Programmatic evaluation

Twice each year, the DNR host a forum with federal, state, county, tribal, university, and private stakeholders to summarize and discuss aquatic invasive species reports, monitoring improvement, and response actions. Staff have requested to be made aware of reports and when Resources of Interest are created in their work area. We will begin providing weekly or monthly reports to staff. Staff has also requested to be made aware of follow-up efforts in their work area. Annual reviews should be conducted either statewide or by regional coordinators to share discoveries with volunteers and receive feedback.

Section 3.2 Monitoring Strategy for Fish Tissue

Table 21: Fish Tissue Monitoring Studies	
Study Name	**Purpose: Recreation, Public Health & Welfare**
Fish Tissue Contamination Studies	Monitoring of advisory sites and new sites for PCBs and mercury.

Study Description

Contaminants in Fish Tissue

This program has been in place since the mid-1970s. Current funding allows for return monitoring of advisory sites and some new site monitoring for PCBs and mercury. Current funds allow for limited monitoring of dioxin/furan and emerging chemicals. Overall, fish are collected from approximately 50 to 100 sites each year. Analyses completed each year include about 600 samples analyzed for mercury, 350 for total PCBs, 30 for banned pesticides, 20 for dioxin/furan analysis and 20 for other chemicals. Collection of fish for contaminants is not funded through the fish contaminant program funds but is achieved through fieldwork conducted for baseline, treaty, or other fisheries surveys.

Monitoring Objectives

The objectives of the fish contaminant program include but are not limited to protection of fish consumers, resource management, and environmental protection.

Clean Water Act Objectives:

- Determining water quality standards attainment – determine 'fishability'
- Identifying impaired waters – identify waters with bioaccumulative chemicals
- Identifying causes and sources of water quality impairments – fish tissue monitoring assists in determining sources or location of contaminated sediments.
- Evaluating program effectiveness information to evaluate remediation of sediment. Fish tissue monitoring has in the past reflected efforts to control direct discharges of bioaccumulating chemicals. Fish tissue monitoring may also be helpful in evaluating success of control of other sources of pollutants.

Specific Objectives:

- Protection of fish consumers
- Resource Management
- Environmental Protection

Monitoring Design

The monitoring design consists of different components depending on the purpose of the monitoring, the area of the state or the waterbody type (inland lakes, rivers, Great Lakes), and also varies depending on the contaminant (mercury, PCBs, pesticides, dioxin/furans, and emerging chemicals). Each year, a specific sample collection schedule is formulated to provide guidance to field staff on locations where fish samples are needed to fulfill the monitoring design.

- "Baseline" fish contaminant monitoring focuses on sampling new sites (not previously assessed for contaminants) and sites where contaminant data are old (more than 15 years old) or limited, or where existing data suggests that concentrations may be high and additional data would be beneficial to determine advisory needs. In general, top-level predator species are first selected for contaminant monitoring and additional species may be added depending on the site characteristics and availability of past contaminant data, or statewide general advisory needs.
- Advisory fish contaminant monitoring refers to monitoring fish for contaminants where special fish consumption advice is in place (site-specific advice more stringent than the general advisory) and data are needed to update consumption advice. This monitoring is generally conducted in major industrial rivers and locations where remediation may be necessary or underway. The goal is to return to inland (non-Great Lakes or non-border waters) locations with PCB-based special advice every five years in order to update the data for advisories and for trend monitoring. The goal for inland waters with mercury-based special advice is to return every 10 to 15 years. More frequent sampling can occur in areas where remediation is imminent. In addition, specific biennial monitoring designs are defined for Lakes Superior and Michigan.
- In addition, the Department has been cooperating with the EPA Great Lakes National Program Office since the late 1980s to determine trends and geographic patterns of contamination, to provide information for health advisories and for tracking contaminant levels in composite samples of key salmon species. The Department participates in some components of this monitoring by collecting fish, processing of samples, and shipping samples as defined in inter-agency agreements. This includes collection of coho or chinook salmon at three Great Lakes tributaries according to the inter-agency agreement (these samples are also analyzed as individual fillets for advisory purposes). In addition, WDNR collects lake trout from Lake Superior every other year for EPA. EPA provides the analytical services for PCBs, chloro-organic and other compounds. The data generated by this program are used for trend analysis and consumption advisories when the results are shared with WDNR.

Water Quality Indicators

Fish tissue concentrations of mercury and PCBs are core indicators as is resulting consumption advice; however, tissue concentrations are difficult to portray as indicators because of the complexity of confounding factors like fish age, growth and migration. Tissue concentrations may vary as a result of non-water quality factors and therefore appropriate analyses must be conducted to use tissue concentrations as an indicator of water quality. In addition, data for some parameters like dioxin/furan, banned pesticides and some emerging chemicals are limited.

Quality Assurance

Quality assurance processes may be found in sampling and procedure documents describing the fish contaminant monitoring program, in the procedures for each of the analytical laboratories that provide analytical services, and in Department quality assurance documents. The Wisconsin State Lab of Hygiene, a certified laboratory with approved quality assurance procedures, completes most fish contaminant analyses.

Data Management

Contaminant data are stored in the Department's fish-sediment contaminant database consisting of a series of Oracle tables and managed on a web-based system, recently updated. Data are available to the public through the Surface Water Data Viewer and through the online query tool, as well as upon verbal or written request after field verification and Department analyses are completed.

Data Analysis

Each year, the Department reviews newly obtained contaminant data in the context of existing data and advisories. The WDNR, in a cooperative effort with the Wisconsin Division of Public Health in the Dept. of Health and Family Services (DHFS), determine whether a sample is of public health significance. When concentrations of contaminants exceed

health guidelines, WDNR and WDHFS jointly issue a fish consumption advisory for the appropriate water body. Data are shared and advisories are determined for boundary waters in coordination with other Great Lakes states. The process of collection, data management and interpretation, and policy development is outlined in Department manual code 3611.1.

Reporting

The following reports are updated each year after new data are evaluated:

- Annual review of new data in context of existing data, advisories and other information to determine necessary advisory updates and publication of the advice.
- Data summaries for specific advisory or remediation sites or for specific fish contaminants on a statewide or regional basis on an as needed basis.
- Annual update of Wisconsin's Fish Contaminant Monitoring Program and Advisory Summary.
- Reporting is included in the biennial 305b report to congress.
- Completion of EPA's annual survey for the Listing of Fish and Wildlife Advisories
- Reporting to EPA Region V through the ENPPA program.
- Reporting of accomplishments through the Department's biennial work planning process.

In addition, the data and reports from the fish contaminant monitoring are used by various programs including reporting of information necessary for the 303d and other Clean Water Act requirements and sediment remediation programs.

Programmatic Evaluation

The fish contaminant monitoring program operates within the framework of the Water Division biennial work plan. Any changes to the protocol or strategy are recommended to the Fisheries Board. Reviews of work plan performance are completed annually, to evaluate job completion. In addition, program staff participates in regional and national workshops and evaluations of fish contaminant monitoring programs. Overall review of monitoring programs occurs each time a component of the program is evaluated (e.g. Great Lakes trend monitoring, baseline monitoring, advisory updates). Review of state monitoring programs is also a part of the Department-EPA ENPPA process. These processes allow annual and biennial work planning goals to be established. In addition, ongoing discussions of monitoring occurs with other groups like the Division of Health, the Great Lakes National Program office and EPA programs, contacts with other fish contaminant monitoring coordinators including coordinators from the states adjacent to Wisconsin.

Figure 22 Specific Fish Advice Sites in Wisconsin