of Agric. (Apr. 23, 2007).
17. Personal Communication with Michael Sauer, N. D. Dep't of Health (Apr. 20, 2007).
18. Dyke, *supra* note 11.
19. Sauer, *supra* note 17.
20. N.D. Dep't of Health, Envtl. Health Section, *Construction and Environmental Disturbance Requirements*, (acquired 4/20/07).
21. Sauer, *supra* note 17.
22. Letter from Michael T. Sauer, Senior Envtl. Health Scientist, N. D. Dep't of Health, Envtl. Health Section, to Daniel E Cimarosti, State Program Manager, US Army Corps of Eng'rs, N.D. Regulatory Office (Apr. 2, 2007).

tion, with additional conditions placed on 15 NWPs.[23] NDDOH also attaches Construction and Environmental Disturbance Requirements as a condition to all NWPs.[24]

Mitigation

North Dakota has not adopted regulations, policies, or legislation for wetland mitigation, deferring to the Corps for mitigation under CWA §401/404.

Compliance and enforcement

Violations to state water quality standard rules are handled by the NDDOH or referred to the Corps and EPA as lead agencies for investigation and resolution.[25]

Complaints of violations to the state's water resource drainage laws may be reported to the applicable Water Resource District Board. Injunctions, criminal penalties, and civil penalties are available for enforcement under the state's drainage requirements.[26] However, in practice, complaints are almost always immediately addressed and resolved without legal proceeding or fines.[27]

Tracking systems

The North Dakota OSE has a comprehensive database of all drainage applications and permits. This database began in the late 1960's and includes all information found on the permit application. The SWC records all constructed water projects in the state that require permitting, and this includes the restoration of drained wetlands or the construction of new wetlands.[28] North Dakota does not maintain state system for tracking mitigation.

23. Nationwide Permits which are certified under Section 401 of the Clean Water Act by the State of North Dakota are: 1-7,9-11,14,18,20-22,25,28,30,31,33,36-38,41,43-46,48-50. North Dakota's additional conditions were place on the following: NWP 19: §401certification is issued if disposal of soil material is at an upland site. NWP 12, 15, 16, 23, 27, 29, 35 & 47: Projects in Class I rivers, Class IA rivers or classified lakes are denied §401 Water Quality certification. NWP 13: Projects exceeding 200 linear feet in Class I rivers, Class IA rivers and classified lakes are denied §401 Water Quality certification. NWP 17: §401 Water Quality certification is denied. NWP 32: Enforcement actions involving Class I rivers, Class IA rivers, and classified lakes are denied 401 Water Quality certification. NWP's 39 & 42: Projects that result in a loss or relocation of 150 feet or more of stream are denied §401 Water Quality certification. NWP 40: Projects that involve the discharge from tile drains to Class I, Class IA, Class II rivers and classified lakes are denied §401 Water Quality certification. This Department [DOH] will reconsider the application if 1) All reasonable alternative for avoiding these classified water were considered. 2) A Nutrient Management Plan is developed and 3) Water quality monitoring of the drain outlet(s) is proposed. (Taken from April 2, 2007, Letter from Michael T. Sauer, Senior Environmental Health Scientist, North Dakota Department of Health, Environmental Health Section, to Daniel E Cimarosti, State Program Manager, US Army Corps of Engineers, ND Regulatory Office).

24. N.D. Dep't of Health, Envt.l Health Section, *supra* note 20.

25. Personal Communication with Michael Sauer, N.D. Dep't of Health (May 2, 2007).

26. N.D. Cent. Code § 61-32-07.

27. Personal Communication with Jim Lindseth, State Water Comm'n, Permitting Programs (Apr. 24, 2007).

28. Personal Communication with Jim Lindseth, State Water Comm'n, Permitting Programs (May 24, 2007).

III. Water Quality Standards

The State of North Dakota's numeric water quality standards, designated uses, and anti-degradation policies and procedures are not specific to wetlands. The anti-degradation standards default to open water standards and use degradation categories to assess wetlands.[29] Surface water quality criteria are narrative and biological.[30] As of February 2007, wetland-specific water quality standards are being developed in association with the state's bioassessment program (see *IV. Monitoring and Assessment*).[31]

IV. Monitoring and Assessment

As of 2007, the North Dakota Wetlands Bioassessment Program is under development by NDDOH and its wetland partners, North Dakota State University, University of North Dakota, and the U.S. Department of Agriculture – Agricultural Research Service. The program, initiated in 1993, was created to develop wetland-specific water quality standards for the state.[32,33] End products will include a condition assessment methodology for both streams and wetlands and both a rapid assessment and a landscape assessment methodology component for wetlands. Assessment methods developed include: Level I landscape tools using remote sensing, a Level II rapid assessment method, and a Level III vegetation index of biological integrity (IBI). Standard operating procedures will apply to all assessment methodologies. The NDDOH plans to use the assessment to characterize both the quantity and quality of wetlands across the state. The state is also conducting a wetland survey of the Missouri Coteau Ecoregion. EPA provides annual Wetland Program Development Grants that range from $150,000 to 200,000. Assessment information is already being used in water quality reporting.[34]

V. Restoration

North Dakota has not initiated a state wetland restoration program.

29. N.D. Admin Code 33-16-02.1-11.

30. Water quality rules state that "[w]aters of the state having unique or high quality characteristics that may constitute an outstanding state resource shall be maintained and protected." N.D. Admin. Code 33-16-02.1-08. In addition, the wetlands functions usually place them in this category (2, IV), which can be regulated as an outstanding state resource if they are petitioned to have that classification, though that has yet to occur. Personal Communication with Michael Sauer, N. D. Dep't of Health (Apr. 20, 2007).

31. Ell, *supra* note 10.

32. *See* United States Environmental Protection Agency, Wetlands Division, Bioassessment of Wetlands, *Case Study: North Dakota Wetlands Bioassessment Program*, *at* http://www.epa.gov/owow/wetlands/bawwg/case/nd.html (last visited June 28, 2007).

33. Minter, *supra* note 5.

34. *Id.*; Ell, *supra* note 10.

VI. Public-Private Partnerships

The Waterbanks Program is a cooperative effort led by the North Dakota Department of Agriculture with support from the NDGFD, SWC, FWS, and NRCS. The program, initiated in 1981, provides landowners with financial incentives to preserve wetlands. The program leases the owner's wetlands for five to ten years and disallows draining, burning, filling or any agricultural activity from taking place on the participating lands.[35] In the past, funding for the program was derived from a combination of federal and state monies and through fund-raising activities. However, state and federal funding was cut in 2006, and so no new contracts were established in 2006. The next state legislature may re-open the funding.[36]

VII. Education and Outreach

North Dakota does not conduct education or outreach related to wetlands.

VIII. Coordination among State and Federal Agencies

State and federal agencies coordinate regularly to discuss §404 permit applications that involve impacts to North Dakota's aquatic resources. NDDOH, NDGFD, USFWS, the Corps, and SWC meet every two weeks to discuss current projects, permits, and wetland issues in the state. NDGFD and FWS also share information on wetland issues weekly.

IX. Acronyms and Abbreviations

CWA – Clean Water Act

DWQ – Division of Water Quality

EPA – U.S. Environmental Protection Agency

FWS – U.S. Fish and Wildlife Service

MBRT – Mitigation Bank Review Team

NCRS – Natural Resources Conservation Service

NDGFD – North Dakota Game and Fish Department

35. Carlson, *supra* note 15.
36. *Id.*

NDDOH – North Dakota Department of Health

NWP – Nationwide Permit

OSE – Office of the State Engineer

SWC – State Water Commission

Oklahoma

I. Overview

Estimates for the total wetland acreage in Oklahoma vary. The U.S. Fish and Wildlife Service calculated approximately 950,000 acres of lacustrine, riverine and palustrine wetlands; however, the total acreage of wetlands meeting jurisdictional criteria under the Clean Water Act is estimated to be 687,000.[1] Oklahoma protects its vase wetland resources primarily through the efforts of four agencies: the Oklahoma Department of Wildlife Conservation (ODWC), the Oklahoma Department of Environmental Quality (ODEQ), the Oklahoma Water Resources Board (OWRB), and the Oklahoma Conservation Commission (OCC). The state also operates the Oklahoma Wetlands Working Group, which includes all of the state agencies involved in wetlands protection, as well as local, federal, and tribal authorities. The Working Group meets on a quarterly basis to coordinate efforts to conserve, enhance, and restore the quantity and biological diversity of Oklahoma's wetland resources. The group is guided by the state's Comprehensive Wetlands Conservation Plan, as is much of the wetlands work in Oklahoma.[2]

II. Regulatory Programs

Wetlands definitions and delineation

Oklahoma defines "waters of the state" as "all streams, lakes, ponds, marshes, watercourses, waterways, wells, springs, irrigation systems, drainage systems, storm sewers and all other bodies or accumulations of water, surface and underground, natural or artificial, public or private, which are contained within, flow through, or border upon this state or any portion thereof..."[3] The Oklahoma Comprehensive Wetlands Conservation Plan further clarifies that wetlands are included within the state definition for waters, stating, "[b]ecause wetlands can be considered 'waters of the state,' they are afforded baseline protection by OWQS."[4]

The plan also endorses adoption of the U.E. Environmental Protection Agency (EPA) and U.S. Army Corps of Engineers ("Corps") definition of wetlands,[5] but as of 2007, Oklahoma had not adopted a statutory or regulatory definition of wetlands.[6]

1. Okla. Conservation Comm'n, Oklahoma's Comprehensive Wetlands Conservation Plan 16(1996), *available at* http://www.okcc.state.ok.us/Publications/OK_Comprehensive_Wetlands_Conservation_Plan.pdf.,
2. *Id*; Personal communication with Chris DuBois, Wetland Programs Coordinator, Okla. Conservation Comm'n (Jan. 11, 2007).
3. Okla. Stat. tit. 27A § 1-1-201(20).
4. Okla. Conservation Comm'n, *supra* note 1 at 20.
5. *Id.* at 10-11 ("Those areas that are inundated or saturated by surface or groundwater 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.")
6. *Id.* at 2.

