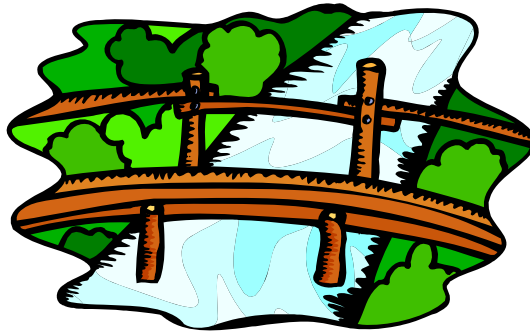


**STORET Data Management
Training
for
Water Quality Data**



Welcome to the STORET Data Management Training for Water Quality Data, also known as “Getting Data into STORET.”

STORET Team

- Frank Kohlasch – Supervisor
- Nancy Flandrick
- Jean Garvin
- Lynda Nelson
- Miranda Nichols
- Sandy Simbeck

This Presentation will cover:

1. Goals
2. Timelines
3. Metadata Forms – Project, Station, Lab
4. The STORET Data Template
5. Basic Data Guidelines
6. Data Review Process
7. Agency Products and Services
8. Retrieving STORET Data

The information presented addresses the current STORET process for ambient water quality data.

1. Goals of the STORET Team are to continue:

- To increase the annual number of data submittals.
- To improve the quality of those submittals.

We intend to achieve these goals by:

- Helping our participants use the forms and templates in the submittal process.
- Improving the understanding of all submittal requirements.

These efforts should result in the continual increase of the number of participants who submit data quickly and efficiently.

2. Timeline for Local and MPCA Project Managers:

- June 1 - Submit Metadata Forms
- November 1* - Target Date to Submit Project Data
- December 1 - Begin Data Review
- January 15 - Complete Data Review

*Tentative submittal date

June 1st - Submit Metadata Forms to STORET Team at the beginning of the sampling season.

November 1st – Target date to submit Project Data to STORET Team. Due to the fairly recent increase of project data and a lack of time to process it, we have a new tentative submittal date of November 1. Project Managers will be emailed a timeline with more information to confirm this in the Spring.

December 1st - Begin Data Review

Project Managers will receive an email on this date containing important guidelines to begin the final data review process.

January 15th - Complete Data Review

Notify the STORET Team by this date with the results from the Final Data Review.

3. Metadata Forms:

- Project Establishment
- Station Establishment
- Lab Establishment

Submit all metadata to STORET Team before the start of the sampling season.

MPCA-STORET: <http://www.pca.state.mn.us/water/storet.html>

Three metadata forms required for all ambient data storage in STORET: **Project, Station and Lab Establishment Forms**. All bolded areas on each of these three forms are 'required information.'

**Minnesota Pollution Control Agency (MPCA) STORET
Project Establishment Form for Data Storage**

Bold = entry required

Monitoring Year: 20

Today's Date: / /

U.S. Environmental Protection Agency's (EPA) STORET is a data repository that can be accessed nationwide and provides data for many purposes including the MPCA's Environmental Data Access (EDA) System, the assessment process, information requests, and water quality reports and analyses.

Project Code (Project ID assigned by MPCA STORET staff) **Contract Number** (ex. A90000)

Project Name (ex. Pelican River Watershed District CWP) **Project Study Area:**

Project Purpose (Indicate monitoring type: Condition, Effectiveness, or Problem Investigation, and explain)

Funding Types (check one):

Volunteer Citizen Monitoring	<input type="checkbox"/>	Non-Grant Projects funded through MPCA	<input type="checkbox"/>
Grant Projects funded through MPCA*	<input type="checkbox"/>	Funding through sources other than MPCA	<input type="checkbox"/>

*Funding Type (ex. CWLA, CWP)

Start Date (ex. 10/1/07) **Planned Duration** (ex. 4 years)

Does this project submit the same data to MPCA another way? If so, how? (ex. CLMP)

Lead Organization Name

Local Project Coordinator (Project Manager)

Organization

Address

Phone

E-mail

MPCA Project Manager

Sample Collector:

First Name	Last Name	Organization

Sample Medium (ex. water column, bed materials, fish tissue)

The first form is the *Project Establishment Form*. This form is used to group and identify data collected for a particular reason.

You will need to submit this form for all new projects or, if the project is a continuation, submit updates each following year if any information has been changed or added.

