4. WETLANDS

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Status: Proposed

This program is currently under development and consists largely of pilot projects at this time. Current funding from the EPA Wetland Program Development Grants program and a Coastal Grant for ephemeral ponds mapping and monitoring covers the salary for one statewide coordinator position, 2 project employees (a GIS Data Manager and a Wetland Ecologist) and 2 LTE positions (for staffing the ephemeral ponds project) per year through September 2008. The statewide coordinator and GIS Data Manager are expected to be funded through 2009 with a new Wetland Grant for which the Department has been invited to write a formal proposal. These positions carry out several pilot projects that will likely serve as models for the design and implementation of an ongoing baseline and project monitoring program. Ongoing implementation will require a reliable source of federal funding to continue successful programs that were begun with wetland grant money and a state commitment to continue to direct resources to a wetland assessment and monitoring program.

Monitoring Objectives

Clean Water Act Objectives

- Establishing, reviewing and revising water quality standards
- Determining water quality standards attainment
- Identifying impaired waters
- Identifying causes and sources of water quality impairments
- Supporting the implementation of water management programs
- Supporting the evaluation of program effectiveness

Specific objectives

Assessment methodologies that are being developed for wetlands vary in focus from extensive, mapping exercises to support planning for wetland protection, acquisition and restoration to site-specific surveys used to determine wetland condition and the cause and extent of problems. Five major objectives are currently being pursued.

- Characterize wetland function and condition at the watershed scale for planning purposes
- Identify wetland restoration opportunities (potentially restorable wetlands)
- Track wetland conservation activities and permitted wetland impacts at the watershed, region, and statewide levels and produce annual status reports
- Monitor the impact of specific wetland management projects (compensatory mitigation projects, selected restoration projects)
- Improve our ability to map ephemeral ponds and develop a tiered system of monitoring protocols to identify and characterize their physical, structural and biological components.

Monitoring Design

The wetlands monitoring design will incorporate the "three tier framework" endorsed by the USEPA National Wetland Monitoring Workgroup to efficiently gather scientifically valid information that meets the needs of managers. Level 1, landscape assessment, relies on coarse, landscape scale inventory data typically

gathered by remote sensing and available in a GIS format, such as the Digital Wisconsin Wetland Inventory, Reed Canary Grass Infestation Map, Potentially Restorable Wetlands Maps and Potential Ephemeral Ponds Maps. Level 2, rapid assessment, consists of relatively simple rapid protocols to be conducted at specific sites. The Department will be revising and supplementing the Wisconsin Rapid Assessment Method as a level 2 assessment tool. Level 3, intensive site assessment, uses intensive ecological measures to score the relative condition of a site, based on research-derived indices of biological integrity. Due to likely funding limitations and the need to tie wetlands assessment to watershed planning, Department management structure, and restoration opportunities, it is recommended that implementation of a formal wetland monitoring program be conducted on a rotating basin or rotating watershed basis; with assessment at the basin or watershed scale. The number of sites needed for representative coverage and sampling frequency for future level 2 and 3 assessments is still to be decided.

Extensive landscape level assessment using available GIS wetland inventory, hydrography soils and land-use/land cover data for coarse assessment, supplemented by follow-up rapid and intensive site assessments, is contemplated at the Basin (equivalent to 8 digit hydrologic units (HU)) scale. The initial focus will be to identify wetland restoration opportunities and characterize wetland condition at the watershed (10 digit HU) and subwatershed (12 digit HU) level. Monitoring design will be guided by the lessons learned in current pilot projects in the Milwaukee River Basin and in the Mead Lake watershed. Implementation will depend upon continued federal and state funding.

Core Indicators

- Occurrence and abundance of reed canary grass (*Phalaris arundinacea*) monotypic areas – 30m resolution, ½ acre minimum mapping unit; occurrence of other wetland invasives such as purple loosestrife (*Lythrum salicaria*) and giant reed grass (*Phragmites australis*) to characterize condition of the plant community.
- Watershed Functional Assessment methodologies adapted from the Milwaukee River Basin Wetland Assessment Project will provide key wetland information for watershed planning. This would include identification of potentially restorable wetlands, estimates of wetland loss, estimates of wetland percent of original watershed and sub-watersheds, need for restoration, relative estimates of some specific ecosystem services (functions) remaining, targeting of restoration opportunities to maximize specific ecosystem services, and analysis of some functional consequences of alternative development scenarios.
- Floristic Quality Assessment (FQA) scores: Floristic Quality Index (FQI) and Mean Site Conservatism (mean C) for intensive (Level 3) site surveys to characterize condition of the plant community of any wetland type.
- Indices of Biological Integrity (IBIs) for isolated depressional wetlands, based on plants, macroinvertebrates, zooplankton, diatoms, and amphibians have been developed for intensive (Level 3) site surveys to characterize biological condition. Level 3 methods for other wetland types are not yet available.

