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# Tutorial Description

This tutorial explains how to access and utilize many of EPA's Web-based applications and resources that support watershed management. Each section provides step-by-step instructions and screen shots to assist the user in gaining a basic understanding of how to access the tool and navigate its features.



*The tools highlighted in this tutorial support the six steps of watershed planning.*

## Intended Audience

This introductory-level course is appropriate for individuals, government and nongovernment program managers and staff interested in leveraging online information and data to support watershed analysis, planning and management.

## Materials

In addition to this tutorial, the following materials provide additional information on EPA resources for watershed management.

- EPA Watershed Tools (EPA 841-B-06-002, May 2006)
- Watershed Academy Web (EPA 841-F-04-001, March 2004)
- Watershed Academy Webcasts (EPA 841-K-06-001, December 2006)
- EPA Watershed Training Opportunities (EPA 841-B-06-001, February 2006)
- Adopt Your Watershed (EPA 840-F-05-004, July 2005)
- Catalog of Federal Funding Sources for Watershed Protection (EPA 841-F-03-001, March 2003)
- WATERS flyer
- Watershed Plan Development Tool flyer
- NPSInfo Fact Sheet



# Key EPA Internet Tools for Watershed Management Quicklinks

## 1.1 Watershed Planning:

<http://iaspub.epa.gov/watershedplan/watershedPlanning.do?pageId=48&navId=35>

## 1.2 Watershed Plan Builder:

<http://iaspub.epa.gov/watershedplan/planBuilder.do?pageId=51&navId=39>

## 1.6 Handbook for Developing Watershed Plans to Restore and Protect Our Waters:

[www.epa.gov/nps/watershed\\_handbook/](http://www.epa.gov/nps/watershed_handbook/)

## 1.7 Watershed Planning Process:

<http://iaspub.epa.gov/watershedplan/planningProcess.do?pageId=33&navId=33>

## 2.1 Watershed Funding: [www.epa.gov/owow/funding.html](http://www.epa.gov/owow/funding.html)

## 2.10 Watershed Central: [www.epa.gov/watershedcentral/](http://www.epa.gov/watershedcentral/)

## 3.1 Watershed Academy: [www.epa.gov/owow/watershed/wacademy/](http://www.epa.gov/owow/watershed/wacademy/)

## 3.2 Watershed Academy Web: [www.epa.gov/watertrain/](http://www.epa.gov/watertrain/)

## 3.7 Webcast Seminars: [www.epa.gov/owow/watershed/wacademy/webcasts/](http://www.epa.gov/owow/watershed/wacademy/webcasts/)

## 4.1 Surf Your Watershed: [www.epa.gov/surf](http://www.epa.gov/surf)

## 5.4 Adopt Your Watershed: [www.epa.gov/adopt/](http://www.epa.gov/adopt/)

## 6.18 ATTAINS: [www.epa.gov/waters/ir](http://www.epa.gov/waters/ir)

## 6.24 Enviromapper for Water: <http://map24.epa.gov/emr/>

## 6.51 STORET: [www.epa.gov/storet/](http://www.epa.gov/storet/)

## 7.1 Watershed Links: [www.epa.gov/owow/watershed/links.html](http://www.epa.gov/owow/watershed/links.html)

## 7.2 Watershed: [www.epa.gov/owow/watershed/](http://www.epa.gov/owow/watershed/)

## 7.8 EPA Public Listservers: [https://lists.epa.gov/read/all\\_forums/](https://lists.epa.gov/read/all_forums/)

## 7.11 News-Notes: [www.epa.gov/owow/info/NewsNotes/](http://www.epa.gov/owow/info/NewsNotes/)

## 8.1 ECHO: [www.epa-echo.gov/echo/](http://www.epa-echo.gov/echo/)

## 9.1 Watershed Central: [www.epa.gov/watershedcentral/](http://www.epa.gov/watershedcentral/)

## 10.1 Water Quality Standards Database: [www.epa.gov/wqsdatabase/](http://www.epa.gov/wqsdatabase/)

10.9 Water Quality Standards Home Page: [www.epa.gov/waterscience/standards/wqslibrary/](http://www.epa.gov/waterscience/standards/wqslibrary/)

10.15 State, Tribal and Territorial Standards:  
[www.epa.gov/waterscience/standards/wqslibrary/links.html](http://www.epa.gov/waterscience/standards/wqslibrary/links.html)

11.1 ATTAINS: [www.epa.gov/waters/ir/](http://www.epa.gov/waters/ir/)

12.1 Enviromapper for Water: <http://map24.epa.gov/emr/>

13.1 WATERS: [www.epa.gov/waters/](http://www.epa.gov/waters/)

14.1 Nonpoint Source Categories: [www.epa.gov/owow/nps/categories.html](http://www.epa.gov/owow/nps/categories.html)

14.3 National Management Measures to Control Nonpoint Source Pollution:  
[www.epa.gov/owow/nps/urbanmm/index.html](http://www.epa.gov/owow/nps/urbanmm/index.html)

14.4 Section 319 Nonpoint Source Success Stories: [www.epa.gov/owow/nps/Success319/](http://www.epa.gov/owow/nps/Success319/)

14.5 Smart Growth: [www.epa.gov/smartgrowth/](http://www.epa.gov/smartgrowth/)

14.8 Model Ordinances: [www.epa.gov/owow/nps/ordinance/](http://www.epa.gov/owow/nps/ordinance/)

14.12 Volunteer Monitoring: [www.epa.gov/owow/monitoring/volunteer/](http://www.epa.gov/owow/monitoring/volunteer/)

14.16 Biological Indicators for Watershed Health: [www.epa.gov/bioindicators/](http://www.epa.gov/bioindicators/)

14.27 Water Quality Models and Tools: [www.epa.gov/waterscience/models/](http://www.epa.gov/waterscience/models/)

14.33 About Biological Indicators: [www.epa.gov/bioindicators/html/about.html](http://www.epa.gov/bioindicators/html/about.html)

14.34 CADDIS: <http://cfpub.epa.gov/caddis/>

14.42 WARSSS: [www.epa.gov/warsss/](http://www.epa.gov/warsss/)

14.46 NPDES: <http://cfpub.epa.gov/npdes/>

14.52 Nonpoint Source Outreach Toolbox: [www.epa.gov/nps/toolbox/](http://www.epa.gov/nps/toolbox/)

14.53 After the Storm: [www.epa.gov/weatherchannel/](http://www.epa.gov/weatherchannel/)

# 1. Watershed Planning Resources

## Watershed Plan Builder

- 1.1 Open the [Watershed Planning](#) site.

The Watershed Plan Builder Tool (Plan Builder) is a Web-based watershed plan development tool that promotes a consistent approach to watershed planning.

The Plan Builder leads users through a series of questions to produce a **customized watershed plan outline** that is populated with relevant data links from EPA water programs, regional and state information, stakeholder contacts, and narrative sections that describe how to complete a watershed plan.

### What is a watershed plan?

A watershed plan is a document that results from the watershed planning process and provides assessment and management information for a geographically defined watershed, including the analyses, actions, participants and resources related to development and implementation of the plan. The plan provides a road map to help you identify the problems, set goals and implement solutions in your watershed. EPA has recommended developing comprehensive watershed plans, particularly for impaired waterbodies.

- 1.2 Click the [Watershed Plan Builder](#) link.

A series of pages prompts the user for information about the watershed such as reasons for developing a watershed plan, current land use activities and pollutants of concern.

The answers provided are used to customize the plan outline to include information relevant to that watershed.

- 1.3 Scroll down and click the **Enter the Plan Builder** button.

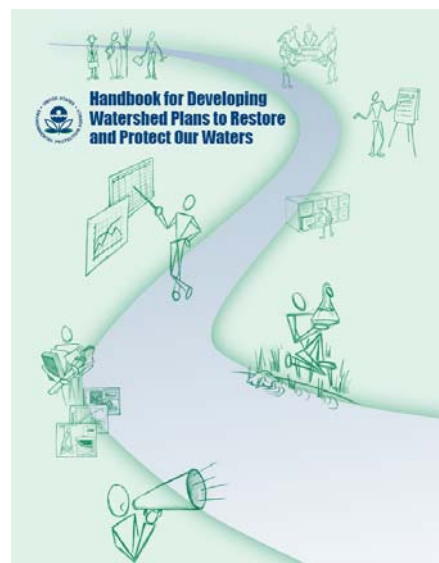
Start the process by entering contact information. This information is stored, allowing the draft to be retrieved at a later date. The saved project can be updated with new information, or the customized outline can be re-created to incorporate new tools and information that are added at a later date.

- 1.4 On the left, blue sidebar, click **Examples**.

- 1.5 Review the watershed plan information on the **Corsica River Watershed**.

## Handbook for Developing Watershed Plans to Restore and Protect Our Waters

The Handbook for Developing Watershed Plans to Restore and Protect Our Waters is intended to help any organization including communities, watershed organizations and government environmental agencies develop and implement watershed plans to meet water quality standards and protect water resources. It should be particularly useful to persons working with impaired or threatened waters. The Handbook is intended to supplement existing watershed planning guides and is generally more specific than other guides with respect to guidance on quantifying existing pollutant loads, developing estimates of the load reductions required to meet water quality standards, developing effective management measures, and tracking progress once the plan is implemented.