The STORET Project Code, or *Project ID*, is a 5-8 character code that the STORET team creates. It will be sent to you once your project is established.

Laboratory Information

Please provide a completed Laboratory Information Form for new labs and each year for new methods or analytes. Do not submit lab form if using the MDH lab only.

Laboratory Name

Address

Contact Name

Phone E-mail

Field Procedure Information

Please provide a monitoring plan with standard operating procedures (SOP's) in electronic form if possible.

Sample Collection Method(s) and Gear(s) (ex. grab with weighted bucket)

Field Measurements - Methods and Instrumentation
(ex. pH, spec. cond., temp., and DO with Hydrolab; transparency with t-tube)

Turbidimeter Make and Model

Gage Type Probe Make and Model Other

Citation for Project Plan

Title

Author Publishing Organization

Publication Year Volume and Page No.

Stations To Be Visited:

Enter Field Code and/or STORET Station Number (ex. BE-0, S000-134 / Blue Earth River at Mouth in Sibley Park / Mankato)

Field Code (Project_Station_ID)	STORET Station Number (STORET_Station_ID)	Location Description

Please be as specific as possible when filling out the *Field Procedure Information*. This is very helpful metadata information--particularly when preparing analyses results from labs other than MDH for STORET.

**Minnesota Pollution Control Agency (MPCA)
STORET Station Establishment Form**

Bold = entries required

Monitoring Year(s)

U.S. Environmental Protection Agency's (EPA) STORET is a data repository that can be accessed nationwide and provides data for many purposes including the MPCA's Environmental Data Access (EDA) System, the assessment process, information requests, and water quality reports and analyses.

Today's Date

Project Name (ex. Surface Water Assessment of the Nokasipi Watershed)

Project Code (Project_ID)
Project name or maximum 8 digit ID code assigned by MPCA STORET staff

Field Code (Project_Station_ID)
Common name, ex. CSMP0020, Drain Tile 1

Station Length (for biological monitoring)

Is there a different STORET Station ID at the same location? Yes No Unknown

If yes, what is the other STORET Station ID?

(If yes, do not complete remainder of form.)

STORET Station ID
Assigned by MPCA STORET staff. Streams: S###-###. Lake: common code

Station Name
Maximum 60 characters, ex. ELBOW CK AT MN-53, .5 MI N OF EVELETH, MN

Station Type (select one):

Y	Primary Station Type
	Lake
	River/Stream

Station Description

Township N Range E or W Sec

Direction and distance from nearest city (please list)

Travel Directions

4/24/2008

The second form is the *Station Establishment Form*, which pinpoints the location of the sampling event. Write in the *Project Code*, or if unknown, leave blank. The *Field Code* is what you call your sampling site.

You will receive a STORET *Station ID* when your station is established. It is important to write it accurately on your lab sheet and include it with your data because each code pertains to a specific site.

The *Station Description* should include details about the sampling site.

LATITUDE

LONGITUDE

Decimal Degrees

(or) Deg/Min/Sec

(or) UTM

Geopositioning Method (select one):

Y	Method	Y	Method
	GPS - Carrier/Geodetic ¹		Loran C
	GPS - Code/Geodetic ²		Other
	GPS - Kinematic		Public-Land Survey-Quartering
	GPS - Other		Public Land Survey Footing
	GPS - Unknown		Unknown
	Interpolation - Electronic Map Source		
	Interpolation - Map		
	Interpolation - Photo		
	Interpolation - Satellite		
	Interpolation - Other		
	Interpolation - Unknown		

¹ Trimble; ² Magellan Promark

If determined from USGS quad, choose Interpolation - Map.

If GPS - Other or GPS - Unknown, what brand and model of GPS receiver was used? **Datum** (select one):

Y	Datum	Y	Datum	Y	Datum
	North American Datum 1927		North American Datum 1983		Other
	World Geodetic System 1972		World Geodetic System 1984		Unknown

Map Scale

If Geopositioning Method = Interpolation-Map, ex. 1:24,000 for USGS quad.

State/County

State Abbr.

County Name

RF1 River Reach

HUC Code

Local and/or MPCA Project Manager requesting Station Establishment

STORET Team Member responsible for Station Establishment

4/24/2008

The other essential part of this form is *Latitude/Longitude*. If unknown, please include a map with the sampling points marked.