Quality Assurance

Quality Assurance Project Plans are completed for each grant project where environmental data are gathered.

Data Management

A statewide GIS tracking system for restoration and conservation projects, compensatory mitigation projects, and permitted losses has been developed to produce comprehensive reports on trackable wetland activities. The first annual report for activities in 2006 has been released and placed on the Department's Wetland Assessment and Monitoring web page, and data is being gathered for 2007 with wetland grant funding. A new funding source to support a wetland data management coordinator is required to continue this program beyond the 2007 report.

Mapping of reed canary grass monotype areas across the entire state began in 2005 and was completed in March 2007. The resulting GIS coverage has been put on the Department's Surface Water Data Viewer web page.

Other data management systems will need to be set up in the future when wetland condition surveys are initiated in target watersheds or ecoregions. Staff are currently considering incorporating wetland monitoring data, such as Floristic Quality Assessment data and Ephemeral Ponds monitoring data, into the SWiMS database. The Wetland Monitoring Technical Team will work with the Data Management Team to accomplish this.

Data Analysis/Assessment

The following is a description of the type of data analysis being carried out in pilot programs, which would likely be employed in an ongoing rotating Basin approach to wetland assessment.

In the watershed planning context existing level 1 GIS data are used to identify two categories: degraded existing wetlands (wetlands in need of rehabilitation) and converted but potentially restorable areas, and prioritize them for further study and for restoration. Coarse GIS data on potentially restorable wetlands and reed canary grass monotypes will allow a characterization of the level of impairment of wetlands within watersheds. Further site specific study of a subset of existing wetlands and potential restoration sites identified in the coarse screening will need to employ level 1 functional assessment methods that were developed in the Milwaukee River Basin pilot assessment project. A Level 2 method for assessing the condition of existing and restored wetlands needs to be developed and tested. Once assessment protocols are in standardized and in place, this data can be stored in the state's Waterbody Assessment Display and Reporting System (WADRS). The manner in which data on wetland impairment is reported needs to be carefully considered, due to the potential for confusing wetland condition with the assessment of wetland functional values that is sometimes required for regulatory decision-making.

Reporting

Data may be reported in WDNR Basin Plans and the integrated 303(d)/305(b) Report to EPA.

Programmatic Evaluation

Currently annual meetings with regional and national EPA wetland program staff are being held to guide current and proposed monitoring projects. Other grant-funded projects include biannual project reports. A formal program evaluation would likely be held in the future when a formal program is implemented.

General Support and Infrastructure Planning

Support for work to date has been provided through EPA Wetland Program Development Grants (CWA s.104) with a 25% state match. Averaging about $150,000 per year, wetland grants have been funding the salary for one statewide coordinator position and 2 project positions per year. These positions are funded through September 2008, and support several pilot projects that have been found to be feasible for implementation in an ongoing assessment program. Since 2005 a full time LTE position for mapping and monitoring ephemeral ponds in southeastern Wisconsin has been funded through June 2008 with wetland grant money and a Coastal Zone Management grant. A citizen-based network in southeastern Wisconsin is being formed to gather monitoring data on ephemeral pond wetlands using a set of recently developed protocols.

We expect to learn much about data needs and staffing levels from these pilot projects to apply toward future analysis of infrastructure needs, program design and mobilization costs. Implementation will require a reliable source of federal funding and a state commitment to continue to direct resources to a wetland assessment and monitoring program.

Program Gaps

Level Two Condition Assessment methodology. We need to develop and test a rapid, method for assessing wetland condition, based on site response to disturbance. This method is needed for use in targeted watershed surveys to report wetland condition for 305(b) purposes. It could also be used for special management and restoration projects actions that would be similar to level two methods using a numerically based score of wetland condition. We have been invited to submit a formal application for a Wetland Grant to accomplish this.

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