

# STORET/WQX for Tribes

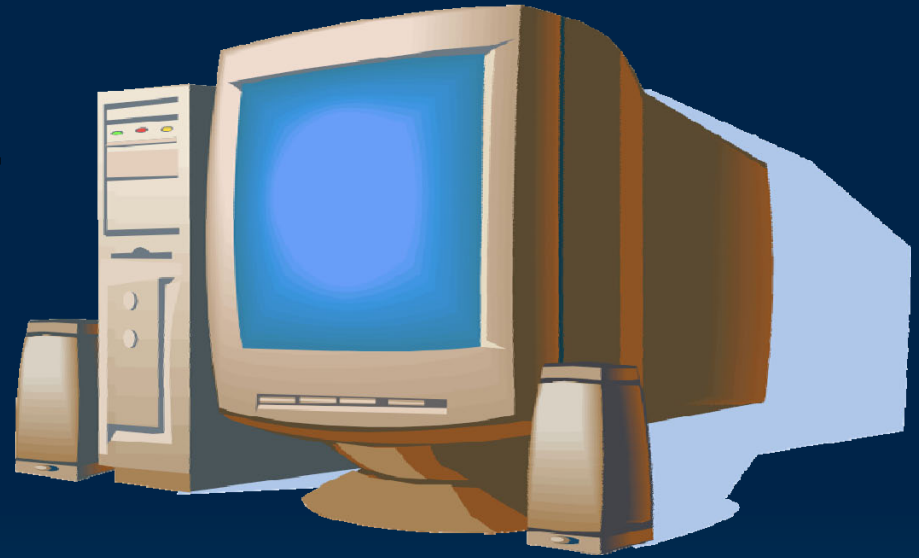
November 18-19, 2008

EPA Region 9



# Clean Water Act §106 Guidance

DATA MANAGEMENT  
REQUIREMENTS



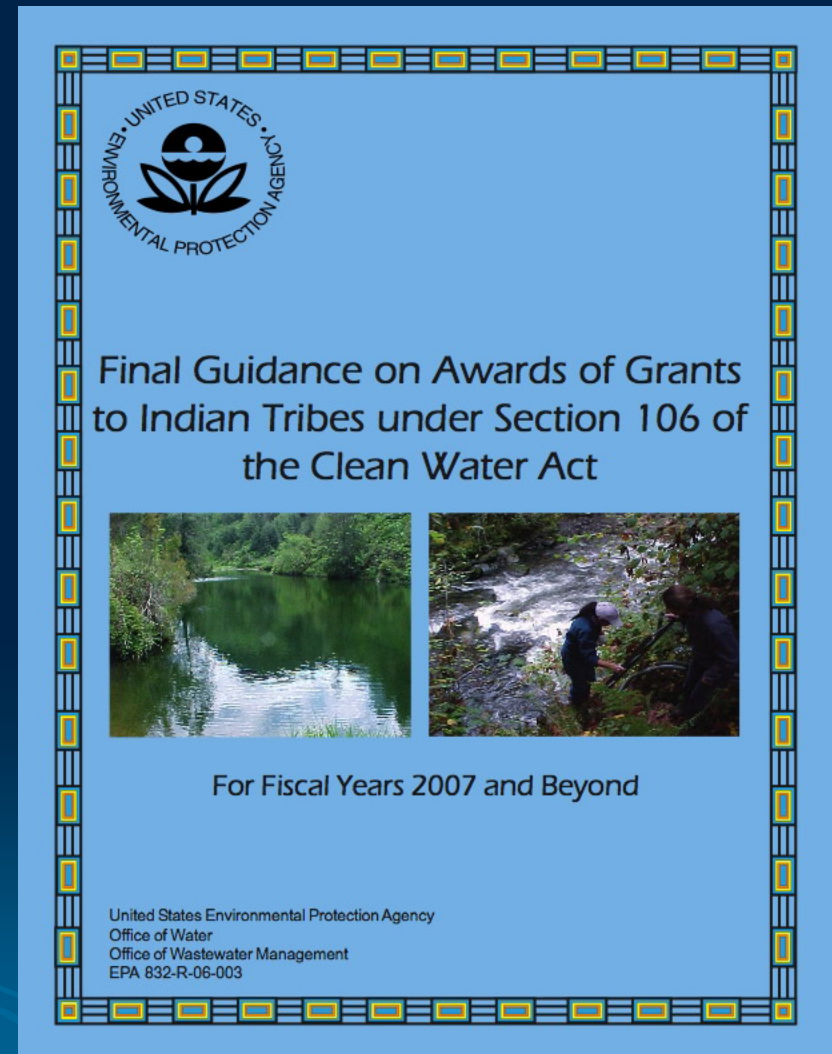
# Items to be Discussed



- Background Information
- Reporting Requirements
- Developing Data Storage Capacity
- Reporting Data to EPA
- Tools and Resources

# Background Information

- Final CWA §106 Guidance for Tribes released by EPA in 2006
- Outlines approaches of CWA §106 programs by maturity level
- Tribal Assessment Report
  - Three components



# **Tribal Assessment Report: Three Components**

## **1. Monitoring Strategy**

- See page A-1 of the CWA §106 Guidance and your CWA §106 QAPP

## **2. STORET-Compatible Electronic Data**

- See page 8-6 of the CWA §106 Guidance

## **3. Water Quality Assessment Report**

- See page A-4 of the CWA §106 Guidance

# Parameters by Maturity Level

- **Fundamental (4)**
  - pH
  - Temperature
  - Dissolved Oxygen
  - Turbidity

- **Intermediate (+2)**
  - Total Nitrogen
  - Total Phosphorus

- **Mature (+3)**
  - E. coli or enterococci
  - Macroinvertebrates
  - Basic Habitat Information

*Maturity level for monitoring determined through discussions between Tribe and Project Officer*

# Developing Data Storage Capacity

## •Fundamental Tribes

- Use of electronic spreadsheets allow for easily stored data
  - Data can be organized, summarized and manipulated
  - Tools can be used to analyze the data