Oklahoma delineates wetlands in accordance with the criteria outlined in the U.S. Army Corps of Engineers'1987 *Wetlands Delineation Manual*.[7] This method is described in the Oklahoma Comprehensive Wetlands Conservation Plan.[8]

Organization of state agencies

Oklahoma protects wetlands primarily through the efforts of four agencies: Oklahoma Conservation Commission (OCC), Oklahoma Department of Environmental Quality (ODEQ), Oklahoma Department of Wildlife Conservation (ODWC), and Oklahoma Water Resources Board (OWRB).

Oklahoma Conservation Commission. The OCC is the lead agency for wetlands planning and strategy development and has one full-time equivalent (FTE) staff member dedicated to wetland issues. The OCC coordinates the Oklahoma Wetlands Working Group, which meets quarterly and includes all of the state agencies involved in wetlands protection, and local, federal, and tribal authorities. The group is guided by the state's Comprehensive Wetlands Conservation Plan, which was also developed by OCC.[9] OCC wetlands activities are funded by multiple, continuing grants from EPA.[10]

Oklahoma Department of Environmental Quality. The ODEQ regulates wetlands by providing §401 water quality certification for federal permits or licenses that result in impacts to waters of the state, including §404 dredge and fill permits.

Oklahoma Department of Wildlife Conservation. The ODWC reviews federal actions that may cause impacts to wetlands in the state, assists in coordinating wetlands mitigation, and acquires wetlands for protection through fee title acquisition. The agency employs one FTE staff person devoted to wetland issues. The ODWC is primarily funded by Oklahoma Duck Stamp program revenues, matched with Pittman-Robertson federal grant monies. The Duck Stamp program provides revenue of approximately $325,000 annually.[11] Numerous other federal, state, and private conservation agencies regularly also supply matching funds.[12]

Oklahoma Water Resources Board. The OWRB is responsible for developing the state water quality standards, which apply to jurisdictional wetlands and streams. (*See III. Water Quality Standards.*) The agency also conducts some monitoring and assessment and restoration activities.

§401 certification

The ODEQ reviews applications for §401 certification of both individual and nationwide §404 permits.[13] The agency receives approximately 20 to 25 permit applications made under §404 each year, certifying the

7. Corps of Engineers Wetlands Delineation Manual (1987), *available at* http://el.erdc.usace.army.mil/elpubs/pdf/wlman87.pdf.
8. Okla. Conservation Comm'n, *supra* note 1 at 10.
9. *Id*; Personal communication with Chris DuBois, Wetland Programs Coordinator, Okla. Conservation Comm'n (Jan. 11, 2007).
10. Personal communication with Chris DuBois, Wetland Programs Coordinator, Okla. Conservation Comm'n (Jan. 11, 2007) (The estimated annual budge of the OCC wetlands program is approximately $200,000).
11. Personal communication with Alan Stacey, Wetland Program Coordinator, Okla. Dep't of Wildlife Conservation (Jan. 19, 2007).
12. Personal communication with Alan Stacey, Wetland Program Coordinator, Okla. Dep't of Wildlife Conservation (Feb. 23, 2007).
13. Okla. Admin. Code § 252:611-3-1.

majority and issuing many with conditions (primarily mitigation requirements). According to ODEQ, only one certification request has been denied outright in six years.[14]

The certification process is uniform for all types of wetlands, and staff rely on best professional judgment to make decisions. The ODEQ has a memorandum of agreement with the Tulsa Corps District that establishes the §401 certification procedure. The Corps shares copies of applications with the ODEQ and the two agencies issue joint public notices. The ODEQ has 60 days to make its certification determination.[15]

Nationwide permits

The ODEQ denied certification for several nationwide permits (NWPs) for any activities in the watersheds of Outstanding Resource Waters designated in Oklahoma's water quality standards.[16] The state has also applied conditioned approval for NWP #16 (Discharges Associated with Upland Contained Disposal Areas).[17] ODEQ denied certification for permits that do not apply within the State of Oklahoma.[18] For the remaining Nationwide Permits, ODEQ granted certification with a number of conditions.[19]

Mitigation

Oklahoma has not adopted guidelines, policies, or legislation (beyond §404 requirements) concerning compensatory mitigation for permitted impacts to wetlands or streams, including banking and in-lieu-fee operations. However, the state is taking steps toward developing mitigation banks and is close to establishing a bank for the Oklahoma Department of Transportation.[20] The OCC has also established a clearinghouse for landowners wanting to engage in wetlands restoration projects.[21] Oklahoma does not participate on the state's Mitigation Banking Review Team.[22]

14. Personal communication with Mark Derichsweiler, Eng'g Manager, Water Quality Division, Okla. Dep't of Envtl. Quality (Feb. 2, 2007).
15. *Id.*
16. Letter from Mark Derichsweler, Eng'g Manager, Watershed Planning and Storm Water Permitting Section, Water Quality Division, to Regulatory Branch, U.S. Army Corps of Eng'rs (Jun. 23, 2003), *available at* http://www.swt.usace.army.mil/permits/Documents%20-%20Nationwide%20Permits/odeq2.pdf (stating that certification is denied for Nationwide Permits 7, 12, 14, 16, 17, 21, 29, 31, 39, 40, 42, 43 and 44 for all activities in the watersheds of Outstanding Resource Waters which are listed in Appendix A of Oklahoma's Water Quality Standards have been designated as Critical Resource Waters (CRW) by the District Engineer and are subject to NWP Special Condition 25.).
17. *Id.* (stating that for NWP 16 the discharge shall not contain a TSS concentration of greater than 45 mg/L daily maximum and shall maintain a pH between 6.5 and 9.0. The TSS daily max shall be monitored once a year during discharge. The limits and monitoring may be waived on a site-specific basis through implementation of a ODEQ approved set of BMPs).
18. *Id.* (NWPs 24, 26, and 34).
19. *Id.* ((1) All spills of fuel or other pollutants in excess of five gallons shall be reported to the DEQ within 24 hours, to the pollution prevention hotline at 1-800-522-0206; 2) All fuelling and servicing of vehicles and equipment shall be done above the Ordinary High Water Mark (OHWM); 3) Permittee shall provide access to the property for DEQ inspection purposes; 4) Any material and fuels used in the project shall be stored and/or stockpiled above the OHWM and shall be removed from a likely flood zone prior to any predicted flood; 5) If a stormwater discharge permit for construction activities is required once can be obtained from DEQ at (405) 702-8100.).
20. Guided by a memorandum of agreement written in 1996, signatories of the memorandum, the Tulsa District of the U.S. Army Corps of Engineers, the U.S. Fish and Wildlife Service, the U.S. Environmental Protection Agency, Natural Resources Conservation Service, Federal Highway Administration, Oklahoma Department of Transportation, Oklahoma's Office of the Secretary of the Environment, OCC, and the ODWC, along with the ODEQ and the Nature Conservancy, drafted a banking instrument, but the bank has yet to be finalized. DuBois, *supra* note 10.
21. Oklahoma Conservation Commission, *Wetland Registry for Landowners*, at http://www.okcc.state.ok.us/Wetlands/wetlands_registry.htm (last visited July 5, 2007).
22. DuBois, *supra* note 10.

Compliance and enforcement

Oklahoma has not adopted compliance or enforcement mechanisms relating to wetlands and defers to the U.S. Army Corps of Engineers on compliance and enforcement issues under Clean Water Act §§ 401/404.