- 1.6 Go to the [Handbook's Web page](#).  
Through this Web page, individual sections of the Handbook can be downloaded as well as the entire Handbook. There are also links to EPA's [January 2006 webcast](#) on the Handbook and a [Handbook Fact Sheet](#).
- 1.7 Go to the [Watershed Planning Process](#) Web page.  
This page shows the steps of the planning process at the top of the page. Each step has detailed instructions to help you prepare that section of the watershed plan.



- 1.8 Click **Characterize Watersheds**.  
Look to the right-hand side of the page to see an inset navigation box for a detailed list of sub-steps. A similar box will appear on each step's page. Notice the resources that are listed below the line: EPA programs, plan outline and plan examples.
- 1.9 On the left-hand sidebar, click **Analysis Tools and Technical Assistance**.
- 1.10 Click **Analysis Tools** for a collection of tools and technical assistance links.

More info on Characterize the Watershed

- Gather Existing Data and Create a Watershed Inventory
- Identify Data Gaps and Collect Additional Data if Needed
- Analyze Data
- Identify Causes and Sources of Pollution That Need to Be Controlled
- Estimate Pollutant Loads
- Results and Next Steps

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[EPA Programs](#)  
[Plan Outline](#)  
[Plan Examples](#)



## 2. Watershed Funding Resources

EPA offers several resources to locate funding sources for watershed activities.



- 2.1 Open the [Watershed Funding](#) page.
- 2.2 Scroll down and click **Funding Databases**.
- 2.3 Click the **Catalog of Federal Funding for Watershed Protection**.
- 2.4 For Type of Assistance, select **Grants**.
- 2.5 For Eligible Organization, select **Community/Watershed Group**.
- 2.6 For Match Required, keep the **Select All** default choice.
- 2.7 For Keywords, select the checkbox(es) for the keywords that are meaningful to you.
- 2.8 Click the **Get Results in List Format** button.
- 2.9 Select a program that is of interest to you to get more information. Click the hyperlinked program name to get full details about that program.

**What is the application deadline for the program you selected?**

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(Hint: Click the hyperlinked program name twice.)

- 2.10 Additional sources of funding can be found in [Watershed Central](#). Click on the **Funding Sources** link in the left hand blue bar.


<a href="#">Watershed Central</a> <a href="#">Basic Information</a> <a href="#">Frequent Questions</a> <a href="#">Calendars of Events</a> <a href="#">Collaborative Tools</a> <a href="#">Watershed Management Process</a> <a href="#">Models, Tools &amp; Data</a> <a href="#">Funding Sources</a> <a href="#">Training</a> <a href="#">Outreach &amp; Communication</a> <a href="#">Guidance, Rules &amp; Regulations</a> <a href="#">Interactive Wiki</a>	<h3>Funding Sources</h3> <p>Watershed organizations, state, tribal, and local governments need adequate resources to achieve goals of the Clean Water Act and improve our nation's water quality. You can access hundreds of funding sources to help fund the implementation of your watershed plan. These sources include federal, state, local, and private sources. The list below provides tools, databases, and information about sources of funding to practitioners and funders that serve to protect watersheds.</p> <p><a href="#">Sustainable Finance</a> - This EPA Web site provides information on funding sources for watershed Programs.</p> <p><a href="#">The Directory of Watershed Resources</a> <a href="#">[EXIT Disclaimer]</a> - An on-line, searchable database that includes information on federal, state (Oregon, Washington, Idaho, Alaska, Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island, and Vermont), private, and other funding sources and assistance.</p> <p><a href="#">EPA Science to Achieve Results (STAR) Estuarine and Great Lakes Program (EAGLES)</a> - This site provides basic information about the STAR program. The National Center for Environmental Research's (NCER) Science to Achieve Results or STAR program funds research grants and graduate fellowships in numerous environmental science and engineering disciplines through a competitive solicitation process and independent peer review.</p> <p><a href="#">More ...</a></p>
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## 3. Watershed Academy

### EPA Training Opportunities for Watershed Management

Knowledge, training and awareness of new techniques for watershed topics are essential for successful watershed restoration and planning. Several watershed training resources are available through EPA's Watershed Academy.

- 3.1 Go to the [Watershed Academy](#).
- 3.2 Click [Watershed Academy Web](#).  
More than 50 self-paced training modules on topics such as *Understanding Lake Ecology* and *Introduction to the Clean Water Act* are available through this site.
- 3.3 Find the **Watershed Change Modules** group.
- 3.4 Click the link to the **Growth and Water Resources** module.
- 3.5 On the third slide, within the right-frame, click the internal link **Changes nationwide and by state**.
- 3.6 Use the browser's **Back** button to return to **Watershed Academy**.
- 3.7 Click [Webcast Seminars](#).  
These are free courses available to anyone who pre-registers to participate in a webcast. National experts present topics on cutting edge tools, methods and new developments in the field of watershed science and management. Slideshows with live audio streams over the Internet or over the phone are also available. Previous webcasts are easily accessible through the webcast archive on this site.
- 3.8 Scroll down the page to the heading **Archived Versions of Past Webcasts**.
- 3.9 Click a webcast of your choice (e.g., Integrating Wetlands into Watershed Protection, May 17, 2006).
- 3.10 Click the **Audio Version of the Webcast** (you will exit the EPA site).
- 3.11 If the date of the webcast is July 2008 or earlier, click **Go to Seminar**. Then click  to launch the webcast.
- 3.12 If the date of the webcast is October 2008 or later, scroll down, select a media player, and click the **Launch Presentation** button.

## 4. Surf Your Watershed

The watershed is the organizing principle of the Surf Your Watershed Web site. Inter-federal agency partnerships among the U.S. Geological Survey (USGS), the U.S. Department of Agriculture, and the U.S. Environmental Protection Agency (EPA) enable Surf Your Watershed to act as a portal to these agency Web sites that offer watershed-related data and resources. For example, the USGS link connects the user to databases of stream gage stations that have logged flow measurements within the watershed. Watershed-related activities can also be found through this site.



- 4.1 Go to the [Surf Your Watershed](#) page.
- 4.2 Within the colorful map, click the state of **New Mexico**. This takes you to the state profile page, which includes many valuable links. Note the links under the **Places Involving this State** heading. Click the hyperlinked number next to **Watersheds**. The watershed list page allows the user to click any of the hyperlinked HUC8 codes to get to individual watershed profile pages.

### Locating Watershed Information with a County Name

- 4.3 Use the **Back** button to return to the main **Surf Your Watershed** page. Underneath the heading, Find Your Watershed→Step 1 Pick your Geographic Unit, select **County Name** from the menu.
- 4.4 Type in your **County Name** (e.g., Fairfax, Pitt, Essex, Orange).  
**Note:** Do not add a comma or a state abbreviation.
- 4.5 Click the **Submit** button. A list of counties with that name entered will appear.
- 4.6 Click the correct, hyperlinked county name and state combination. (**Note:** There are many methods that can be used to locate a watershed within Surf Your Watershed such as the county name, ZIP code, city name and stream name.) A map of the county and any overlapping HUC8 watershed boundaries appears.

**How many watersheds intersect your county?** \_\_\_\_\_

- 4.7 Select a HUC8 watershed number. (**Note:** The map is not hyperlinked.)
- 4.8 Click your selected hyperlinked HUC8 watershed number below.

**Write the 8-digit HUC watershed number here:** \_\_\_\_\_

- 4.9 The **Watershed Profile** page for the selected watershed opens. Scroll down and note the upstream and downstream watershed names:

**Upstream Watershed:**

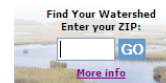
\_\_\_\_\_

## Downstream Watershed:

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### Locating Watershed Information with a ZIP Code

- 4.10 On the left-hand sidebar, click [Surf Your Watershed Home](#). Enter your ZIP code into the **Find Your Watershed Enter Your ZIP:** box. **Click Go.** The watershed profile page will appear for the watershed that intersects with that ZIP code.



**What is ZIP code that you entered?** \_\_\_\_\_

**What is the watershed name and HUC8 code?**  
\_\_\_\_\_

### Locating Stream Gage Data from the USGS

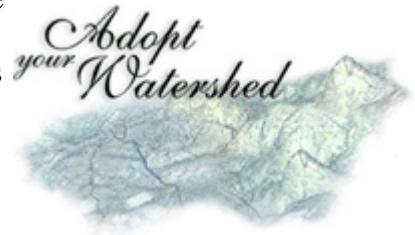
- 4.11 On the **Watershed Profile** page, scroll down to **Information Provided by the United States Geological Survey** and click [Stream Flow](#).

**How many USGS stream gages are in your watershed?** \_\_\_\_\_

- 4.12 Click a hyperlinked **Stream Gage Station Number**. Scroll down to see a graph of real-time data. Stream gage height and discharge rates at the sampling site are among the parameters that will be featured.
- 4.13 At the top of the page in the blue bar, click the dropdown list next to **Available data for this site** to see other data.
- 4.14 Select **Daily Data**. When the page refreshes, change the **Begin Date** and **End Date** to a one month span in the data summary table at the top.
- 4.15 Change the Output Format from Graph to **Table** to get individual readings. Click the **Go** button to look at one month's gage readings.
- 4.16 Use the browser's **Back** button to return to the **Watershed Profile** page.