Please feel free to send the STORET Team other site information, such as additional maps or travel directions.

Laboratory Information Form for Projects Submitting Data to MPCA STORET

Today's Date
Monitoring Year(s)

Bold = entry required

Project Name Project Code (Project_ID) (8-digit ID code assigned by MPCA STORET Staff)

Lab ID (assigned by MPCA STORET staff)

Laboratory Name

Address

Contact Name

Phone Fax E-mail

Citation for Laboratory Manual or Handbook

Title

Author Publishing Organization

Publication Year Volume and Page No.

Analyses and Methods

Note: Table below reflects methods, limits, and certifications of lab for the year(s) in which the data were collected. Please include analyte information applicable to the monitoring year indicated in the first column.

Monitoring Year	Analyte Name	Sample Fraction	Reporting Units	Comparable Standard Method	Fld. Preservation Method	Detect. Limit	Report. Limit	Lab Certified For Analyte	Duration Basis	Temperature Basis
2007	Example: BOD	Total	mg/L	USEPA 405.1	Chill to 4°C	1 mg/L	2 mg/L	Yes	5 days	@20°C

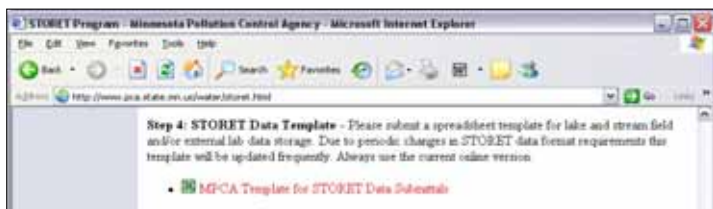
The third form is the *Lab Establishment Form*, which is required for all labs other than MDH. All this information is entered into STORET for each set of data and is required for migration of analyses results.

The Lab form is submitted with each new project, and each year thereafter, if any information on the form has been added or changed. If all information is the same each year, it is helpful if we receive a message accompanying the data submittal indicating that nothing has changed with the lab.

The *Analyses and Methods Table* is used for all analyte information for that sampling season.

4. STORET Data Template -

- To be used for all analyses results from labs other than MDH.
- Located at the MPCA-STORET Web site:
<http://www.pca.state.mn.us/water/storet.html>



- Download and save the Excel file.
- Occasionally modified in response to user needs; check site for current copy.

After you have collected your data, received your results back from the lab, and sent in all of the metadata forms, the next step is to enter your data into the STORET Data Template. If this template is submitted with good data in a clean format and with accurate units, the rest of the data process is streamlined.

The Data Template can be found on our MPCA STORET Web site listed on the screen. Download and save this Excel file. You need one template filled out for each data submittal. This is usually just for one year, but if you are submitting multiple years, all data can go into one file.

STORET Data Template

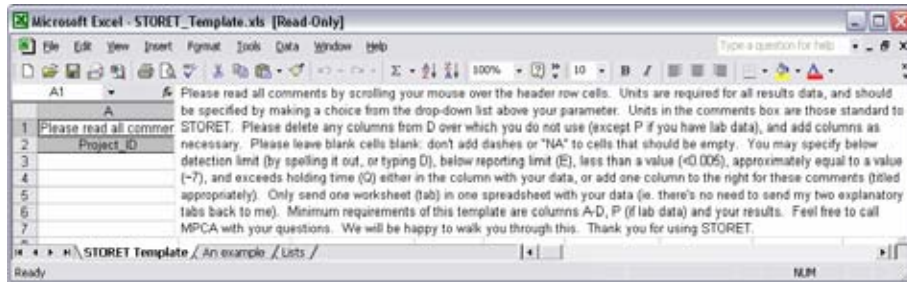
Project_ID	Project_Station_ID	STORET_Station_ID	Location	STORET sampling location name	Project_Site_ID	MPCA_Site_ID	
CCRE-VENT	014	5004-515					
DIAMOND	Diamond Lake	32-0044			0 Middle	3001	
DIAMOND	Diamond Lake	32-0044			0 Middle	3001	
CLAWFER	Crow Lake, West Bay	17-0054-01			John's Pond	16201	
Round Lake dissolved oxygen TMDL	Round Lake	87-0101		4/30/2006	15.45	Deepest Spot	3001
Round Lake dissolved oxygen TMDL	Round Lake	87-0101		5/17/2006	6.66	Deepest Spot	3001
Round Lake dissolved oxygen TMDL	Round Lake	87-0101		5/10/2006	19.03	Deepest Spot	3001
Round Lake dissolved oxygen TMDL	Round Lake Creek at CSAH-4	5004-001		4/30/2006	12.15		
Round Lake dissolved oxygen TMDL	Round Lake Creek at CSAH-4	5004-001		6/22/2006	9.07		
Round Lake dissolved oxygen TMDL	Round Lake Creek at CSAH-4	5004-001		8/10/2006	8.15		
Round Lake dissolved oxygen TMDL	Round Lake Creek at CSAH-4	5004-001		10/1/2006	13.10		