III. Water Quality Standards

Oklahoma's water quality standards (WQS) do not identify antidegradation policies, designated uses, or criteria specific to wetlands.[23] In the absence of wetland-specific WQS, Oklahoma §401 certification decisions rely on surface water criteria and standards and antidegradation requirements. Wetlands are assigned the default uses for "unlisted" waterbodies: Agriculture; Industrial and Municipal Process and Cooling Water; Aesthetics; Warm Water Aquatic Community; Primary Body Contact Recreation.[24]

IV. Monitoring and Assessment

The OCC, OWRB, and ODEQ are jointly responsible for monitoring and assessment of waters of the state, as well as implementation of the Comprehensive Wetlands Conservation Plan.[25] While no methodology has been officially adopted for monitoring and assessing wetlands, the OCC is developing standard operating procedures for monitoring depressional wetlands.[26] The agency also plans to develop probabilistic methodologies to determine wetland losses and gains using National Wetlands Inventory data as a baseline.[27]

In 2006, Oklahoma's Blue Thumb volunteer water monitoring group completed a one-year pilot program for monitoring wetlands. Using the wetlands health assessment monitoring (WHAM) program, 20 volunteers monitored 8 sites.[28] Oklahoma also has a Water Watch (OWW) program, run by the OWRB. OWW collects water quality data, including wetlands data, which are used for decisions made under Clean Water Act §303 decisions.[29] The program began in 1992 and involves approximately 100 volunteers who monitor 80 sites across the state. The five primary goals of the OWW are to: (1) collect environmental data to determine baseline water quality conditions for Oklahoma's water resources, (2) identify current or potential water quality problems, (3) determine water quality trends, (4) promote citizen participation in protecting, managing, and restoring our water resources, and (5) educate the public on basic ecological concepts associated with Oklahoma's water resources.[30]

23. Okla. Admin. Code § 785:45-5-1 et seq., *available at* http://www.owrb.state.ok.us/util/rules/pdf_rul/Chap45.pdf; Derichsweiller, *supra* note 14.
24. Okla. Admin. Code § 785:45-5-3(a); Mark Derichsweiller, Eng'g Manger, Okla. Dep't of Envtl. Quality (Feb. 5, 2007).
25. Okla. Stat. tit. 27A, §§ 1-3-101(F)(2), 1-3-101(F)(3).
26. DuBois, *supra* note 10.
27. *Id.*
28. *Id.*
29. Oklahoma Water Watch, *at* http://www.owrb.state.ok.us/quality/monitoring/watch/wwatch.php; personal communication with Derek Smithee, Water Quality Div. Chief, Water Res. Bd. (Jan. 5, 2007).
30. Oklahoma Water Watch, *at* http://www.owrb.state.ok.us/quality/monitoring/watch/wwatch.php.

V. Restoration

Many state agencies conduct activities related to wetlands restoration. In coordination with the ODWC and with support from EPA, OWRB operates an Aquatic Revegetation Program, part of the larger Lakes and Special Studies Program.[31] The ODWC also initiates restoration projects based on funding opportunities, including the acquisition and restoration of public lands wetlands. ODWC monitors and manages of these wetlands for migratory birds and other wildlife annually.[32] The agency also collaborates with the U.S. Department of Agriculture (USDA) through several farm bill programs which benefit wetlands resources on private lands. The OCC provides technical assistance and other incentives to landowners implementing management practices that conserve, enhance, and restore wetlands on private property on a case-by-case basis, in advancement of another objective of the plan.[33] The state constructs treatment wetlands on a project-by-project basis.[34]

Oklahoma agencies are also: advancing the objectives of developing information/education programs on Oklahoma's wetlands resources; identifying and prioritizing unique or scarce wetlands types and sites for acquisition or special protection; identifying wetlands sites for restoration and enhancement; and identifying and developing funding sources to accomplish this work. They are also taking steps toward establishing a comprehensive, statewide wetland mapping program and researching and developing techniques for protecting, enhancing, and constructing wetlands for pollutant control and/or mitigation.[35] Developed techniques will be implemented to maximize beneficial uses of wetlands pollutant removal and mitigation techniques.[36]

VI. Public-Private Partnerships

The ODWC partners with private landowners on restoring wildlife habitat through the USDA's Wildlife Habitat Improvement Program (WHIP).[37] Through WHIP, landowners enter into 10-year contracts with ODWC for approved projects to develop, preserve, restore and manage wildlife habitat on private lands.[38] The Department shares part of the cost of habitat improvement work, up to 75 percent but not to exceed $5,000 per landowner per year. In exchange, the landowner agrees to maintain the habitat for a period of ten years. Types of projects include, but are not limited to, wetland restoration and enhancement, fencing of existing and restored wetlands, the creation of small openings in stands of timber, removal of invasive species, estab-

31. Personal communication with Derek Smithee, Water Quality Div. Chief, Water Res. Bd. (Jan. 5, 2007).
32. Stacey, *supra* note 11.
33. DuBois, *supra* note 10; *see* Okla. Conservation Comm'n, *supra* note 1 at 8.
34. DuBois, *supra* note 10.
35. Okla. Conservation Comm'n, *supra* note 1 (to promote the coordination of wetlands management in OK through discussion, information exchange, cooperation and the sharing of resources).
36. DuBois, *supra* note 10; Okla. Conservation Comm'n, *supra* note 1 at 8.
37. Stacey, *supra* note 11.
38. Oklahoma Department of Wildlife Conservation, *Wildlife Habitat Improvement Program*, *at* http://www.wildlifedepartment.com/wildlife-habitat.htm (last visited July 5, 2007).

lishment of firebreaks, and tree plantings. The program encourages short-term habitat improvements like food plots and disking, but cannot support them with cost sharing.[39]

VII. Education and Outreach

The OCC's Conservation Education Program offers several programs with wetlands education and outreach components.[40] OCC offers *WOW! The Wonders of Wetlands* curriculum trainings for educators, statewide.[41] The agency also cosponsors permanent wetland outdoor classroom facilities on school grounds or other public lands with local conservation districts. The Oklahoma Environmental Education Coordinating Committee hosts an annual water festival for 5th graders (H2Oklahoma Water Festival) located in a different targeted watershed each year.[42]

Project WET (Water Education for Teachers) is another major training program coordinated by the OCC, with sponsorship from OWRB and ODEQ.[43] Using the national curriculum,[44] the Oklahoma program trains educators of all kinds, including student teachers and informal educators such as naturalists and interpreters at parks and zoos. Agency staff also train students and landowners in the curriculum.[45]

The Blue Thumb and Oklahoma Water Watch volunteer water quality monitoring programs described above also both have education components in addition to their hands-on components.[46]

VIII. Coordination among State and Federal Agencies

Oklahoma adopted its Comprehensive Wetlands Conservation Plan in 1996. Several of the Plan's objectives are being implemented, including formation of the Wetlands Working Group, which is composed of all state, federal, tribal, and local authorities involved in wetlands protection in the state. The group meets quarterly.[47]

Steps also are being taken to integrate wetlands protection with other related resource issues on a watershed or hydrologic unit basis, in order to characterize wetlands resources more completely and identify critical

39. Stacey, *supra* note 11.
40. Oklahoma Environmental Education Coordinating Committee, *at* http://www.ok.gov/okcc/Agency_Divisions/Conservation_Programs_Division/Conservation_Education/OKEECC_Members,_Projects_&_Programs.html.
41. Oklahoma Environmental Education Coordinating Committee, *Wow! The Wonders of Wetlands*, available at http://www.ok.gov/okcc/Agency_Divisions/Conservation_Programs_Division/Conservation_Education/WOW_Wonder_of_Wetlands.html.
42. Oklahoma Environmental Education Coordinating Committee, *supra* note 40.
43. Personal communication with Karla Beatty, Educ. Coordinator, State Coordinator for Project Wet, Okla. Conservation Comm'n (Jan 22, 2007).
44. Project Wet, *at* http://www.projectwet.org/usa/ (last visited July 5, 2007).
45. Beatty, *supra* note 43.
46. Smithee, *supra* note 31.
47. Okla. Conservation Comm'n, *supra* note 1 at 7 (to promote the coordination of wetlands management in OK through discussion, information exchange, cooperation and the sharing of resources).

functions, as well as to develop a classification system and water quality standards to identify and protect wetlands functions.[48]

IX. Acronyms and Abbreviations

EPA – U.S. Environmental Protection Agency

FTE – Full-Time Equivalent

Corps – U.S. Army Corps of Engineers

NWP – Nationwide Permit

OCC – Oklahoma Conservation Commission

ODEQ – Oklahoma Department of Environmental Quality

ODWC – Oklahoma Department of Wildlife Conservation

OWRB – Oklahoma Water Resources Board

OWW – Oklahoma Water Watch

USDA – U.S. Department of Agriculture

WET – Water Education for Teachers

WHAM – Wetlands Health Assessment Monitoring

WQS – Water Quality Standards

48. *Id.*

South Carolina

I. Overview

Approximately 4.5 million acres of wetlands comprise 23 percent South Carolina's land area. Of these 90 percent are freshwater wetlands and 10 percent are coastal wetlands.[1] Wetlands loss in South Carolina is less extensive than in other states. Officials estimate that the state has lost about 27 percent of its wetlands since the mid-1700s.[2]

Regulatory activities pertaining to wetlands are administered by South Carolina's Department of Health and Environmental Control (SCDHEC). SCDHEC's Office of Ocean and Coastal Resource Management (OCRM), Regulatory Division regulates tideland critical areas through a direct permitting program under the state's Coastal Zone Management Act (CZMA). OCRM also certifies state and/or federal permits that involve freshwater and brackish water wetlands outside the critical areas but within the coastal zone.[3] SCDHEC's Office of Environmental Quality Control (OEQC), Bureau of Water regulates waters of the state, including wetlands, and issues §401 certifications under the Clean Water Act (CWA).