## •Intermediate and Mature Tribes

- Upgrading electronic data systems
- Incorporating additional monitoring parameters, evaluating monitoring frequency

# Developing Data Storage Capacity

- National Template for Data Storage
  - Template developed in Region 5 in response to requirements of CWA §106 Guidance
  - Excel spreadsheet that is STORET/WQX compatible
  - Uses metadata to provide context for all data, whether collected in the field and analyzed in a lab
  - Compatible with WebSIM and WQXWeb, in order to upload data to the National STORET Warehouse



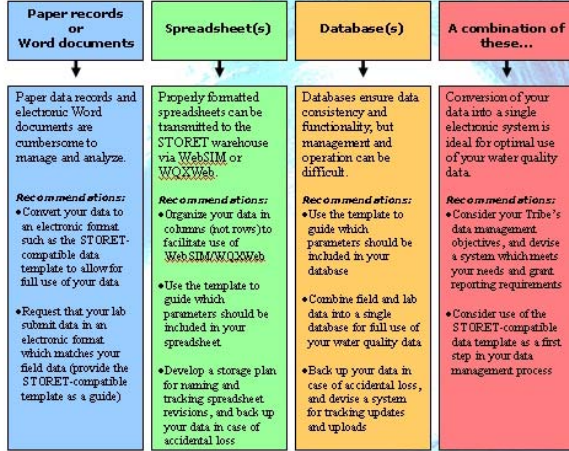
# Developing Data Storage Capacity

- Managing electronic data:
  - Check field and lab forms for accuracy
  - Find out if your lab can report data in a STORET/WQX-compatible format (template)
  - Enter data using electronic software
  - Conduct quality control on data after entry
  - Evaluate data and produce reports for your environmental program
  - Maintain backups of electronic data

# Reporting Data to EPA

- CWA §106 Guidance requires Tribes to submit data in STORET-compatible, electronic format
- Tribes are not yet **required** to upload data to the STORET Warehouse, but it is encouraged
- If not submitted to the warehouse, electronic data must be submitted with the Assessment Report to your Project Officer
- Data should include the parameters required by maturity level (decision of the Tribe to include more parameters)