In the spreadsheet you will see three worksheets:

1. **STORET Template:** add data here
2. **An example:** shows you what a filled out template may look like
3. **Lists:** used mostly by MPCA STORET staff. Please do not delete this worksheet.

Add data to the *STORET Template* tab. The *Example tab* shows you what a filled out template may look like. The *Lists* tab is used mostly by MPCA STORET staff; however, you may want to take a look if you are interested in seeing a list of analytes and other types of information that can be stored in the database. **Please do not delete this worksheet.**

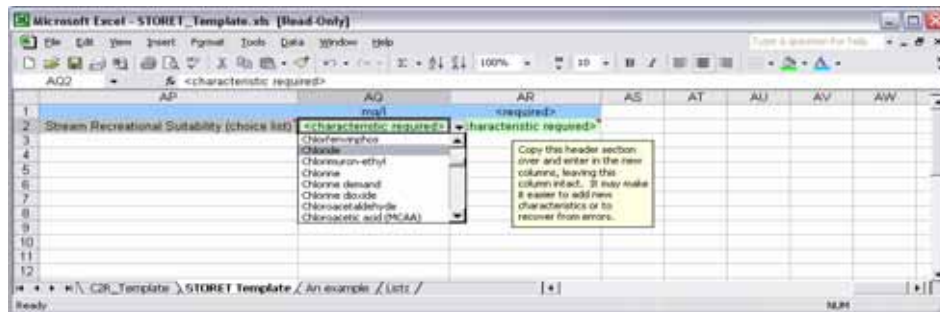
The STORET Data Template - continued



- As you scroll over certain cells, you will see numerous instructions and tips to help you.

The STORET Data Template - continued

- Either Column B or C are REQUIRED, in addition to Column D.
- You can erase any other columns that you don't use.
- Columns R-AP are examples of common types of data we get for STORET submittal.
- If you have data for analytes other than those already in the template, add columns by copy/pasting Column AQ.
- Don't forget to add your reporting units in Row 1.



Either **Column B** or **C** are REQUIRED. **Column D** is also required. The analyte columns listed in the template (Columns R through AP) are examples of common types of data we get for STORET submittals. If you have data for analytes other than these, feel free to add columns by copy-and-pasting Column AQ. For example if you tested for chloride in surface water, you can choose the units in Row 1 and “Chloride” in Row 2 of Column AQ and fill in the data below.

Before you send us the template with your data, check the entire template for typos or data in incorrect columns. Also be sure to include your reporting units in Row 1. There are instructions throughout the MPCA STORET Web site regarding the forms and the template. Feel free to also contact the STORET Team with any questions you may have.

5. Basic Data Guidelines:

For MDH Lab Results -

- Include your MDH ID on lab sheets.
- Submit lake field data on template.
- Submit **all** stream field data on pink stream field sheet. Please be sure to use proper abbreviations on this sheet.

The MDH ID alerts the MDH Lab to send you a .pdf report file and Excel spreadsheet of your data when the results are complete. It represents the MPCA Project Manager who will be responsible for their project data for the Data Review process. To request this number, please contact a member of the STORET Team.

Submit lake field data associated with MDH chemistry results on 'lakefielddata' template. The STORET Team will provide this template to Project Managers with these types of data. Please submit lake field data throughout the sampling season.

Submit all stream field data throughout the sampling season using the pink stream field sheet. Due to the large volume of data, we no longer can accept 'end of the year spreadsheet' submittals. It is important to be specific. On the back of the pink sheet you will find instructions on abbreviations.

MDH Lab's CLIENT VIEW
A Tool to View MDH Lab Results

<https://phl.health.state.mn.us/result/login.jsp>

- User Name: pca
- Password: pca520

You can view MDH's Client View tool to see MDH lab analyses results as they become available by following this internet path.