II. Regulatory Programs

Wetland definitions and delineation

South Carolina's Pollution Control Act (PCA)[4] defines "waters of state" as "lakes, bays, sounds, ponds, impounding reservoirs, springs, wells, rivers, streams, creeks, estuaries, marshes, inlets, canals, the Atlantic Ocean within the territorial limits of the State and all other bodies of surface or underground water, natural or artificial, public or private, inland or coastal, fresh or salt, which are wholly or partially within or bordering the State or within its jurisdiction."[5] SCDHEC includes wetlands in the PCA's definition of "waters of the state," an agency policy that has been upheld in court.[6]

Tidelands are defined by the CZMA as:

1. S.C. Dep't of Health and Envtl. Control, A Brief Guide To Wetlands Regulation in South Carolina, *available at* http://www.scdhec.gov/environment/water/docs/401guide.pdf (last visited July 20, 2007)
2. Dep't of Health and Envtl. Control, The facts on wetlands, available at http://www.scdhec.gov/environment/water/docs/fswets.pdf (last visited July 23, 2007)
3. S.C. Code Ann Regs. 30-1.
4. S.C. Code Ann. § 48-1 *et seq.*
5. S.C. Code Ann. § 48-1-10(2).
6. Dep't of Health and Envtl. Control, 401 Water Quality Certification, *available at* http://www.scdhec.net/environment/water/401wetlands.htm (last visited July 20, 2007).

> all areas which are at or below mean high tide and coastal wetlands, mudflats, and similar areas that are contiguous or adjacent to coastal waters and are an integral part of the estuarine systems involved. Coastal wetlands include marshes, mudflats, and shallows and means those areas periodically inundated by saline waters whether or not the saline waters reach the area naturally or through artificial water courses and those areas that are normally characterized by the prevalence of saline water vegetation capable of growth and reproduction. Provided, however, nothing in this definition shall apply to wetland areas that are not an integral part of an estuarine system.[7]

The coastal zone includes "all coastal waters and submerged lands seaward to the State's jurisdictional limits and all lands and waters in the counties of the State which contain any one or more of the critical areas."[8]

Wetland delineation criteria for tideland critical areas are found in the CZMA and associated regulations and are delineated by OCRM. Wetland delineation criteria for freshwater wetlands correspond to the criteria in the U.S. Army Corps of Engineers ("Corps") 1987 *Wetlands Delineation Manual* and are delineated by the Corps.[9]

Wetland-related law and regulation

The CZMA authorizes OCRM to develop, administer and enforce "an overall coastal management program and permitting process" for wetlands that are "continuous to or adjacent to coastal waters and [are] an integral part of an estuarine system."[10] The OCRM has direct permitting authority for critical areas of the coastal zone through the state's Critical Area Permitting Program. Critical areas of the coastal zone include coastal waters, tidelands, beach/dune systems and beaches.[11]

OCRM staff review about 1,000 permit applications per year; between three and five percent are denied. Issued permits are often attached with special conditions that can drastically reduce or otherwise change the scope of the project. Permit decisions begin with a public notice review; once the file is complete, the project manager will consider the request's consistency with the Coastal Zone Management Act, Coastal Zone Management Plan, and Critical Area Regulations. The review process consists of 15-day public notices for minor activities, such as docks and bulkheads, to 30-day comment periods for major activities, such as marinas, dredging, and bridges. The review contains a decision document that contains all knowledge about a project site, including a geographic review. Applicants may appeal decisions.[12] In addition, OCRM reviews proposed activities in areas outside of the critical area but within the Coastal Zone for consistency with the Coastal Zone Management Program.[13]

7. S.C. Code Ann. § 48-39-10.

8. These counties are Beaufort, Berkeley, Charleston, Colleton, Dorchester, Horry, Jasper, and Georgetown. S.C. Code Ann. Regs. 30-1(D)(12).

9. Personal communication with Barbara Neale, Dep't of Health and Envtl. Control, Office of Ocean and Coastal Res. (Feb. 26, 2007); and Personal Communication with Rheta Geddings, Dep't of Health and Envtl. Control, Bureau of Water (Mar. 15, 2007).

10. S.C. Code Ann. § 48-39-10(G).

11. S.C. Code Ann. Regs. §30-1(D)(14).

12. Personal communication with Curtis Joyner, Dep't of Health and Envtl. Control, Office of Ocean and Coastal Res. (Apr. 9, 2007)

13. S.C. Dep't of Health and Envtl. Control, *supra* note 1.

OEQC's Bureau of Water regulates waters of the state, including wetlands, through CWA §401 certification and the state's PCA.[14]

Organization of state agencies

Office of Ocean and Coastal Resource Management, Regulatory Division. SCDHEC's OCRM, Regulatory Division administers South Carolina's Coastal Zone Management Program, regulating tideland critical areas and certifying state and/or federal permits that involve freshwater and brackish water wetlands outside the critical areas but within the coastal zone.[15] The Regulatory Division has two regional offices; the main regional office is located in Charleston. Approximately 30 full-time equivalent (FTE) staff work primarily on reviewing Critical Area Permit applications. OCRM's budget is derived primarily from state appropriations.[16]

Office of Environmental Quality Control, Bureau of Water. SCDHEC's OEQC, Bureau of Water issues §401 certifications. The Bureau of Water has twelve regional offices and approximately eight FTEs who work primarily on §401 certification. The Bureau's budget is derived primarily from state appropriations; however, a few additional Bureau of Water staff are funded through U.S. Environmental Protection Agency Wetland Program Development Grants.[17]

§401 certification

Any actions that require a federal permit, license, or approval that results in a discharge into waters of the state, including §404 individual dredge and fill permits and nationwide permits outside the coastal zone, require state water quality certification. The state has adopted procedures and criteria for water quality certification[18] and National Pollutant Discharge Elimination System permits decisions (NPDES).[19] Certification addresses physical and hydrological impacts on wetlands and water quality to prevent degradation and maintain existing uses.[20] When assessing the water quality impacts of a proposed project, the Bureau of Water uses best professional judgment to consider the following factors: (1) whether the activity is water dependent and the intended purpose of the activity; (2) whether there are feasible alternatives to the activity; and (3) all potential water quality impacts of the project, both direct and indirect, over the life of the project including: (a) impact on existing and classified water uses; (b) physical, chemical, and biological impacts, including cumulative impacts; (c) the effect on circulation patterns and water movement; and (d) the cumulative impacts of the proposed activity and reasonably foreseeable similar activities of the applicant and others.[21]

14. S.C. Code Ann. § 48-1 *et seq.*
15. S.C. Code Ann Regs. 30-1.
16. Personal communication with Barbara Neale, Dep't of Health and Envtl. Control, Office of Ocean and Coastal Res. (Feb. 26, 2007).
17. Personal Communication with Rheta Geddings, Dep't of Health and Envtl. Control, Bureau of Water (Mar. 15, 2007).
18. S.C. Code Ann. Regs. 61-101.
19. Bureau of Water, Expedited Review Program-Standard Operating Procedures (2006), *available at* http://www.scdhec.net/environment/water/docs/erf_ExpRevSOPFINAL.pdf.
20. S.C. Dep't of Health and Envtl. Control, *supra* note 1..
21. S.C. Code Ann. Regs. 61-101.