## 5. Adopt Your Watershed

Finding information about existing watershed efforts helps connect people who are interested in watershed issues. Forging partnerships will produce benefits from economies of sharing resources (e.g., membership databases or experience working with state agency programs). The Adopt Your Watershed database contains more than 2,600 watershed groups that are involved in watershed and water resource monitoring and protection activities such as volunteer water monitoring, stream cleanups and storm drain marking.



- 5.1 On the **Watershed Profile** page within the Surf Your Watershed Web site, notice the first link on the page, **Citizen-based Groups at Work in this Watershed**. Click this link. A listing of groups in the Adopt Your Watershed database for that watershed appears.

**How many groups are listed?** \_\_\_\_\_

- 5.2 An existing organization in the Adopt Your Watershed database can update their information by clicking the **Request Update** button next to the Group Name. Click **Submit** after updating the organization's information.



- 5.3 Within the blue, left-hand sidebar, click the **Add Your Watershed Group** link. The online form that appears will allow you to add information to the database. By clicking **Submit** at the bottom of the form, your organization's information will be added to the Adopt Your Watershed database.
- 5.4 The [Adopt Your Watershed](#) site also includes a watershed stewardship toolkit for volunteers.



## 6. STORET

The STORET (short for STOrage and RETrieval) Data Warehouse is EPA's repository for water quality monitoring data including chemical, biological and physical data. State environmental agencies, EPA and other federal agencies, universities, watershed groups, private citizens, and many others submit their data to the STORET Warehouse where it is publically accessible. WQX is the framework by which organizations submit data to the Warehouse.

STORET data are of documented quality, meaning that each sampling result in the STORET Warehouse is accompanied by information on where the sample was taken (latitude, longitude, state, county, Hydrologic Unit Code and a brief site identification), when the sample was gathered, the medium sampled (e.g., water, sediment, fish tissue), and the name of the organization that sponsored the monitoring. In addition, the STORET Warehouse contains information on why the data were gathered; sampling and analytical methods used; the laboratory used to analyze the samples; the quality control checks used when sampling, handling the samples, and analyzing the data; and the personnel responsible for the data. To learn more about STORET, visit the [fact sheet](#) section of the STORET Web site or view the June 21, 2007 Watershed Academy Webcast Seminar, "[Using STORET Data to Characterize Your Watershed.](#)"

While a user can go directly to the STORET Warehouse to download data, several of EPA's Internet tools including Surf Your Watershed, ATTAINS and Enviromapper for Water offer efficient methods to access STORET data for specific locations.

### Accessing STORET Data Through Surf Your Watershed

The eight digit HUC number is needed to locate data within STORET's Watershed Summary Tool.

- 6.1 Go to the [Surf Your Watershed](#) site.
- 6.2 Select **County Name** from the Step 1 pick list.

**Surf Your Watershed**

Find your [watershed](#) using the form below. Once you have found your watershed, you will be able to find citizen based groups that are active in your watershed.

**Find your watershed**

**Step 1) Pick your geographic unit:**

8 digit USGS hydrologic cataloging code

**County Name**

National Estuary Program

Community Water System ID #

Large Ecosystem

**Step 2) Enter your geographic information:**

- 6.3 Type **Burke** next to Step 2) Enter your geographic information and click **Submit**.
- 6.4 Select **Burke, North Carolina** from the list of choices.

## What is the eight digit HUC number for the Upper Catawba Watershed?

6.5 Click the **03050101** link **Upper Catawba**; state(s): NC, SC.

**Upper Catawba Watershed -- 03050101**

**Upper Catawba Watershed Profile**

Watershed Name: Upper Catawba  
 USGS Cataloging Unit: 03050101  
 NC 5th Congressional District  
 SC 5th Congressional District  
 NC 9th Congressional District  
 NC 10th Congressional District  
 NC 11th Congressional District  
 NC 12th Congressional District

[Citizen-based Groups at work in this watershed](#) (Provided by [Adopt your Watershed](#))

[Water quality monitoring data from this watershed](#) (Provided by STORET) →

[Environmental Websites Involving this Watershed](#)

[National Watershed Network](#) (provided by [Conservation Technology Information Center](#)) (WRT #161466)

**Assessments of Watershed Health**

- Impaired Water for this watershed
- Assessed Waters by Watershed
  - North Carolina
  - South Carolina


**Information provided by the United States Geological Survey (USGS)** (WRT #161466)

- Stream Flow (Source: USGS)
- Science in Your Watershed
- Water use data (1985-2000): Information about the amount of water used and how it is used.
- Selected USGS Abstracts

**Places Involving this Watershed**

Counties:

- Alexander
- Avery



6.6 Click on the **Water quality monitoring data from this watershed** link to open the Watershed Station Summary.

The next page provides a summary of organizations, stations, characteristics and the number of data results for the Catawba Watershed within STORET.

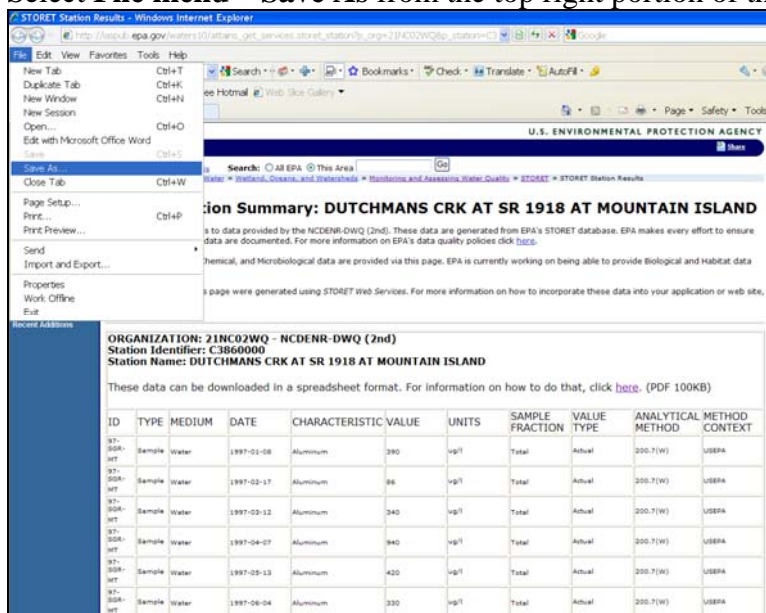
Organization ID: 21NC02WQ - NCDENR-DWQ (2nd)

Station ID	Station Name/Summary Information	Period of Record
C7400000	CATAWBA CRK AT SR 2102 AT SC STATE LINE (Get Details) 203-Metal, 143-Microbiological, 159-Nutrient, 65-Other, 1733-Physical	01/13/1997-12/13/2007
C3900000	CATAWBA RIV AT NC 21 NR THREEET (Get Details) 737-Metal, 167-Microbiological, 307-Nutrient, 214-Other, 2443-Physical	01/13/1997-12/13/2007
C4220000	CATAWBA RIV AT POWERLINE CROSSING AT S BELMONT IS FEE C141000 (Get Details) 126-Metal, 150-Microbiological, 274-Nutrient, 188-Other, 3573-Physical	01/13/1997-01/03/2007
C0350000	CATAWBA RIV AT SR 1221 NR PLEASANT GARDENS (Get Details) 673-Metal, 123-Microbiological, 298-Nutrient, 103-Other, 1460-Physical	01/21/1997-12/13/2007
C0145000	CATAWBA RIV AT SR 1234 NR GREENLEE (Get Details) 661-Metal, 116-Microbiological, 151-Nutrient, 53-Other, 1328-Physical	01/21/1997-12/14/2006
C1130000	CATAWBA RIV AT SR 1304 NR CALVIN (Get Details) 740-Metal, 182-Microbiological, 123-Nutrient, 91-Other, 1934-Physical	01/21/1997-12/12/2007
C8660000	CROWDEFS CRK AT SC 364 RIDGE RD NR BOWLING GREEN SC (Get Details) 671-Metal, 126-Microbiological, 148-Nutrient, 126-Other, 1560-Physical	01/22/1997-12/12/2007
C3860000	DUTCHMANS CRK AT SR 1918 AT MOUNTAIN ISLAND (Get Details) 269-Metal, 186-Microbiological, 163-Nutrient, 98-Other, 1605-Physical	01/08/1997-12/10/2007
C3800000	LAKE HICKORY AT NC 112 NR HICKORY (Get Details) 390-Metal, 169-Microbiological, 287-Nutrient, 202-Other, 2944-Physical	01/14/1997-01/02/2007
C1420000	LAKE NORMAN AT SR 1001 NR MOORESVILLE (Get Details) 769-Metal, 167-Microbiological, 283-Nutrient, 201-Other, 3652-Physical	01/14/1997-01/02/2007
C2030000	LAKE RHODHRS AT SR 1001 NR RATON MARION (Get Details) 430-Metal, 60-Microbiological, 128-Nutrient, 72-Other, 563-Physical	01/14/1997-05/17/2000
C7500000	LAKE WYLIE AT NC 49 NR OAK GROVE (Get Details) 148-Metal, 166-Microbiological, 282-Nutrient, 194-Other, 5281-Physical	01/15/1997-01/03/2007
C1000000	LINVILLE RIV AT NC 126 NR NERO (Get Details) 662-Metal, 121-Microbiological, 295-Nutrient, 136-Other, 1381-Physical	01/21/1997-12/13/2007

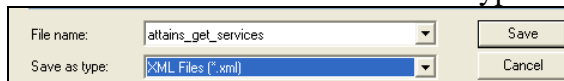
6.7 Scroll down to Organization ID 21NC02WQ - NCDENR-DWQ (2<sup>nd</sup>), C3860000, Dutchmans Crk at SR 1918 at Mountain Island, 01/08/1997 - 12/10/2007. Click **Get Details**.