## How is your field and lab data stored and managed?



# Tools



Advantages and Disadvantages of Water Quality Data Submission Tools

Tool	Definition	Advantages	Disadvantages	Advice
STORET Data template	An Excel file formatted to provide the parameters and metadata necessary for STORET compatibility	Free, appropriate for electronic data submission requirements of ID6 Guidance	Some what difficult to manage over time and with large data sets	Tribes are encouraged to use the template as a first tool to submit data electronically to EPA.
WebSIM and WQX Web	Web-based STORET Import Module and WQX Submission Tool sites which allow users to upload data and configure formatting for transmission to the STORET warehouse	Free, relatively simple internet applications to upload data into the STORET Warehouse Data analysis easier through STORET	Requires manual operation to submit data, some configuration required	Tribes can learn the WebSIM interface and continue to use this application as it transitions to WQXWeb (similar interface and function).
Network Node	A web server that facilitates the interface between database systems and the Exchange Network	Seamless exchange of data between groups regardless of hardware, operating system, or programming environment Fully-automated	Costly, usually only feasible under Exchange Network grants	Tribes with Exchange Network grants are encouraged to build a node that can both request data from and publish data to the Exchange Network.
Network Node Client	Software on a web server that facilitates the interface between database systems and the Exchange Network	Seamless publishing of data to the STORET Warehouse Cheaper than a network node Requires manual operation to submit data	Requires manual operation to submit data Cannot respond to data queries from other nodes, and therefore cannot interact with the Exchange Network Technical expertise and network server required	Tribes with Exchange Network grants are encouraged to build a node that can both request data from and publish data to the Exchange Network. A network node client only has the capability to publish data.

## Clean Water Act §106 Water Pollution Control Program Monitoring Strategy Requirement (FY 2008)



A monitoring strategy is an implementation plan that describes how a monitoring program will assess tribal water quality management needs and address tribal waters over time. It should be comprehensive in scope and identify the issues and needs that are currently important to an adequate monitoring program.

Understanding existing water quality is a key step in protecting and improving the waters within the tribal boundaries. Developing a comprehensive Monitoring Strategy helps tribes understand existing water quality conditions. Identifying strategies should vary among tribes due to the varying tribal programs and objectives, the level of CWA §106 program implementation, and the resources available to the grant recipient. A Monitoring Strategy does not need to be submitted annually, just updated as needed by the grantee.

### Components of a Monitoring Strategy

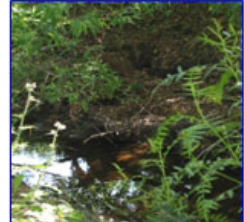
- Monitoring Objectives:** The grant recipient should assess information about the water bodies within tribal boundaries to determine how they will implement their monitoring program. This should be a comprehensive description of the monitoring program. This may include identifying water quality problems areas, including trends over time, identifying the most important water quality parameters and monitoring objectives, and identifying objectives and implementation strategies.
- Monitoring Design:** Establishes the frequency of monitoring the water bodies that will be monitored, the locations that will be monitored within the water body, the parameters and water quality indicators that will be sampled and how the information will be used or displayed to support the grant recipient's monitoring objectives.
- Clean Water Quality Indicators (CWQI):** The strategy should define the extent of CWQI parameters that will be monitored within the program. It is expected that tribal programs monitor for the most important parameters (temperature, pH, dissolved oxygen, turbidity, and average total phosphorus) and other parameters (total phosphorus, nitrate, and nitrite) as needed to assess water quality.
- Quality Assurance:** A Quality Assurance Plan (QAP) must be developed and approved by EPA to ensure the validity of monitoring data. The QAP should include a detailed plan of quality assurance appropriate for the specific uses of the data.
- Data Management:** The strategy should describe how the grant recipient will store data in an electronic system that can be used to manage the data, and to ensure that the data will be shared with EPA. Data collected on different parameters and methods should be managed consistently.
- Data Analysis and Assessment:** The strategy should describe the grant recipient's assessment methodology-how data collected will be analyzed and used to make an assessment of water quality. Assessment should address whether water quality is meeting established goals and objectives.
- Reporting:** The strategy should describe the tribal water program procedures and process for preparing and submitting an annual tribal assessment report, which includes a description of the monitoring strategy, water quality assessment, and electronic copies of the data collected. Any other reporting requirements (quarterly reports, periodic assessments, etc.) should be included as well.
- Programmatic Evaluation and Needs Monitoring:** The strategy should describe the process for conducting regular review of the tribal water quality monitoring program with the Regional EPA office. These reviews will help determine how well the program is serving your quality objectives. There should also be a clearly defined and fair assessment review process used to fully implement a comprehensive program.