Public notice is required of all applications for certification of federal licenses or permits. If 20 or more individual written requests that raise water quality and classified use issues are received during the public comment period, then the Bureau of Water will hold a public informational hearing. SCDHEC then prepares a written assessment on each proposed activity, and a certification is issued if the applicant has demonstrated that the project is consistent with state and federal water quality provisions. Federal §404 Permit from the Corps may not be issued without the associated state issuance of a §401 certification and/or a Coastal Zone Consistency determination.[22] The Bureau of Water issues an average of 200-300 certifications per year.[23] Although the vast majority of the applications for certification are approved (approximately 99 precent), project-specific conditions are attached to nearly all permits.[24]

Nationwide permits

The State of South Carolina has denied four nationwide permits (NWPs),[25] thus requiring individual water quality certifications and coastal zone consistency determinations prior to the use of these NWPs. Six NWPs[26] have been denied in areas of South Carolina defined as the Coastal Management Zone; thus an individual coastal zone consistency determinations is required prior to permitted actions. South Carolina's action on the 2007 NWPs could not be reviewed within the reporting period. SCDHEC has been unsuccessful in its attempt to develop a programmatic general permit with the Corps.[27]

Mitigation

South Carolina has not adopted mitigation rules for freshwater wetlands. However, the Bureau of Water follows a non-rule standard operating procedure[28] developed by South Carolina's Mitigation Banking Review Team (MBRT) that directs the Bureau to consider the qualities of the impact site, as well as the proposed mitigation site, to determine the proper ratio of mitigation. The Bureau of Water is currently updating these standard operating procedures and expects to be finished in late 2007.[29]

The non-rule policy document *Policies and Procedures of the South Carolina Coastal Management Program* establishes general guidelines for coastal wetland mitigation in the state.[30] These guidelines include provisions relating to site selection, drawing submittals, hydrological engineering, soils, vegetation establishment, criteria for evaluating success, contingency planning, implementation schedules, and mitigation

22. S.C. Dep't of Health and Envtl. Control, *supra* note 1.
23. Geddings, *supra* note 17.
24. *Id.*
25. *Id.* NWP 16 – Return Water From Upland Contained Disposal Areas; NWP 17 – Hydropower Projects; NWP 21 – Surface Coal Mining Activities; NWP 34 – Cranberry Production Activities
26. *Id.* NWP 23 – Approved Categorical Exclusions; NWP 24 – State Administered Section 404 program; NWP 28 – Modifications of Existing Marinas; NWP 35 – Maintenance Dredging of Existing Basins; NWP 42 – Recreational Facilities; NWP – 43 Stormwater Management Facilities
27. Geddings, *supra* note 17.
28. US Army Corps of Eng'rs – Charleston District, Regulatory Division, Standard Operating Procedures for Compensatory Mitigation (2002), *available at* http://www.sac.usace.army.mil/?action=mitigation.home (follow "2002 Compensatory Mitigation SOP" hyperlink).
29. Geddings, *supra* note 17.
30. Office of Ocean and Coastal Res. Mgmt., S.C. Dep't of Health and Envtl, Control, Policies and Procedures of the South Carolina Coastal Management Program-An Excerpt of the South Carolina Coastal Management Program Document (1995), *available at* http://www.scdhec.net/environment/ocrm/regs/docs/OCRM_Policies_Procedures.pdf .

ratios.[31] In addition, OCRM uses the Corps Charleston District's standard operating procedure for calculating mitigation bank credits.[32] A pilot program has been developed for in-lieu fee mitigation, although it is limited to two nonprofit recipients within three defined service areas.[33]

The South Carolina Department of Natural Resources (SCDNR), SCDHEC, Corps Charleston District, U.S. Environmental Protection Agency (EPA), U.S. Fish and Wildlife Service (FWS), and U.S. Department of Agriculture serve on an interagency MBRT that meets once a month.[34] In 2002, the MBRT published *Joint State/Federal Administrative Procedures for the Establishment and Operation of Mitigation Banks in South Carolina,* which provides guidance on the development and operation of mitigation banks.[35] Three mitigation banks are operated by the South Carolina Department of Transportation; the remaining banks are privately operated.[36]

Compliance and enforcement

The Pollution Control Act includes enforcement provisions such as civil[37] and criminal[38] penalties.[39] These provisions, however, are rarely used. In practice, the Corps takes the lead on corrective action orders pertaining to §401/404-related matters.[40]

The CZMA also authorizes enforcement provisions, including civil[41] and criminal[42] penalties. OCRM enforcement actions focus on critical area permits and some impacts to freshwater wetlands in the eight coastal counties.[43]

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31. *Id.*
32. Personal communication with John Hensel, Dep't of Health and Envtl. Control, Office of Ocean and Coastal Res. Mgmt. (March 14, 2007).
33. *Id.*
34. Geddings, *supra* note 17.
35. US Army Corps of Eng'rs – Charleston District, Regulatory Division, *supra* note 28.
36. J. Wayne Hall, US Dep't of Transp. – Federal Highway Admin., *Wetlands Mitigation Program in South Carolina*, Greens Roadside (2001), *available at* http://www.fhwa.dot.gov/environment/greenerroadsides/sum01_3.htm.
37. S.C. Code Ann. § 48-1-330. Civil penalties. Any person violating any of the provisions of this chapter, or any rule or regulation, permit or permit condition, final determination or order of the Department, shall be subject to a civil penalty not to exceed ten thousand dollars per day of such violation.
38. S.C. Code Ann. § 48-1-340. False statements, representations or certifications; falsifying, tampering with or rendering inaccurate monitoring devices or methods. Any person who knowingly makes any false statement, representation or certification in any application, record, report, plan or other document filed or required to be maintained under this chapter or who falsifies, tampers with or knowingly renders inaccurate any monitoring device or method required to be maintained under this chapter, shall be subject to the civil or criminal provisions contained in this chapter. For the purposes of this section the term "person" shall mean, in addition to the definition contained in § 48-1-10, any responsible corporate officer.
39. S.C. Code Ann. § 48-1-210.
40. Geddings, *supra* note 17.
41. S.C. Code Ann. § 48-39-170. Penalties.
(B) Any violation of any provision of this chapter involving five yards square (225 square feet) or less of critical area may be treated as a minor violation, the penalty for which shall be a fine of not less than fifty dollars nor more than two hundred dollars. The enforcement officers of the Natural Resources Enforcement Division of the South Carolina Department of Natural Resources may serve warrants under this provision and otherwise enforce this chapter. The magistrates of this State have jurisdiction over minor violations of this chapter. Each day of noncompliance with any order issued relative to a minor violation or noncompliance with any permit, regulation, standard, or requirement relative to a minor violation shall constitute a separate offense; provided, however, that violations which involve the construction or repair of water control structures shall not be considered minor violations regardless of the area involved.
(C) Any person who is determined to be in violation of any provision of this chapter by the department shall be liable for, and may be assessed

Tracking systems

Since 1999, OCRM has utilized the Environmental Facilities Information System (EFIS) to track critical area permits and coastal certification decisions, although the database is not yet fully functioning according to state agency staff.[44] OCRM is working to build the database's tracking capacity and has recently begun tracking proposed impacts, locations of both impacted areas and mitigation activities, restoration methodology, and monitoring reports for both on-site and off-site mitigation projects.

The Bureau of Water also uses EFIS to track §401 certifications and is currently developing a database to track mitigation activities. This new database will include maps of all mitigation sites using Geographic Information Systems. The Bureau of Water requires monitoring reports and site inspections for all mitigation projects.[45]

III. Water Quality Standards

South Carolina's water quality standards (WQS) do not identify criteria specific to wetlands.[46] Surface WQS, which apply to all waters of the state, are both narrative and numeric in nature and include chemical and biological criteria for water quality.[47] The regulations do not identify designated uses for wetlands specifically, defaulting to open water designated uses.[48] Likewise, there are no wetland-specific antidegradation rules; these rules apply to all state waters, which include wetlands.[49] WQS and open water designated uses relate to wetland fish and wildlife habitat and water quality.[50]

In the absence of wetland-specific WQS, the Bureau of Water has adopted procedures and criteria for water quality certification for Corps permits[51] and NPDES permits.[52] In November 2006, the Bureau of Water instituted a pilot program for an Expedited Review Program (ERP) for NPDES permits.[53] The Bureau of Water has

by the department for, a civil penalty of not less than one hundred dollars nor more than one thousand dollars per day of violation. Whenever the department determines that any person is in violation of any permit, regulation, standard, or requirement under this chapter, the department may issue an order requiring such person to comply with such permit, regulation, standard, or requirement, including an order requiring restoration when deemed environmentally appropriate by the department; in addition, the department may bring a civil enforcement action under this section as well as seeking an appropriate injunctive relief under Section 48-39-160.

42. S.C. Code Ann. § 48-39-170. Penalties.

(A) Any person violating any provision of this chapter is guilty of a misdemeanor and, upon conviction, must be imprisoned not more than six months or fined not more than five thousand dollars, or both, for the first offense, and imprisoned not more than one year, or fined not more than ten thousand dollars, or both, for each subsequent offense.

43. Neale, *supra* note 16.

44. *Id.*; Hensel, *supra* note 32.