## Saving STORET Data as an XML File for Use in MS Excel

- 6.8 Select **File** menu – **Save As** from the top right portion of the window.



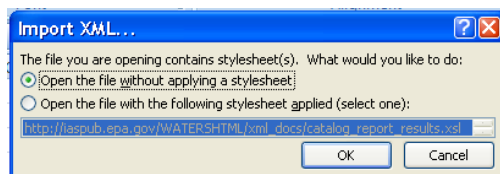
- 6.9 Select **XML Files** from the Save as type: dropdown options.



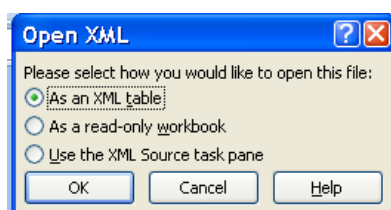
- 6.10 Click **Save**.

## Opening a Downloaded XML File from STORET in MS Excel

- 6.11 Launch Microsoft Excel from the **Start** button.
- 6.12 On Excel's menu bar, click **File** and select **Open**.
- 6.13 Locate the saved XML file, select it, and click **Open**. The import dialog box opens.
- 6.14 Select **Open the file without applying a stylesheet**. Then click **Ok**.

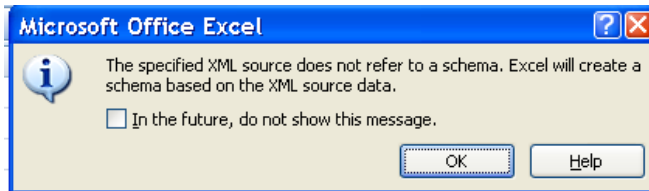


- 6.15 Select **As an XML table**. Then click **OK**.





6.16 If the schema box below appears, click **OK**.



6.17 The data from the monitoring station will be populated into the Excel document with Autofilters applied to each column, allowing for easy data sorting.

OrganizationIdentifier	OrganizationName	ActivityIdentifier	ActivityTypeCode	ActivityMediaName	ActivityStartDate	ProjectId
21NC02WQ	NCDENR-DWQ (2nd)	02-FLDW-	Field Msr/Obs	Water	12/30/2002	NCAMBNT
21NC02WQ	NCDENR-DWQ (2nd)	02-FLDW-	Field Msr/Obs	Water	11/6/2002	NCAMBNT
21NC02WQ	NCDENR-DWQ (2nd)	02-FLDW-	Field Msr/Obs	Water	10/1/2002	NCAMBNT
21NC02WQ	NCDENR-DWQ (2nd)	02-FLDW-	Field Msr/Obs	Water	9/11/2002	NCAMBNT
21NC02WQ	NCDENR-DWQ (2nd)	02-FLDW-	Field Msr/Obs	Water	8/8/2002	NCAMBNT
21NC02WQ	NCDENR-DWQ (2nd)	02-FLDW-	Field Msr/Obs	Water	7/9/2002	NCAMBNT
21NC02WQ	NCDENR-DWQ (2nd)	02-FLDW-	Field Msr/Obs	Water	6/6/2002	NCAMBNT
21NC02WQ	NCDENR-DWQ (2nd)	02-FLDW-	Field Msr/Obs	Water	5/16/2002	NCAMBNT
21NC02WQ	NCDENR-DWQ (2nd)	02-FLDW-	Field Msr/Obs	Water	4/10/2002	NCAMBNT
21NC02WQ	NCDENR-DWQ (2nd)	02-FLDW-	Field Msr/Obs	Water	3/1/2002	NCAMBNT
21NC02WQ	NCDENR-DWQ (2nd)	02-FLDW-	Field Msr/Obs	Water	2/20/2002	NCAMBNT
21NC02WQ	NCDENR-DWQ (2nd)	02-FLDW-	Field Msr/Obs	Water	1/9/2002	NCAMBNT
21NC02WQ	NCDENR-DWQ (2nd)	02-SGR-TB	Sample	Water	12/30/2002	NCAMBNT
21NC02WQ	NCDENR-DWQ (2nd)	02-SGR-TB	Sample	Water	11/6/2002	NCAMBNT
21NC02WQ	NCDENR-DWQ (2nd)	02-SGR-TB	Sample	Water	10/1/2002	NCAMBNT
21NC02WQ	NCDENR-DWQ (2nd)	02-SGR-TB	Sample	Water	9/11/2002	NCAMBNT
21NC02WQ	NCDENR-DWQ (2nd)	02-SGR-TB	Sample	Water	8/8/2002	NCAMBNT
21NC02WQ	NCDENR-DWQ (2nd)	02-SGR-TB	Sample	Water	7/9/2002	NCAMBNT
21NC02WQ	NCDENR-DWQ (2nd)	02-SGR-TB	Sample	Water	6/6/2002	NCAMBNT
21NC02WQ	NCDENR-DWQ (2nd)	02-SGR-TB	Sample	Water	5/16/2002	NCAMBNT
21NC02WQ	NCDENR-DWQ (2nd)	02-SGR-TB	Sample	Water	4/10/2002	NCAMBNT
21NC02WQ	NCDENR-DWQ (2nd)	02-SGR-TB	Sample	Water	3/1/2002	NCAMBNT
21NC02WQ	NCDENR-DWQ (2nd)	02-SGR-TB	Sample	Water	2/20/2002	NCAMBNT
21NC02WQ	NCDENR-DWQ (2nd)	02-SGR-TB	Sample	Water	1/9/2002	NCAMBNT
21NC02WQ	NCDENR-DWQ (2nd)	02-FLDW-0.1	Field Msr/Obs	Water	12/30/2002	NCAMBNT
21NC02WQ	NCDENR-DWQ (2nd)	02-FLDW-0.1	Field Msr/Obs	Water	12/30/2002	NCAMBNT
21NC02WQ	NCDENR-DWQ (2nd)	02-FLDW-0.1	Field Msr/Obs	Water	12/30/2002	NCAMBNT
21NC02WQ	NCDENR-DWQ (2nd)	02-FLDW-0.1	Field Msr/Obs	Water	12/30/2002	NCAMBNT
21NC02WQ	NCDENR-DWQ (2nd)	02-FLDW-0.1	Field Msr/Obs	Water	11/6/2002	NCAMBNT
21NC02WQ	NCDENR-DWQ (2nd)	02-FLDW-0.1	Field Msr/Obs	Water	11/6/2002	NCAMBNT
21NC02WQ	NCDENR-DWQ (2nd)	02-FLDW-0.1	Field Msr/Obs	Water	11/6/2002	NCAMBNT
21NC02WQ	NCDENR-DWQ (2nd)	02-FLDW-0.1	Field Msr/Obs	Water	11/6/2002	NCAMBNT
21NC02WQ	NCDENR-DWQ (2nd)	02-FLDW-0.1	Field Msr/Obs	Water	10/1/2002	NCAMBNT
21NC02WQ	NCDENR-DWQ (2nd)	02-FLDW-0.1	Field Msr/Obs	Water	10/1/2002	NCAMBNT
21NC02WQ	NCDENR-DWQ (2nd)	02-FLDW-0.1	Field Msr/Obs	Water	10/1/2002	NCAMBNT

### Accessing STORET Data through ATTAINS

6.18 From the [ATTAINS](#) site, click on the state of Louisiana within the multicolored map at the top of the page.

The Louisiana Water Quality Assessment Report for 2006 will appear.

6.19 From the **Select a watershed from the list:** dropdown menu, select **Tickfaw**. Click **Go**. An alternative option is to click on the Tickfaw Watershed on the interactive map. The Tickfaw Watershed is located directly east of the watershed containing Baton Rouge. A watershed map of the Tickfaw Watershed will appear.

6.20 Click on **Water Quality Data Available for this Watershed**, located in the For More Information section on the left side of the screen.

The STORET Summary Page for the Tickfaw Watershed will appear, listing the water monitoring station IDs and names, a summary of the type of monitoring data that has been collected and the date range of when data was collected.

## 6. STORET

- 6.21 In the Station Name/Summary Information column, click on the **(Get Details)** hyperlink for Station ID 116.

STORET Station Summary		
Organization ID: LADEQWPD - LDEQ Watershed Planning Division		
Station ID	Station Name/Summary Information	Period of Record
1106	<a href="#">Tribble River (Get Details)</a> <a href="#">253-Station, 02-Physical</a>	01/09/2001-12/09/2001
1112	<a href="#">Franchotia Creek (Get Details)</a> <a href="#">253-Station, 02-Physical</a>	01/09/2001-12/09/2001
116	<a href="#">Tribble River at Sardenville, Louisiana (Get Details)</a> <a href="#">691-Station, 693-Station, 105-Other, 20-Postside, 1244-Physical</a>	03/06/1978-02/09/2004
298	<a href="#">Tribble River west of Franchotia, La. (Get Details)</a> <a href="#">245-Station, 245-Physical</a>	01/14/1991-12/09/2001
299	<a href="#">Yalton Water Stream west of Franchotia, La. (Get Details)</a> <a href="#">214-Station, 245-Physical</a>	01/14/1991-12/09/2001

A page will open providing all of the water monitoring data that was collected at that particular monitoring location.