Please call the STORET Team for the sample number to track your analyses results.

This site has 'navigation tips' with information about using this tool.

Guidelines (continued):

For Analyses Results from Labs other than MDH –

Submit all unstored data in the STORET Data Template by November 1st.

MPCA-STORET:

<http://www.pca.state.mn.us/water/storet.html>

We welcome all types of ambient water quality data - older or current, funded or non-funded - but please submit this data in the data template. Please include correct reporting units in the data template submittal.

Basic Data Guidelines:

For all Project Managers -

- Submit all metadata forms before the start of the current sampling season.
- Submit the Laboratory and Project Establishment Form the first year of the project and then again each year thereafter if changes have occurred.

If there are no changes with the lab form from the previous year, please notify the STORET Team that there are no changes.

Basic Guidelines:

For all Project Managers (continued) -

- Include correct Project ID & Station ID with all data submittals.
- Use the STORET required reporting units.
- Identify turbidity reporting unit.

http://water.usgs.gov/owq/turbidity_codes.xls

Please visit the above Web site to determine the correct turbidity unit to associate with your turbidity reading.

6. Data Review Process:

Created in 2002 to ensure data quality.

Two part process:

- Routine Data Review (during the year)
- Final Data Review (end of year)

Routine Data Review: For MDH Lab Results -

- Project Managers request MDH ID from the STORET Team before the sampling season begins.
- MDH lab results are automatically emailed to Project Managers through the MDH ID numbering system.

It is important to write the MDH ID on the MDH lab sheet so the agency can email the Project Manager an Excel spreadsheet and .pdf report file containing data results for Routine Data Review. This ID also represents the Project Manager responsible for the Final Data Review process.

Routine Data Review:

For Analyses Results from Labs other than MDH -

Project Managers will need to obtain the data from the lab to review, process, and format for STORET using the Data Template located here:

MPCA-STORET:

<http://www.pca.state.mn.us/water/storet.html>

Final Data Review:

- Project Managers will receive an email around mid-November containing review guidelines.
- STORET Project data is available for review by MPCA Project Managers throughout the year at this Web site:

<http://intranet.pca.state.mn.us/programs/wqmonplanning>

The Final Data Review process involves the verification of the data and the subsequent removal of the preliminary flag that is automatically assigned to the data when it is first entered into STORET.

Project Managers will receive the Final Data Review information on December 1. They can choose to either review the data themselves or pass it on to someone else familiar with the project's data.

Project Managers can review their data at the above Web site and contact a STORET Team member at any time to change or remove the hold on their project's data.

Final Data Review (continued):

All Project Managers with preliminary project data are required to:

- **Compare** all lab and field results to the STORET project data file for accuracy.
- **Notify** the STORET Team if the data is correct or if changes need to be made.

Project Managers will be provided instructions about how to submit corrections.

Once Project Managers complete their final review of their data and the accuracy of the data is verified, the preliminary flag can be removed to make the data available for all agency purposes.

7. Products and Services Stemming From STORET Data:

- The MPCA Environmental Data Access (EDA) System
- Annual Citizen Stream (CSMP) and Citizen Lake (CLMP) Monitoring Program Reports
- 305(b) Report to Congress assessing the quality of Minnesota water bodies
- 303(d) Impaired Waters List
- Lake Assessment Program (LAP) Reports
- And many more...

The MPCA puts great value on the water quality data you are gathering as part of your project and generates many products and services using the data in STORET.

8. Retrieving STORET Data:

- Access the intranet's 'STORET Project Data'
<http://intranet.pca.state.mn.us/programs/wqmonplanning>
- Request data retrieval from STORET Team.
- Use the Internet's Environmental Data Access (EDA) System.
<http://www.pca.state.mn.us/data/eda/index.cfm>

The 'STORET Project Data' database contains all preliminary and non preliminary STORET data, which can either be retrieved by project or MPCA Project Manager. This database is also used for the Data Review process.

To request STORET data retrieval, contact a member of the STORET Team.

The Environmental Data Access system is available for site-by-site data retrievals at the above Web site.

What Do You Think?

If you have questions, comments or suggestions, we would like to hear from you.

Contact information can be found at the Web site:

MPCA-STORET:

<http://www.pca.state.mn.us/water/storet.html>