45. Geddings, *supra* note 17.

46. S.C. Code Ann. Regs. 61-68(C).

47. S.C. Code Ann. Regs. 61-101.

48. S.C. Code Ann. Regs. 61-68(A)(1), 61-68(D).

49. S.C. Code Ann. Regs. 61-68(D).

50. S.C. Code Ann. Regs. 61-101.

51. *Id.*

52. S.C. Code Ann. Regs. 61-9.

53. Section 44-1-165 of S.1263.

established standard operating procedures and a fee schedule for the pilot ERP.[54] The state has adopted procedures and criteria for water quality certification (see *§401 certification*, above).[55]

IV. Monitoring and Assessment

South Carolina does not operate a formal monitoring and assessment program for wetlands or streams. However, OCRM uses an informal functional assessment methodology that tracks biological criteria for the purpose of monitoring mitigation and enforcing the CZMA. The agency requires site-specific monitoring for all Critical Area Permits that require mitigation. In addition, the interagency MBRT defines monitoring and assessment requirements for mitigation banks.[56] The Bureau of Water follows standard operating procedures to guide functional assessments of wetland mitigation projects.[57]

V. Restoration and Partnerships

DHEC does not operate a formal restoration program for wetlands or for partnering with private landowners to conserve wetlands. However, as of July 2007, legislation has been proposed that would provide tax breaks to private landowners for protecting riparian buffers.[58]

VI. Education and Outreach

South Carolina's DNR administers two privately-funded wetland-specific education programs that help educators integrate wetland education into their curriculum: Project WET (Water Education for Teachers) and Project Wild.[59]

VII. Coordination among State and Federal Agencies

An interagency team composed of the Corps, SCDHEC, EPA, FWS, National Marine Fisheries Service, SCDNR, and South Carolina Department of Archives and History meets once a month to discuss permitting issues and provide comments on permit applications.[60]

54. Bureau of Water, Expedited Review Program-Standard Operating Procedures (2006), *available at* http://www.scdhec.net/environment/water/docs/erf_ExpRevSOPFINAL.pdf.
55. S.C. Code Ann. Regs. 61-101.
56. Hensel, *supra* note 32.
57. Geddings, *supra* note 17.
58. Neale, *supra* note 16.
59. Personal communication with Steve Bates, S.C. Dep't of Natural Res. (April 6, 2007).
60. Hensel, *supra* note 32.

SCDHEC also entered into Memorandum of Agreements (MOA) with nearly all other state agencies when the coastal program was being developed. These MOAs relate to broad coastal issues, including those that affect wetlands.[61]

VIII. Acronyms and Abbreviations

ACOE- Army Corps of Engineers

CWA- Clean Water Act

CZMA – South Carolina Coastal Zone Management Act

EFIS – Environmental Facilities Information System

EPA – U.S. Environmental Protection Agency

EQC – Office of Environmental Quality Control

ERP – Expedited Review Program

FTE – Full-time Equivalent

FWS – U.S. Fish and Wildlife Service

MBRT – Mitigation Banking Review Team

MOA – Memorandum of Agreement

NPDES- National Pollutant Discharge Elimination System

NWP – Nationwide Permits

OCRM – Office of Ocean and Coastal Resource Management

PCA –Pollution Control Act

(Project) WET – Water Education for Teachers

SCDHEC- South Carolina Department of Health and Environmental Control

SCDNR – South Carolina Department of Natural Resources

61. Neale, *supra* note 16.

Tennessee

I. Overview

As of the early 1990s, Tennessee had lost more than half of its historic wetlands, with an estimated 787,000 acres remaining.[1,2] Many wetlands have been lost due to filling, draining, water diversion,[3] and habitat fragmentation,[4] and alteration of hydrologic processes by agriculture, construction, mining, and creation of dams has significantly reduced wetland water quality. Excessive or inadequate water inputs, high sediment or nutrient loads, and interference with vegetation have often resulted in imbalance among the physical, chemical, and biological processes that together determine wetland function.[5]

However, the rate of wetland loss in Tennessee has significantly declined in recent years. A state interagency committee devoted to wetland management has identified the following general trends in the state:

- Agricultural conversions are decreasing;
- Marginal cropland is being abandoned and allowed to revert to wetlands;
- Bottomland hardwoods are being converted to cropland at a decreasing rate;
- Urban conversions are increasing; and
- Mitigation for increasing transportation impacts is helping to limit the net loss of wetland acreage.[6]

Tennessee's wetlands are regulated by the Department of Environment and Conservation (TDEC) Division of Water Pollution Control, which requires either §401 certification or a state permit for impacts to wetlands. The Tennessee Wildlife Resources Agency (TWRA) collaborates with TDEC on mitigation banking and independently administers a program to acquire and restore wetland properties.

II. Regulatory Programs

Wetlands definitions and delineation

The Tennessee Water Quality Control Act of 1977 defines "waters of the state" as:

1. Kenneth L Morgan & Thomas H Roberts, Tenn. Technological Univ., An Assessment of Wetland Mitigation in Tennessee (Tenn. Dep't of Env't and Conservation eds., 1999), *available at* http://www.state.tn.us/environment/na/wetlands/mitdoc3.pdf , *citing* T. E. Dahl, Wetland losses in the United States, 1780's to 1980's (U.S. Department of the Interior, Fish and Wildlife Service eds., 1990).
2. Governor's Interagency Wetlands Comm., Tennessee's Wetland Conservation Strategy (October 1998), *available at* http://www.state.tn.us/environment/na/wetlands/, *citing* T. E. Dahl, Wetland losses in the United States, 1780's to 1980's (U.S. Department of the Interior, Fish and Wildlife Service eds., 1990).
3. *Id.*
4. Personal Communication with Mike Lee, Tenn. Dep't of Env't and Conservation (March 13, 2007).
5. Governor's Interagency Wetlands Comm., *supra* note 2.
6. *Id.*

> any and all water, public or private, on or beneath the surface of the ground, which are contained within, flow through, or border upon Tennessee or any portion thereof except those bodies of water confined to and retained within the limits of private property in single ownership which do not combine or effect a junction with natural surface or underground waters.[7]

Wetlands are defined in the TDEC rules as "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."[8]

Tennessee relies on the delineation criteria in the Corps' 1987 *Wetland Delineation Manual.*[9]

Wetland-related law and regulation

The Tennessee Water Quality Control Act of 1977[10] and the corresponding Aquatic Resources Alteration Rule[11] establish the state's Aquatic Resources Alteration Permit (ARAP) program that regulates wetlands and wetland activities apart from those covered by individual §404 permits. Physical alterations to waters of the state that require either an ARAP or a §401 water quality certification include: dredging, excavation, channel widening, or straightening; bank sloping; stabilization; channel relocation; water diversions or withdrawals; dams, weirs, dykes, levees or other similar structures; flooding, excavating, draining and/or filling a wetland; road and utility crossings; and structural fill.

§401 certification program

Tennessee uses §401 certification to protect wetlands by approving, conditioning, or denying federal §404 permits.[12] In 2000, rules for implementation of the state's §401 certification and the ARAP programs were formally adopted. The rules specifically define wetlands as a category of waters of the state and establish a "no net loss of water resource value" standard for permitting.[13] Section 401 certification is required for any §404 permit approved by the Corps. However, if the Corps issues a Nationwide Permit (NWP) for a project, or doesn't have jurisdiction over the impacted wetland, then the applicant must obtain a state ARAP permit.[14]

TDEC issues approximately 400 to 500 wetland permits per year, split about equally between ARAPs and §401 certification. Almost all decisions are approved; few decisions are waived.[15] Approval is almost always contingent upon changes to the original application, such as reductions of impacts or incorporation of avoidance and minimization considerations.[16] Wetland permit decisions are based on both quantitative and qualitative

7. Tenn. Code Ann. § 69-3-103(33).
8. Tenn. Comp. R. & Regs. 1200-4-7-.03(38).
9. Personal Communication with Mike Lee, Tenn. Dep't of Env't and Conservation (January 9, 2007).
10. Tenn. Code Ann. § 69-3-108.
11. Tenn. Comp. R. & Regs. 1200-4-7.
12. Lee, *supra* note 9.
13. Tenn. Comp. R. & Regs. 1200-4-7-.01, 1200-4-7-.04.
14. Lee, *supra* note 9.
15. *Id.*
16. Personal Communication with Mike Lee, Tenn. Dep't of Env't and Conservation (March 12, 2007).

assessment methodologies. These qualitative factors are described in TDEC's Aquatic Resource Alteration Rules in relation to assessing water resource values[17] and in the Tennessee Antidegradation Standard.[18]

TDEC's wetland assessment methodology is still evolving. The division is incorporating Tennessee's antidegradation rules and tier evaluations into the permit assessment process.[19] TDEC reviews all applications to assess the proposed impacts and determine if a tier assessment must be conducted. The antidegradation guidelines, which apply to all waters of the state, are more stringent for impacts to Tier 2 and 3 wetlands than those for Tier 1 wetlands.[20] A field review is conducted for projects impacting all three tiers of wetlands; these are coordinated with TWRA, the Corps, the U.S. Fish and Wildlife Service (FWS), and occasionally the U.S Environmental Protection Agency (EPA).[21] The department also has an EPA grant to develop a new assessment methodology for permitting purposes.[22]

TWRA reviews public notices for §401 certification and ARAP permits to ensure that the proposed impacts and mitigation comply with the Basic Minimum Compensatory Mitigation Requirements developed by TDEC, TWRA, EPA, Corps, and FWS.[23] TWRA also ensures that permits follow the mitigation ratios laid out in the TDEC mitigation rules.[24]