## Saving STORET Data as an XML File for Use in MS Excel

The screenshot shows the STORET Station Details page for Station ID 116. The browser's File menu is open, and the 'Save As...' option is highlighted. A red arrow points to the 'Save As...' option. The page content shows a table with two rows of data, each with columns for Characteristic, Measure, and Status.

Watershed Planning Division																	
STATION	ACTIVITY	RESULTS															
	Activity ID: FM10 Activity Type: Field Msr/Obs Medium: Water Start Date: 1978-03-06	<table border="1"><thead><tr><th>Characteristic</th><th>Measure</th><th>Status</th></tr></thead><tbody><tr><td>pH</td><td>6.9 (None)</td><td>F (Actual)</td></tr><tr><td>Dissolved oxygen (DO)</td><td>9600 (ug/l)</td><td>F (Actual)</td></tr><tr><td>Temperature, water</td><td>12 (deg C)</td><td>F (Actual)</td></tr></tbody></table>	Characteristic	Measure	Status	pH	6.9 (None)	F (Actual)	Dissolved oxygen (DO)	9600 (ug/l)	F (Actual)	Temperature, water	12 (deg C)	F (Actual)			
Characteristic	Measure	Status															
pH	6.9 (None)	F (Actual)															
Dissolved oxygen (DO)	9600 (ug/l)	F (Actual)															
Temperature, water	12 (deg C)	F (Actual)															
	Activity ID: FM10 Activity Type: Field Msr/Obs Medium: Water Start Date: 1978-04-10	<table border="1"><thead><tr><th>Characteristic</th><th>Measure</th><th>Status</th></tr></thead><tbody><tr><td>pH</td><td>6.4 (None)</td><td>F (Actual)</td></tr><tr><td>Dissolved oxygen (DO)</td><td>7600 (ug/l)</td><td>F (Actual)</td></tr><tr><td>Temperature, water</td><td>23 (deg C)</td><td>F (Actual)</td></tr><tr><td>Oxygen consumption</td><td>14000 (ug/l)</td><td>F (Actual)</td></tr></tbody></table>	Characteristic	Measure	Status	pH	6.4 (None)	F (Actual)	Dissolved oxygen (DO)	7600 (ug/l)	F (Actual)	Temperature, water	23 (deg C)	F (Actual)	Oxygen consumption	14000 (ug/l)	F (Actual)
Characteristic	Measure	Status															
pH	6.4 (None)	F (Actual)															
Dissolved oxygen (DO)	7600 (ug/l)	F (Actual)															
Temperature, water	23 (deg C)	F (Actual)															
Oxygen consumption	14000 (ug/l)	F (Actual)															

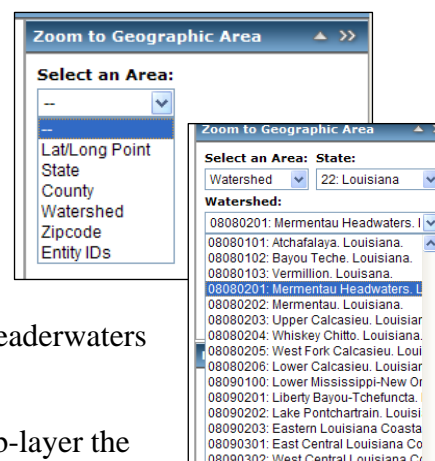
- 6.22 To save the data for future use in an Excel file, select **File** from the menu bar and select **Save As**.
- 6.23 Choose where the data should be saved and select **XML Files** from the Save as type dropdown list.

The screenshot shows the 'Save As' dialog box. The 'File name' field contains 'attains\_get\_services'. The 'Save as type' dropdown menu is open, and 'XML Files (\*.xml)' is selected. A red arrow points to the 'XML Files (\*.xml)' option.

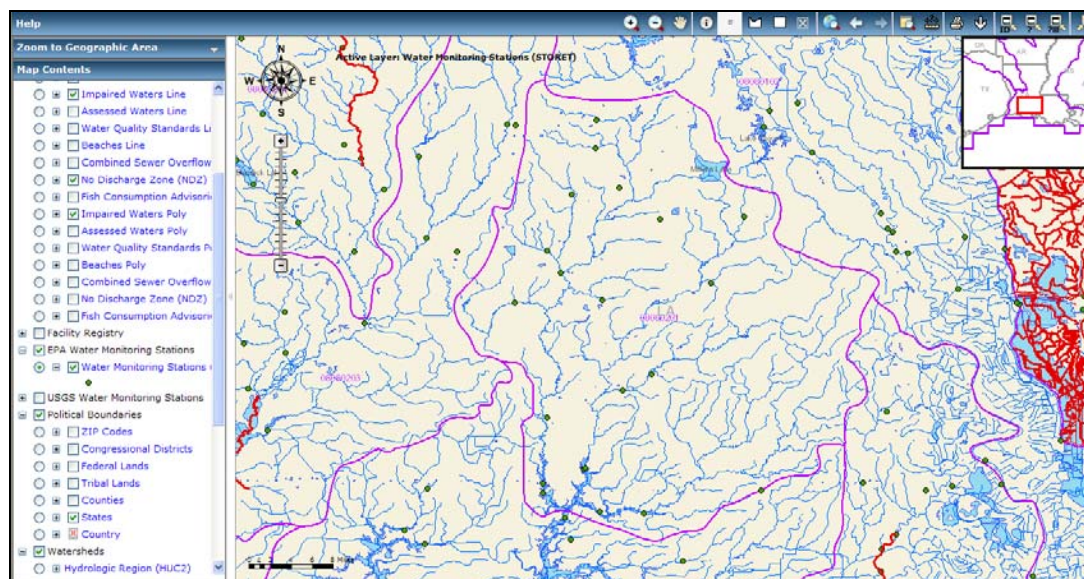
Instructions for how to open this file in Excel can be found in the previous section, [Opening a Downloaded XML File from STORET in MS Excel](#) (see Step 6.11).

## Accessing STORET Data through Enviromapper for Water

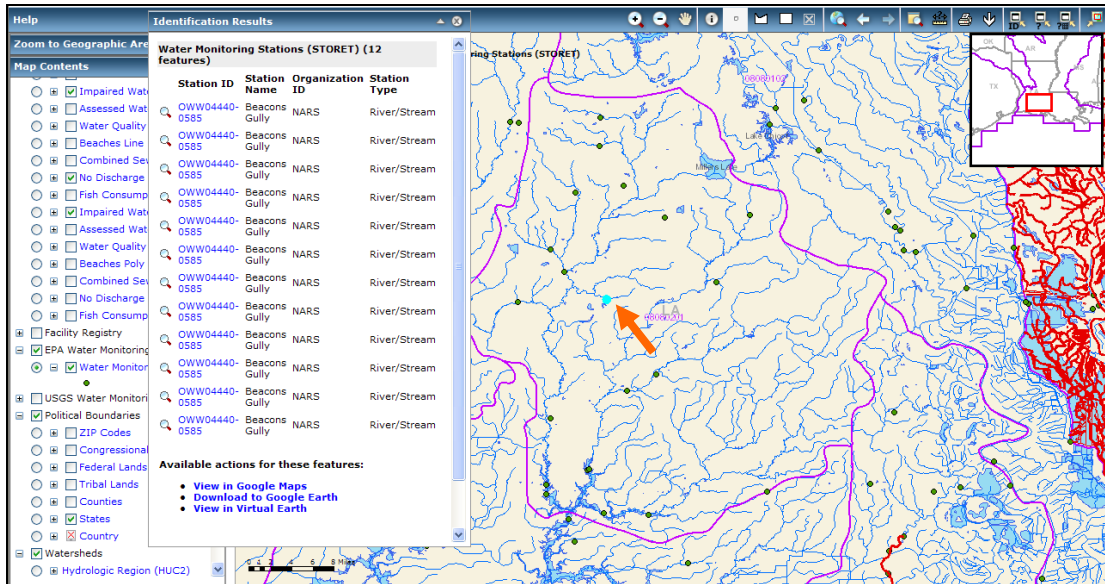
- 6.24 Open the [Enviromapper site](#).
- 6.25 Within the Zoom to Geographic Area box, located at the top, right portion of the screen, click the dropdown arrow of the **Select an Area**. Select **Watershed**. Select **Louisiana** from the state pick list, and **08080201: Mermentau Headwaters**. Select **Zoom to Watershed**.



- The map will re-configure, showing the Mermentau Headerwaters Watershed with default layers and sub-layers selected.
- 6.26 Make the **Water Monitoring Stations (STORET)** sub-layer the active layer by clicking the radio button. (The EPA Water Monitoring Stations parent layer should already be checked.) Select the **Select Features by Point** tool located in the top menu bar.
- 6.27 Select a STORET station indicated by a green dot.



The Identification Results dialog box will be populated with information for the selected STORET station including a link. The selected STORET station on the map will be identified by a blue dot, while the unselected STORET stations will remain green dots.