## A Guide to the STORET/WQX Transition

Original name	Will Use (STORET/WQX)	Phase Out
STORET (STORET-010 K1-F-010)	STORET/WQX (Water Quality Exchange)	EPA water quality data system.
Water Quality Exchange (WQX)	WQX	Used for data exchange and data flow to the STORET warehouse.
STORET Data Template	WQX Data Template	Template used to format data for electronic upload to the STORET warehouse.
Application	Phase Out	Timeline for Implementation
Discontinued STORET	Discontinue use of all data directly to the STORET warehouse. Discontinue STORET data exchange.	Discontinued
STORET Warehouse	The repository for water quality data, it will continue for both WQX and RER until water quality data from across the US. Water based STORET data will continue to be used for the STORET warehouse.	Ongoing
National WebSIM	Module, it will continue to be used for a period of time to the STORET warehouse.	To be discontinued in 2009
Water Quality Exchange (WQX)	WQX will continue to be used for a period of time to the STORET warehouse.	Ongoing
WQXWeb	The repository for WQXWeb data will continue to be used for a period of time to the STORET warehouse. The data will be used for the STORET warehouse.	Full 2008
STORET-Compatible Data Template	A template used to format data for upload to the STORET warehouse. It will continue to be used for a period of time to the STORET warehouse.	Not to be used, in an electronic system, ready in full 2008
Metadata	Data with descriptive information (date, time, location, etc.) that is used to describe the data. It will continue to be used for a period of time to the STORET warehouse.	---
Node and Node Client	Software used to connect a network node to the STORET warehouse. It will continue to be used for a period of time to the STORET warehouse.	Ongoing



## Temperature



**Temperature** is an important indicator of the general condition of a water body and the ecosystem it supports. The following physical and biochemical processes are all affected by water temperature: dissolved oxygen levels, the rate of photosynthesis of aquatic plants, the metabolic rates of aquatic organisms, and the sensitivity of aquatic organisms to toxic substances, pesticides and diseases. Changes in temperature can severely affect these processes leading to stress in organisms and death. Reporting requirements are the most sensitive to a change in temperature. The following are indicators that could cause a change in the temperature of a water body: weather, riparian shade, water level, dam, industrial discharges, and other water.

**Understanding the Impact of Temperature Fluctuations:** Optimal temperature ranges depend on the water body. If temperatures are outside the optimal range for the water body for an extended amount of time, organisms will become stressed and die. For fish, there are two kinds of limiting temperatures: the maximum temperature for short exposures and a widely varying temperature that may vary by time of year and life cycle stage. It should be difficult to know optimal ranges for the organisms in the water body. Find out what the tribal state or federal standard range for temperature is to use as a comparison for the data you are collecting.

**Monitoring Temperature:** There are a variety of monitoring devices available to measure temperature. When you select, you will depend on the monitoring objectives as far as to your own annual and monitoring program. The following equipment options are commonly used to collect temperature data from the field:

- All options should be readily available at:
- Labatory supply stores
  - Thermometers
  - Meters
  - Multi-parameter probes
  - Central Laboratory (if necessary)



For more information, visit [www.epa.gov/epaospr/monitoring/monitoring/temperature.html](http://www.epa.gov/epaospr/monitoring/monitoring/temperature.html)