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## 15. SPECIAL PROJECTS & RESEARCH

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### **Status: Currently in Place**

This monitoring is conducted as special projects under Tiers II and III. Water Division staff develop special projects during the work planning process to supplement data collected during Tier 1 monitoring. This monitoring is primarily directed at identifying, confirming, or quantifying problems. Resources are allocated to support special projects monitoring.

### **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

This monitoring occurs as a result of potential problems identified from a variety of sources, including public inquiries or complaints, knowledge of local staff or review of Tier I monitoring data. The objective of this monitoring is to investigate potential problems and determine if special management should be pursued through inter-governmental or industry cooperation or even special legislation. Most often these issues are site specific, but can be statewide in nature. Monitoring of invasive species formerly fit into this category before the effort obtained its own program and budget.

Examples of past monitoring developed to meet site-specific needs include:

- Dam operations – Monitoring to document the effects of tailwater or headwater fluctuations, the thermal or water quality effect of top draw versus bottom draw and assessment of dam removal options.
- Thermal effects of urban land use on coldwater resources.
- Compliance monitoring of WPDES permitted wastewater facilities.
- Stream classification and use designation studies.
- Impact of failing septic systems or other sanitary system deficiencies on adjacent water bodies.
- Impact of industrial groundwater withdrawal on adjacent waterbodies.
- Investigation of blue green algae with significant public health implications; investigation of algal toxicity via mouse assay.

Examples of proposed Special Projects and Research currently under consideration include:

- *303(d) List Identification/ Verification*  
Monitoring conducted to either verify current 303d listings, or identify new potential waters for listing. This monitoring may include fish surveys, habitat assessment, macroinvertebrate sampling, continuous DO/temperature monitoring or water chemistry sampling. This monitoring may be

conducted on waters currently on the 303d list or follow Tier I monitoring where impairments are identified.

- *Nutrients in Nearshore Waters of the Great Lakes*  
The objectives for nearshore monitoring of the Great Lakes are to determine trends in nutrient concentrations and water clarity and provide information for nearshore management issues. Specifically, this program is monitoring the impacts of nutrient loading from Great Lakes tributaries and impacts on nearshore environment, and identify problem areas for alga blooms along the coastlines. The presence and absence of *Cladophora*, zebra mussels, and quagga mussels are being included in the monitoring protocol to supplement information on nutrient concentrations. In addition, the nutrient status and photosynthesis rates of *Cladophora* will be measured to assist with the UWM development of a model for *Cladophora* growth in Lake Michigan. This program began in 2004 and is expected to continue annually with State Great Lakes Monitoring funds.
- *Area of Concern Monitoring*  
Through funding from EPA's Great Lakes National Program Office, the Department or contractors are periodically monitoring conditions in Great Lakes Areas of Concern: Milwaukee River Estuary, Sheboygan Harbor and river; Menominee River Harbor, Lower Green Bay/Lower Fox River and St. Louis River/Superior Harbor. The specific objectives are determined on a project by project basis. The intent is to focus this monitoring on assessing the present conditions relative to "delisting criteria".
- *Effluent Limit Refinement for Use Attainability Analysis*  
Data were compiled in a 2004 report that indicated that a strategic, widespread evaluation of the categorical effluent limits established in the 1970s is warranted to determine whether assumptions based on earlier technologies are still valid or whether an overhaul of these limits is needed. Preliminary investigations in a limited geographic area have shown the potential for this effort to substantially advance the state's efforts to revise and update NR104 and correct inappropriate assumptions. To ensure that these professional judgment based effluent limits are adequately protective, while not being overly protective, monitoring is needed. The monitoring would be focused at sites and times when stream flow was dominated by wastewater effluent, at locations across different ecoregions of the state.
- *Lake Superior Tributary Monitoring for Suspended Solids and Flow*  
Monitoring is needed to quantify the effects of various erosion control practices on tributaries to Lake Superior. This would involve looking at recovery rates of spawning areas affected by the various practices, and evaluating load reductions of solids transport under various flow conditions to evaluate effectiveness of BMPs in the watershed. Monitoring would occur over a 5-8 year period to measure changes resulting from the various practices used to control erosion. Because there are currently no standard techniques to use for these types of evaluations, appropriate techniques and sampling schedules would need to be developed.

### **Monitoring Design**

Project proposals are developed by regional staff to fund laboratory support, equipment and travel under this category. The design of these monitoring efforts is very site-specific. In most cases, the problems have been in existence for some time so that the work can be incorporated into monitoring work plans. Exceptions include problems with significant public health implications where incorporation into a biennial work plan cycle is inappropriate. These problems can have sufficient public/political interest as to displace other planned work. While it may be possible to postpone the monitoring until it can be incorporated into work plans, it is often not possible to avoid it altogether with the claim that it does not pertain to our EPA grant

supported, regulatory work. Failure to acknowledge the need for this monitoring sometimes results in resources being diverted from monitoring planned in support of regulatory programs.

### **Core and Supplemental Water Quality Indicators**

These activities range from standard water chemistry and physical measurements to methods under development such as algal toxin assays. Long term recording (weeks or months) of water level, temperature, dissolved oxygen, etc. may be involved. Sampling of fish or invertebrate populations is sometimes appropriate as well.

### **Quality Assurance**

Chemical and biological sampling and analytical procedures follow established Department protocols. The long term recording methods have not been formalized and this remains a program need.

### **Data Management**

Electronic data from this type of monitoring follows the path of other, more routine sampling: water chemistry into SLOH system, invertebrates into the UW Stevens Point database, and fish and habitat data into the Fisheries Management Database. Data from long term recording units is generally stored on personal computers and will be downloaded into SWIMS in the future.

### **Data Analysis/Assessment**

Due to the wide open nature of this category of monitoring, it is not possible to generalize data analysis techniques.

### **Reporting**

Reporting will occur in a variety of formats, including technical reports, public presentations, or news releases. Some of these investigations will result in an impairment listing under 303(d), and be reported in the integrated 303(d)/305(b) Report.

### **Programmatic Evaluation**

Since these activities are not part of EPA grant supported programs they tend to be viewed as departures from program expectations. They commonly appear in program evaluations as justifications as to why EPA grant supported work did not get done.

### **General Support and Infrastructure Planning**

*Staff & training* – Since the monitoring needed to address the diversity of issues that come up in this category can be quite specialized, local Department staff can be unaware of appropriate methods. The best way to deal with this is establishment of a forum of exchange of technical information. This formerly was partially satisfied by statewide program meetings and regular meetings of staff involved in monitoring. As budgets have caused these meetings to become less frequent, staff have become less aware of monitoring options beyond the techniques used in regular, EPA grant-supported monitoring. Also, the distribution of staff with the specialized knowledge to conduct this monitoring is not uniform and cooperation across basin and regional lines is needed. This does not always happen. The current work planning system makes it difficult to estimate how much of this kind of work occurs. However, given the fact that this monitoring is compelled to happen despite not being an integral component of EPA grant funded activities, it seems prudent to set aside some resources to acknowledge the unavoidable need to do the work. It is suggested that monitoring hours to support basic Clean Water Act programs be increased 5-10% to accommodate the need to do this work. Volunteers may be considered to assist with special projects on a case-by-case basis.

*Laboratory resources* – Approximately \$55,000 of laboratory services was allocated to this category for water quality analysis during FY08.

*Funding* – Approximately \$260,000 (not including lab resources) was allocated to this activity in FY08. It is suggested that monitoring expenses to support basic Clean Water Act programs be increased 5-10% to accommodate the need to do this work.