6.28 Click on one of the hyperlinked station IDs to download the data.

### Downloading Data from the STORET Warehouse

Station: [OWW04440-0585](#) Beacons Gully  
 Organization: NARS EPA National Aquatic Resource Survey Data

**Station Information**

Primary Type	River/Stream
Secondary Type	
Latitude/Longitude	Latitude 30.54, Longitude -92.53, NAD83
Elevation	
State	LOUISIANA
County	EVANGELINE
Hydrologic Unit	06090201, Mermentau Headwaters

User Defined Habitat Characteristic	Number of Results	Date Range
<a href="#">Lifestage (choice list)</a>	30	2004-06-30 2004-09-29
<a href="#">Chironomus</a>	3	2004-01-01 2004-09-29
<a href="#">Hydrobiidae</a>	3	2004-01-01 2004-09-29
<a href="#">Naididae</a>	3	2004-01-01 2004-09-29
<a href="#">Polypedilum</a>	3	2004-01-01 2004-09-29
<a href="#">Tanytarsus</a>	3	2004-01-01 2004-09-29
<a href="#">Tanytarsus</a>	3	2004-01-01 2004-09-29
<a href="#">Tubificidae</a>	3	2004-01-01 2004-09-29
<a href="#">Calcium</a>	2	2004-06-30 2004-09-29
<a href="#">Carbon_inorganic</a>	2	2004-06-30 2004-09-29
<a href="#">Carbon_organic</a>	2	2004-06-30 2004-09-29
<a href="#">Chloride</a>	2	2004-06-30 2004-09-29
<a href="#">Color_Turb</a>	2	2004-06-30 2004-09-29
<a href="#">Crangonox</a>	2	2004-01-01 2004-06-30
<a href="#">Euschizaeidae</a>	2	2004-01-01 2004-06-30
<a href="#">Helobdella</a>	2	2004-01-01 2004-06-30
<a href="#">Lernaeans</a>	2	2004-01-01 2004-06-30
<a href="#">Magnesium</a>	2	2004-06-30 2004-09-29
<a href="#">Nitrogen_Nitrate (NO3) as N</a>	2	2004-06-30 2004-09-29
<a href="#">Nitrogen_ammonia as N</a>	2	2004-06-30 2004-09-29
<a href="#">Oligochaeta</a>	2	2004-01-01 2004-06-30
<a href="#">Phage</a>	2	2004-01-01 2004-06-30
<a href="#">Potassium</a>	2	2004-01-01 2004-06-30
<a href="#">RBP2_Low G_Bank Stability_Left Bank</a>	2	2004-06-30 2004-09-29

6.29 Select one of the hyperlinked parameters from the far left column.

6.30 A Results by Station box will appear. Scroll to the bottom of the box to the Characteristic section. Type a % sign into the Characteristic Search box. Click **Search**.

### Results by Station (stormod\_)

**Station**

Select an Organization and a Search Type, then enter a Search String and click "Search Stations".

**Search Type**  
 Search by Station ID  
 Search by Station Name  
 Search by Station Alias  
 Select Station Alias Type

Org ID	Station ID	Alias Type	Station Alias	Station Name
NARS	OWW04440-0588	N/A	N/A	Beacons Gully

**Date**

Specify Activity Start Date range(s)

Date Range 1:    To     
 Date Range 2:    To     
 Date Range 3:    To     
 Date Range 4:    To

(further down the page)

**Activity Intent and Community Sampled**

Select one or more Activity Intent

ACTIVITY INTENT

- Select All
- Individual
- Taxon Abundance
- Tissue
- Population Census
- Group Summary
- Frequency Class

If Intent is Taxon Abundance, select one or more Community Sampled

COMMUNITY SAMPLED

- Select All
- Aquatic Vegetation
- Bacteria/Virus
- Benthic Macroinvertebrates
- Birds
- Fish/Nekton
- Invertebrates

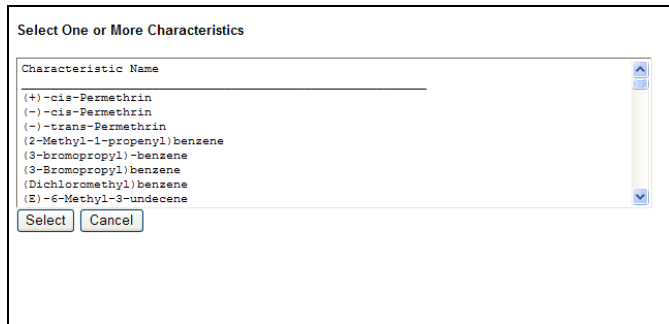
**Characteristic**

Use the Characteristic Search to create a list of up to 50 Characteristics

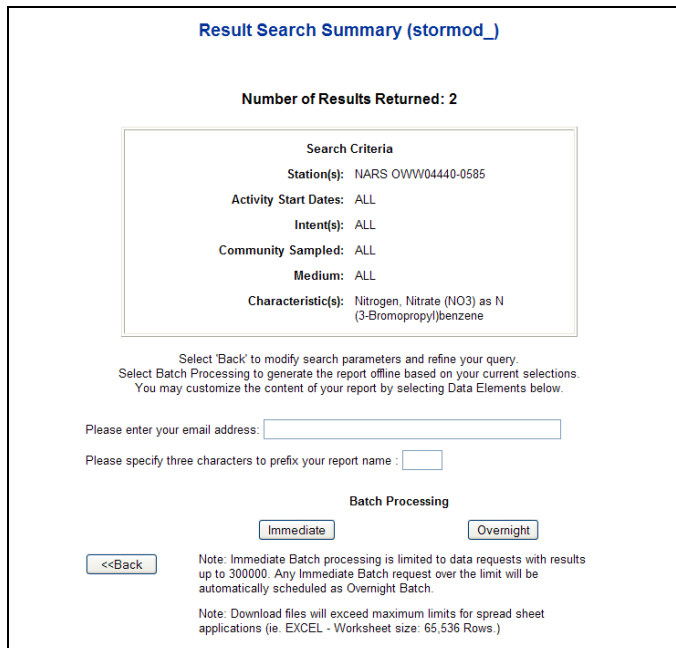
Hide Taxonomic Names

[Help](#)

- 6.31 A complete list of parameters will appear in a new window. If you wish to download data for more than one parameter, scroll through the list, hold down the **Control (Ctrl) key** and select each additional parameter. Once all of the desired parameters are selected, click **Select**.



- 6.32 The selected parameters will appear in the Characteristic Name box. Click **Continue** if the list of parameters is correct.
- 6.33 On the next page, enter your e-mail address and a three character prefix. Select the **Immediate** batch processing option.

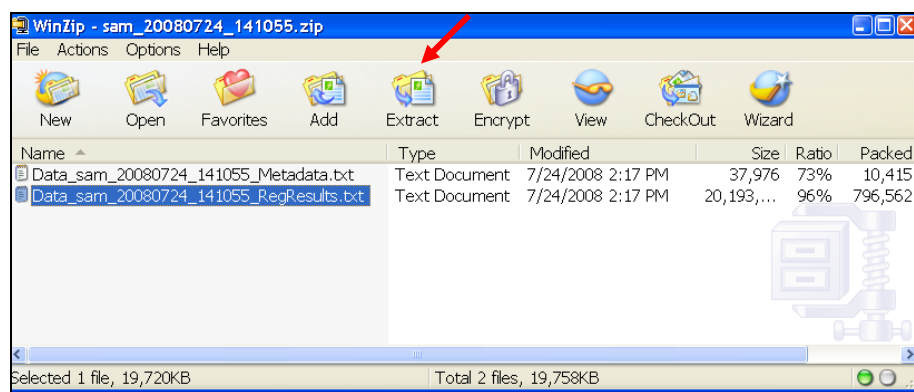


- 6.34 An e-mail results page opens. Data is sent within 5 minutes of process completion.
- 6.35 Open the e-mail account used in Step 6.34.

Two separate e-mails will be sent from STORET. The first will confirm that the STORET Warehouse is processing the data request. **PROCESSING** will be in the subject line of this e-mail. A second e-mail will alert the user that their STORET request has been completed. **COMPLETED** will appear in the subject line of this e-mail.

- 6.36 Within the COMPLETED e-mail, click the hyperlinked URL address. A File Download box will appear on the screen. Select **Save** and choose the location where the file should be saved.
- 6.37 Once the file has finished downloading to your computer, select **Close**.
- 6.38 Go to the location where the file has been saved. Open the file.

The files are compressed using WinZip. A WinZip text box will open showing two files. One will have Metadata.txt within its title. This file includes information about the methods used to collect the data. The other file will include RegResults.txt within its title. This is the file that contains the data results.



- 6.39 Select the file with **\_RegResults.txt** in the title and click the **Extract** button.
- 6.40 An Extract window will appear. Select the location where the files should be extracted and saved, and then choose the **Extract** button.

For further instructions and details of how to download and use data from the STORET Warehouse, visit [http://www.epa.gov/storet/Downloading\\_STORET\\_Data.pdf](http://www.epa.gov/storet/Downloading_STORET_Data.pdf).

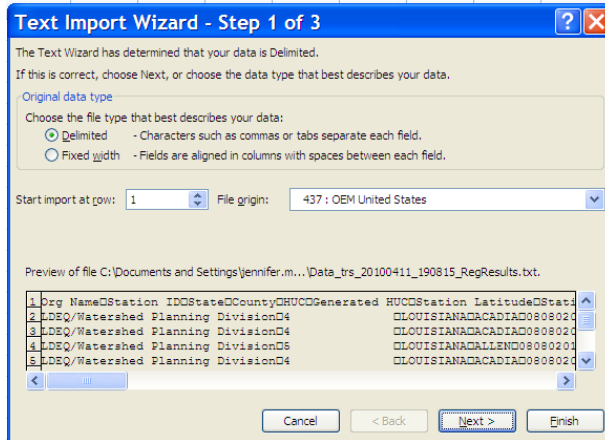
Notice that the files are text files with a .txt extension. A text file can be imported into a spreadsheet such as Microsoft (MS) Excel. Within the spreadsheet, the data can be sorted.