Organization of state agencies

Under the Water Quality Control Act, the TDEC Division of Water Pollution Control has regulatory authority for wetlands and administers the §401 certification and ARAP programs. While a number of staff members devote time to wetland-related issues, only one works full-time on wetlands. This full-time staff member works primarily on permitting, but also handles some enforcement issues and is responsible for EPA State Program Development Grants. Other staff members handle wetland-related permits, and some field office personnel spend portions of their time on wetland delineation and evaluation. Funding for wetland work comes from permit processing fees, the general state operating budget, and the EPA State Program Development Grants. TDEC has field offices in Nashville, Jackson, Cookeville, Johnson City, Memphis, Columbia, Chattanooga, and Knoxville.[25]

TWRA comments on the TDEC permitting processes. Approximately 67 staff members spend part or all of their time on wetland-related activities (the equivalent of an estimated 21 FTEs), including habitat biologists and land managers in regional offices.[26] These regional biologists review TDEC permit public notices to write

17. Tenn. Comp. R. & Regs. 1200-4-7-.04.
18. Tenn. Comp. R. & Regs. 1200-4-3-.06.
19. Lee, *supra* note 9.
20. As of early 2007, TDEC was planning to rename these categories. Tier 3 waters will be renamed as "Outstanding Natural Resources," Tier 2 waters as "Exceptional Tennessee Waters", and Tier 1 as "All Other Waters". Lee, *supra* note 16.
21. Lee, *supra* note 9.
22. *Id.*
23. USACE et al.. Some Basic Minimum Compensatory Mitigation Requirements (October 1999) (on file with author).
24. Personal Communication with Rob Todd, Tenn. Wildlife Res. Agency (January 17, 2007).
25. Lee, *supra* note 9.
26. Personal Communication with Rob Todd, Tenn. Wildlife Res. Agency (March 2, 2007).

TWRA comments. Funding for these activities is provided by state appropriations, money paid to the agency for mitigation credits, and regional wetland budgets for wildlife management areas. TWRA also administers the Tennessee Wetland Acquisition Fund, which acquires and restores wetlands. This program is funded by a real estate transfer tax. TWRA is headquartered in Nashville and maintains regional offices in Jackson, Nashville, Morristown, and Crossville.[27]

Nationwide permits

TDEC has issued conditional §401 water quality certification for 22 NWPs.[28] State certification was issued for seven NWPs in accordance with the provisions and general terms and conditions of the state's corresponding general permits.[29] Certification is denied for seven NWPs.[30,31]

The Division of Water Pollution Control reviews NWPs when they come up for federal reauthorization to certify that the proposed changes satisfy state water quality standards. The development of regional conditions on NWPs is handled in a series of meetings preceding re-issuance involving the Division of Water Pollution Control, TWRA, FWS, EPA, and the Corps. Conditions generally address coordination in the permitting process between the Corps and TDEC, and tend to result in notification requirements.[32]

Tennessee also has 15 General Aquatic Resource Alteration Permits that can be used to authorize a variety of minor impact activities in streams and wetlands.[33]

27. Todd, *supra* note 24.

28. TNDEC has conditioned approval of NWP#3 - Maintenance; NWP#4 - Fish and Wildlife Harvesting, Enhancement, and Attraction Devices and Activities; NWP#7 - Outfall Structures and Maintenance; NWP#12 - Utility Line Activities; NWP#13 - Bank Stabilization; NWP#14 - Linear Transportation Projects; NWP#15 - U.S. Coast Guard Approved Bridges; NWP#16 - Return Water From Upland Contained Disposal Areas; NWP#17 - Hydropower Projects; NWP#20 - Oil Spill Cleanup; NWP#22 - Removal of Vessels; NWP#23 - Approved Categorical Exclusions; NWP#25 - Structural Discharges; NWP#27 - Stream and Wetland Restoration Activities; NWP#30 - Moist Soil Management for Wildlife; NWP#32 - Complete Enforcement Actions; NWP#33 - Temporary Construction, Access and Dewatering; NWP#34 - Cranberry Production Activities; NWP#36 - Boat Ramps; NWP#37 - Emergency Watershed Protection and Rehabilitation; NWP#38 - Cleanup of Hazardous and Toxic Waste; and NWP#42 - Recreational Facilities.

29. NWP#5 - Scientific Measurement Devices; NWP#6 - Survey Activities; NWP#13 - Bank Stabilization; NWP#18 - Minor Discharges; NWP#19 - Minor Dredging; NWP#21 - Surface Coal Mining Activities; and NWP#36 - Boat Ramps.

30. NWP#29 - Single-family Housing; NWP#31 - Maintenance of Existing Flood Control Facilities; NWP#39 - Residential, Commercial, and Institutional Developments; NWP#40 - Agricultural Activities; NWP#41 - Reshaping Existing Drainage Ditches; NWP#43 - Stormwater Management Facilities; and NWP#44 - Mining Activities.

31. Tenn. Dep't of Env't and Conservation, Regional Conditions for Nationwide Permits in Tennessee. (May 2002), *available at* http://www.mvm.usace.army.mil/regulatory/Permit/NWP.TN.Reg.Cond.2002.pdf.

32. Personal Communication with Robert Baker, Tenn. Dep't of Env't and Conservation (January 19, 2007).

33. Alteration of wet weather conveyances; Bank stabilization; Construction and removal of minor road crossings; Construction of launching ramps and public access structures; Construction of intake and outfall structures; Emergency road repair; Maintenance activities; Minor alterations to wetlands; Minor dredging and filling; Sand and gravel dredging; Sediment removal for stream remediation; Stream restoration and habitat enhancement; Surveying and geotechnical exploration; Utility line crossings; Wetlands restoration and enhancement. Tenn. Dep't of Env't and Conservation, Environmenal Permits Handbook *available at* http://www.state.tn.us/environment/permits/arap.shtml (last visited June 27, 2007).

Mitigation

The Tennessee Water Pollution Control Regulations require that permittees consider avoidance and minimization of impacts.[34] The Aquatic Resources Alteration Rule requires that impacts resulting in lost resource value of waters of the state must be "offset by mitigation sufficient to result in no overall net loss of resource value." Under this regulation, a §401 certification or ARAP permit may not be issued unless proposed projects are designed to avoid impacts, minimize them, or provide mitigation.[35]

TDEC rules guide compensatory mitigation in Tennessee. Under these rules, applicants must consider alternatives to the proposed activity that would result in a net loss of water resource value in waters of the state. If the activity will result in a loss of resource values, then the applicant must propose mitigation sufficient to achieve "no net loss" of water resource values. The rules include suggested ratios for common mitigation measures.[36] Certain minor impacts to wetlands authorized under the state's General Aquatic Resource Alteration Permits are exempt from mitigation requirements if they do not exceed prescribed limits.[37]

The Division of Water Pollution Control also has stream mitigation guidelines[38] that are used by the Tennessee Stream Mitigation Program of the non-profit Tennessee Wildlife Resources Foundation. These guidelines cover riparian wetlands in addition to streams and are followed by TDEC permit writers.[39] The stream mitigation program is an in-lieu-fee program through which permittees pay $200 per permitted foot of stream loss.[40]

A Mitigation Banking Review Team (MBRT) was established in 1995. The members include the Memphis and Nashville Corps Districts, TDEC, TWRA, EPA, FWS, U.S. Department of Agriculture (USDA), Federal Highway Administration, and Tennessee Department of Transportation. The team adopted a general wetland banking memorandum of agreement (MOA), which serves as the guiding document for banking.[41,42]

As of January 2007, there were seven wetland mitigation banks operating in the state. Two are operated by state agencies, two by private not-for-profit organizations, and three by private, for-profit organizations. Banks are established through an MOA signed by state and federal agencies.[43]

34. Tenn. Code Ann. § 69-3-102(b).
35. Tenn. Comp. R. & Regs. 1200-4-7-.04 (c).
36. Tenn. Comp. R. & Regs. 1200-4-7-.04.
37. Lee, *supra* note 16.
38. Tenn. Dep't of Env't and Conservation, Stream Mitigation Guidelines for the State of Tennessee (June 1, 2004) (on file with author).
39. Lee, *supra* note 9.
40. Tennessee Wildlife Resources Agency, The Tennessee Wildlife Resources Foundation is a Reality, *at* http://www.tennessee.gov/twra/twrafoun.html (last visited June 27, 2007).
41. Fed. Highway Admin.; Dep't of the Army et al., General Wetland Banking Memorandum of Agreement (June 12, 1995) (on file with author).
42. Lee, *supra* note 9.
43. *Id.*