### Opening a Downloaded Text File from STORET in MS Excel

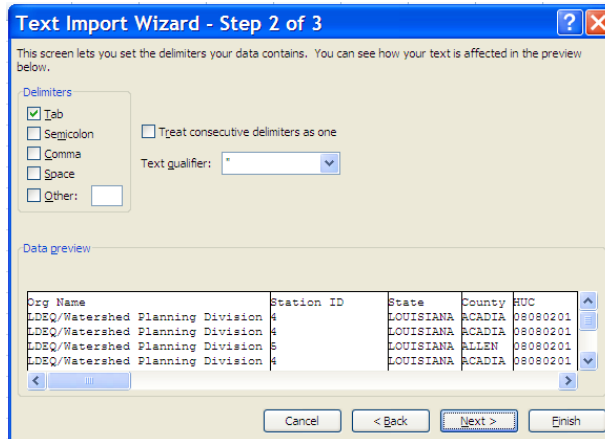
- 6.41 Launch Microsoft Excel from the **Start** button.
- 6.42 On Excel's menu bar, click **File** and select **Open**.
- 6.43 Locate the saved text file. (Specify **Files of type: Text Files** as a dropdown option.)
- 6.44 Select the text file and click **Open**. The text import dialog box opens.



- 6.45 Select **Delimited** because the downloaded file from STORET is a delimited text file. Click **Next**.

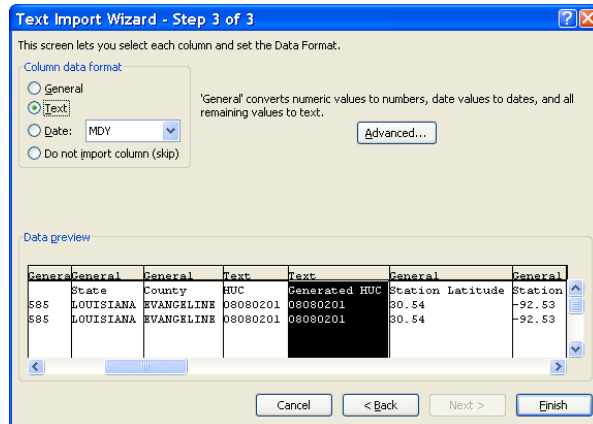


- 6.46 In the delimiters section, make sure the **Tab** option is checked. Then click **Next** to verify the data types we import.



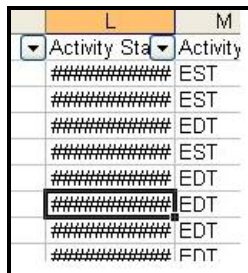
- 6.47 Scroll to the right about five columns to the **HUC** and **Generated HUC** data columns.

- 6.48 Click **HUC** to highlight the column and select **Text** at the top under Column Data Format. Do the same for **Generated HUC**. (If you skip this step, the leading zeros of the HUC number will be removed.)

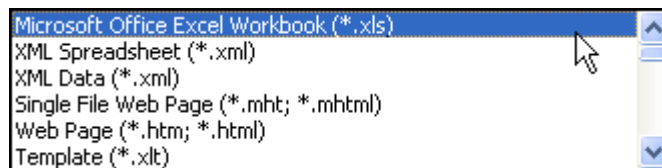


- 6.49 Click **Finish**. All of the data collected by has been imported into MS Excel.

If ##### is present in a field, this indicates that the field (or column) is not wide enough to view the data; **double-click** the right-side column boundary.



- 6.50 On the menu bar, click **File** and select **Save As**: Select the first option, **Microsoft Office Excel Workbook (\*.xls)** and click **Save**.

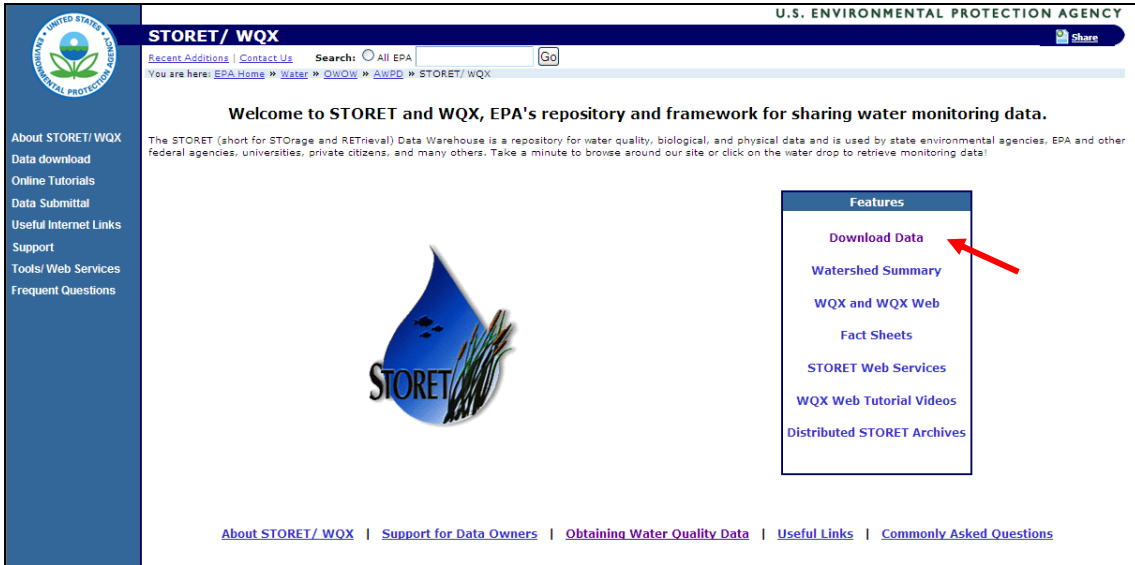


## Retrieving Data Directly from STORET

STORET's data can be accessed directly through the STORET.

- 6.51 Go to the [STORET](#).

6.52 Select **Download Data** from the Features box on the right side of the page.



6.53 Select **Browse or Download Modernized STORET Data** – the yellow button on the right side of the screen.



6.54 Select **Results by Geographic Location** under the STORET Results section.



- 6.55 Select the radio button next to **Drainage Basin/HUC** and then select the **Look Up** button to select a HUC code from the list. Select **08080201** from the list. Click **Select**.

**Results by Geographic Location (stormod\_)**

**Geographic Location**

Select a single type of location search that you wish to perform (state/county, latitude/longitude, or HUC). Then enter the corresponding search criteria.

<input type="radio"/> State/County	State Name ALL	County Name ALL	<input type="button" value="Look Up"/>
<input type="radio"/> Latitude/Longitude (in decimal degrees)	West Limit 180 W	North Limit 90 N	East Limit 0 W
	South Limit 0 N		
<input checked="" type="radio"/> Drainage Basin/HUC	Cataloging Unit 08080201	<input type="button" value="Look Up"/>	

- 6.56 Select **Continue** at the bottom of the page.

**Activity Intent and Community Sampled**

Select one or more Activity Intent	If Intent is Taxon Abundance, select one or more Community Sampled
<p>ACTIVITY INTENT</p> <ul style="list-style-type: none"> <li>Individual</li> <li>Taxon Abundance</li> <li>Tissue</li> <li>Population Census</li> <li>Group Summary</li> <li>Frequency Class</li> <li>Toxicity</li> </ul>	<p>COMMUNITY SAMPLED</p> <ul style="list-style-type: none"> <li>Select All</li> <li>Amphibians</li> <li>Aquatic Vegetation</li> <li>Bacteria/Virus</li> <li>Benthic Macroinvertebrates</li> <li>Birds</li> <li>Corals</li> </ul>

**Characteristic**

Use the Characteristic Search to create a list of up to 50 Characteristics

Characteristic Search: %  Search By: CHARACTERISTIC NAME

Hide Taxonomic Names

Characteristic Name

[Help](#)

- 6.57 The Result Search Summary page will appear. Enter your **e-mail address** and a **three character prefix** within the space provided. Click **Immediate** within the Batch Processing section.



U.S. ENVIRONMENTAL PROTECTION AGENCY

**STORET**

[Recent Additions](#) | [Contact Us](#) | [Print Version](#) Search:

[EPA Home](#) > [Water](#) > [Wetlands, Oceans, & Watersheds](#) > [Monitoring and Assessing Water Quality](#) > STORET > Data Warehouse

### Result Search Summary (stormod\_)

**Number of Results Returned: 17,353**

**Search Criteria**

HUC: 08080201

Station Type(s): ALL

Activity Start Dates: ALL

Intent(s): ALL

Community Sampled: ALL

Medium: ALL

Characteristic(s): ALL

Select 'Back' to modify search parameters and refine your query.  
 Select Batch Processing to generate the report offline based on your current selections.  
 You may customize the content of your report by selecting Data Elements below.

Please enter your email address:

Please specify three characters to prefix your report name :

**Batch Processing**

Note: Immediate Batch processing is limited to data requests with results up to 300000. Any Immediate Batch request over the limit will be automatically scheduled as Overnight Batch.