Compliance and enforcement

TDEC has an Enforcement Section that handles wetland issues, but the responsibility to follow-up with enforcement orders lies with the Division of Water Pollution Control's permit writers.[44] In 2006 the program issued approximately six abatement/corrective action orders.[45] It issued one injunction, which was concluded.[46] The program pursued criminal cases for the first time in recent history, one of which resulted in the serving of a warrant.[47] Criminal penalties can vary up to $10,000 per day for violations of the Tennessee Water Quality Control Act of 1977. The Act also provides for criminal penalties of up to $25,000 for knowing violations.[48] The state assesses civil penalties for violations of the Water Quality Act for activities in wetlands (unpermitted fill, drainage, violation of §401 permit conditions, etc.), but did not impose any in 2006. Civil penalties can be imposed in amounts of up to $10,000 per day.[49] Typically, though, these penalties range between $3,500 and $15,000 per offender.[50]

Enforcement cases are generally resolved with restoration to pre-existing conditions and payment of civil penalties. The majority of penalties are contingent upon the successful completion of corrective actions required by TDEC.[51]

Tracking systems

The Division of Water Pollution Control uses a web-based database called *WPCdatabase* to track the status of permit applications. The web-based feature allows access to and use of the database by all statewide division offices. *WPCdatabase* includes information such as a brief description of the proposed activity, affected water body, latitude and longitude, whether endangered species are present in the impacted area, the number of acres of wetlands or streams to be impacted, and the number of acres to be mitigated. The database also includes information from other permits that may be associated with a site.[52]

The division also has a database for tracking mitigation, although it has not been maintained. As of early 2007, the division had recently assigned a staff member to update the database and move forward with compliance proceedings that may be discovered in the process. The database tracks whether mitigation has been completed, if the project is in compliance with agency rules, and if the site is being monitored as required. This data is drawn from issued permit files that include information on required mitigation and the current status of projects.[53]

44. *Id.*
45. Tenn. Code Ann. § 69-3-109 (2006); Tenn. Comp. R. & Regs. 1200-4-1-.03.
46. Tenn. Comp. R. & Regs. 1200-4-1-.03.
47. Lee, *supra* note 9.
48. Tenn. Code Ann. § 69-3-115.
49. *Id.*
50. Lee, *supra* note 9.
51. *Id.*
52. Personal Communication with Mike Lee, Tenn. Dep't of Env't and Conservation (January 24, 2007).
53. Lee, *supra* note 9.

III. Water Quality Standards

Tennessee does not have water quality standards specific to wetlands. Wetlands are covered by the water quality standards and designated uses for all surface waters of the state.[54] Tennessee's water quality standards and associated designated uses are designed to protect the "resource values," or functions, of waters of the state. Resource values include the ability of water resources to: filter, settle, and/or eliminate pollutants; prevent the entry of pollutants into downstream waters; assist in flood prevention; provide habitat for fish, aquatic life, livestock and water fowl; provide drinking water for wildlife and water fowl; provide and support recreational uses; and provide both safe and adequate quality and quantity of drinking water.[55]

Tennessee also has anti-degradation standards that apply to all waters of the state, and that are used in the §401 and ARAP permitting processes (*see Section II, Regulatory Programs, 401 certification program*).[56,57]

Source permit decisions for wetlands (NPDES) are based on the resource values of wetlands. If an activity is proposed that results in loss of resource values, then applicant must avoid, minimize, and/or compensate for these losses.[58]

IV. Monitoring and Assessment

Monitoring and assessment for wetlands

TDEC has developed a functional assessment methodology (the Tennessee Rapid Assessment Methodology (TRAM)) to assess the quality of wetlands. This methodology is based on the Ohio Rapid Assessment Methodology and is still being modified to account for differences between Ohio and Tennessee. TDEC also has developed two hydrogeomorphic (HGM) models and is in the process of developing a third in coordination with TWRA, FWS, Corps, EPA, and USDA. TDEC hopes to eventually combine the use of the TRAM, a primarily qualitative assessment, with the more quantitative HGM assessments.[59] These methodologies allow TDEC to assign wetlands a tier category for antidegradation regulatory purposes. The assessments also justify permit decisions in the §401 or ARAP application processes.[60]

TDEC is considering using an assessment methodology to determine wetland mitigation requirements. The agency is proposing a seminar under its current EPA Program Development Grant for all applicable agencies to discuss feasibility.[61]

54. Tenn. Code Ann. § 69-3-105.
55. Tenn. Comp. R. & Regs. 1200-4-7-.03.
56. Lee, *supra* note 9.
57. Tenn. Comp. R. & Regs. 1200-4-3-.06.
58. Lee, *supra* note 9.
59. Lee, *supra* note 16.
60. Lee, *supra* note 9.
61. *Id.*

Monitoring and assessment for streams

Tennessee also uses assessment methodologies for streams to help meet antidegradation standards, determine Total Daily Maximum Loads (TMDLs), make permitting decisions, and update the §303(d) list.[62] TDEC uses a bioassessment methodology, a rapid assessment methodology, and standard operating procedures. The standard operating procedures use a macroinvertibrate assessment or other defensible method.[63, 64] These were developed in conjunction with EPA.[65]

V. Restoration

The Tennessee Wetlands Conservation Strategy established a goal of restoring 70,000 acres of wetlands by the year 2000.[66] However, the strategy is not being implemented because TDEC lacks sufficient personnel.[67]

The state's wetland restoration program, TWRA's Wetland Acquisition Fund, uses money from a real estate transfer tax to acquire and manage wetland properties. Since the fund's inception in 1986, it has acquired 65,391 acres of wetlands and buffer zones. The state legislature periodically allows the agency to use the fund to purchase upland areas in regions that have few wetlands. The fund has purchased 59,400 acres of upland and surface rights for 75,000 additional acres. TWRA reforests much of the land that has been converted for agriculture and conducts enhancement in wetland areas for waterfowl and shorebirds. This includes the creation of refuges and planting and managing vegetation. These areas are managed by staff members, who also monitor bird use and vegetation success.[68]

The Land Reclamation Section of the TDEC Water Pollution Control Division creates wetlands as part of its acid mine runoff treatment systems. The section builds created wetlands as the last stage in a series of acid drainage treatments. Funds are usually provided by state appropriations, the U.S. Office of Surface Mining, and matching money from agencies such as EPA and TWRA. The section monitors the success of these created wetlands with water quality sampling.[69]

VI. Public-Private Partnerships

While TDEC does not have a formal program to coordinate with landowners, department staff occasionally coordinate with landowners on mitigation needs. Staff members keep the contact information for interested

62. Lee,*supra* note 52.
63. Tenn. Comp. R. & Regs. 1200-4-3-.03.
64. Lee,*supra* note 9.
65. Lee, *supra* note 52.
66. Governor's Interagency Wetlands Comm., Tennessee's Wetland Conservation Strategy (October 1998), *available at* http://www.state.tn.us/environment/na/wetlands/ .
67. Lee, Tennessee *supra* note 9.
68. Personal Communication with John Gregory, Tenn. Wildlife Res. Agency (January 22, 2007).
69. Personal Communication with Tim Eagle, Tenn. Dep't of Env't and Conservation (January 19, 2007).

landowners so that they can connect them with permit applicants who need to fulfill mitigation requirements.[70] TWRA coordinates with conservation groups such as the Wolf River Conservancy and The Nature Conservancy to acquire and restore wetlands through the Tennessee Wetland Acquisition Fund and NAWCA grants.[71]

VII. Education and Outreach

The state does not conduct outreach or education specific to wetlands.

VII. Coordination among State and Federal Agencies

Although Tennessee has developed a Wetlands Conservation Strategy, the plan has not been implemented due to lack of funds and staff. However, TDEC and TWRA work with the Memphis and Nashville Corps Districts, EPA, FWS, USDA, the Federal Highway Administration, and the Tennessee Department of Transportation on the state's MBRT. TDEC and TWRA also participate in regular monthly meetings on regulatory issues with the Corps and FWS. These meetings primarily focus on permit applications, but also cover mitigation and banking.[72]

IX. Acronyms and Abbreviations

Corps – U.S. Army Corps of Engineers

CWA – Clean Water Act

EPA – U.S. Environmental Protection Agency

FSA – USDA Farm Service Agency

FTE – Full-time Equivalent

FWS – U.S. Fish and Wildlife Service

HGM – Hydrogeomorphic

MBRT – Mitigation Banking Review Team

MOU/MOA – Memorandum of Understanding/Memorandum of Agreement

70. Lee, *supra* note 9.
71. Gregory, *supra* note 68.
72. Lee, *supra* note 9.

NAWCA – North American Wetland Conservation Act

NAWMA – North American Waterfowl Management Act

NEPA – National Environmental Protection Act

NPDES – National Pollution Discharge Elimination System

NRCS – USDA Natural Resources Conservation Service

NWPs – Nationwide Permits

TDEC – Tennessee Department of Environment and Conservation

TMDLs – Total Daily Maximum Loads

TWRA – Tennessee Wildlife Resources Agency

USDA – United States Department of Agriculture

WQS – Water Quality Standards

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