- 6.58 Follow Steps 6.34 – 6.50 from this tutorial to retrieve and open the data in Excel.

## 7. Electronic News and Information

A ZIP Code should not be a limiting factor when looking for partners. EPA has a number of **electronic discussion lists** on the topic of watersheds and water protection. Electronic discussions create large and instantaneous communication networks of water quality professionals and watershed practitioners. It is an efficient way to benefit from the experiences of others and keep abreast of upcoming workshops, conferences, case studies, resources and grants.

- 7.1 Go to the [Watershed Links](#) site. There are a lot of watershed-related links on this page, including Surf Your Watershed.
- 7.2 Underneath the heading EPA Watershed-related Web sites, click the [Watersheds](#) link.
- 7.3 Click the dropdown list in the middle of the page and select **Who's talking about my watershed?**
- 7.4 On the Listserves page, click [Watershed News](#). This is a monthly electronic newsletter for people working at the watershed level. Included are opportunities for training on watershed topics, resources and grants available for watershed protection, and news from other watershed efforts. Archived newsletters are also available.
- 7.5 Click the **Back** button to return to the Listserves page and click [Non-Point Source Information \(NPSInfo\): e-mail listserver](#). NPSINFO is an online forum for open discussion of runoff pollution issues, including unregulated nonpoint source (NPS) pollution and regulated stormwater. More than 2,000 people belong to this list. The daily traffic on this e-mail listserve covers issues faced by professionals and practitioners of water pollution control, announcements of meetings, workshops and other opportunities such as free materials developed by public agencies that are available for use.
- 7.6 To get information on how to subscribe to this list, click the **Joining NPSInfo** hyperlink.

**Write down the e-mail address to join NPSInfo:**

---

**What do you put in the e-mail to join NPSInfo?**

---

- 7.7 Click the **Back** button to return to the Listserves page.
- 7.8 Click [EPA Public Listservers](#). This is a security enabled site. Select **OK** if a dialog box appears.

7.9 Click the magnifying lens located at the top right or the **Search** option on the left-hand menu to search for the **volmonitor listserve**.



7.10 Click **subscribe** in the right-hand side column. The interface to set an e-mail-based username and password appears. After users provide an e-mail address, they will start receiving messages from the volmonitor e-mail listserver.



### **EPA's Nonpoint Source *News-Notes***

*News-Notes* is a quarterly publication sent out by EPA's Office of Wetlands, Oceans and Watersheds on subjects such as innovative pollution control measures, new management techniques and innovative funding schemes used by groups to address water pollution. It has a variety of news and features related to water quality and nonpoint source pollution control. This is a free resource published by EPA.

7.11 Go to the [News-Notes](#) site.

7.12 Click the link for the current issue. Within the bookmark links to the left, scroll down to **Reviews and Announcements** and click some of the associated sub-bookmarks to scroll through some recent announcements.

7.13 Use the **Back** button to go back to the *News-Notes* Home page.

7.14 Type in a keyword within the search criteria box and click **Go**. A listing of issues containing the specified topic appears.

## 8. ECHO

Enforcement & Compliance History Online (ECHO) focuses on facility compliance and EPA/state enforcement of environmental regulations. Roughly 800,000 regulated facilities under the following environmental statutes are included in ECHO: Clean Air Act (CAA) Stationary Source Program, Clean Water Act (CWA), National Pollutant Discharge Elimination System (NPDES), and Resource Conservation and Recovery Act (RCRA). Through ECHO, site visitors can find inspection, violation, enforcement action, informal enforcement action, and penalty information about facilities for the past three years.

### 8.1 Open [ECHO](#).

The screenshot shows the ECHO homepage with the following elements:

- Header:** U.S. ENVIRONMENTAL PROTECTION AGENCY, Enforcement & Compliance History Online (ECHO), and a share icon.
- Left Navigation Menu:**
  - ECHO Home
  - All Data Search
  - Air Data Search
  - Water Data Search
  - Hazardous Waste Search
  - EPA Enforcement Cases Search
  - EPA Enforcement SEP Search
  - Multiple ID Search
  - Summary Reports
  - About the Site
  - About the Data
  - More State Data
  - Related Links
  - Frequently Asked Questions
  - Site Map
- Main Content Area:**
  - News Banner:** "ECHO Launches Redesigned Homepage (November 2009)!" with a link to "Read more about our new features, including: Toxics Release data, State Comparative Reports, and better mapping. [Press Release.](#)"
  - Tools:** Data Alerts, Sign up for Updates, Refresh Dates, Comments/Feedback, Report Violation.
  - Welcome to the EPA's Enforcement and Compliance History Online (ECHO)**
    - ECHO provides fast, integrated searches of EPA and state data for 800,000+ regulated facilities.
    - ECHO integrates inspection, violation, and enforcement for the Clean Water Act, Clean Air Act, and hazardous waste laws.
    - ECHO has added Toxics Release Inventory data, National Emissions Inventory data, and Water Quality Data ([read more about new features](#)).
  - Mouse over areas below to:**
    - search for facilities,
    - review state by state analytics and trends,
    - or to review contextual reports and information.
  - Navigation Buttons:** Search for Facilities, Analytics and Trends, Reports & Resources.
  - Footer:** First Time Users | Data Problems | Quality of Data | Download Data | How to Report an Error | What's New | ECHO History | Use of Data in ECHO | Data Dictionary | State Data Corrections

### 8.2 Select **Water Data Search** from the list of options in the left, blue menu bar.

CWA data shown in ECHO comes from the Permit Compliance System (PCS) or the Integrated Compliance Information System - National Pollutant Discharge Elimination System (ICIS-NPDES). There is a gradual migration taking place as PCS is being phased out and replaced by ICIS.

### 8.3 Select Search **ICIS-NPDES**.



8. ECHO

8.4 Enter **SD0020796** into the Permit IDs box within the Facility Characteristics section and click the **Search** button.

8.5 Click the **Map icon** on the Search Results page in the right, upper corner. Maps are available in three options from Google: map, satellite and terrain. Violation information will appear on the map.

Facility Information	Program ID#	Inspections (5 yrs)	Qtrs in Non Compliance (3 yrs)	# Effluent Exceedances (3 yrs)	Alleged Current Significant or Cat 1 Violations	Informal Enforcement Actions/NOVs (5 yrs)	Formal Enforcement Actions (5 yrs)	Penalties (5 yrs)	TRI Releases to Water (lbs)	Percent Minority (3 mile radius)
LEAD - DEADWOOD SANITARY DISTRICT PO BOX 413 DEADWOOD, SD 57732	SD0020796	4	4	5	no	2	1			4

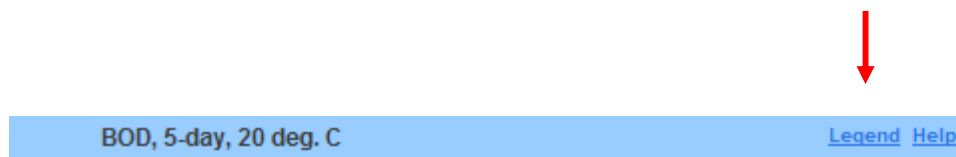
8.6 Click the **Lead-Deadwood Sanitary District** link at the bottom of the map. A detailed facility report appears.

8.7 Scroll down the detailed facility report to the Formal Enforcement Actions section.

**How many formal enforcement actions have been taken within the past 5 years?**

8.8 Scroll up to the Three Year Compliance Status by Quarter section. Click the **Only Charts with Violations** link. The NPDES Effluent Charts page opens.

8.9 Scroll to the first parameter, BOD. Looking at the BOD chart, notice the Legend and Help links in the top blue bar with the name of the parameter, BOD, 5-day, 20 deg. C. These links are available in the same location for each parameter in this section.



The ECHO legend provides the key for understanding the violation graphs. If the shape is open with a blue outline (not filled in with color), then a violation did not occur. If the shape is open but is a color other than blue, there was a previous violation that has been resolved. If the shape is filled in, there is a current violation. Red stands for Significant Noncompliance (SNC) and is the most egregious violation. Purple stands for Reportable Noncompliance (RNC). Yellow stands for an effluent violation. This violation is not as serious as an SNC or RNC. Green stands for a monitoring/reporting violation, in which case a report was not submitted properly.

	Limit	Measurement		Violation		
		no violn	violn	resolved	not resolved	
Max	—	△	▲	◇	◆	SNC
Avg	----	◇	◆	◇	◆	RNC
Min	—	▽	▼	◇	◆	effluent
					◆	monitoring/reporting

Looking at the chart, on which day were BOD violations recorded? \_\_\_\_\_

- 8.10 **Right-click** the **BOD View Detail** link, located just below the Legend and Help links at the top of the chart. A list of options appears. Choose **Open in New Window**. The BOD chart and its table of data appear in a new window.

Permit ID: SD0020796  
Address: POB DEADWOOD SD 57732  
Status: Effective  
Designation: Major  
Owner/Operator: Municipal or water district

BOD, 5-day, 20 deg. C

Discharge Point: 001  
Monitoring Location: Effluent gross  
Sampling Period: Monthly

Qtrs in NC (of 12): 2

QTR10: Apr-Jun07  
QTR11: Jul-Sep07  
QTR12: Oct-Dec07

Formal Enforcement Actions - (05 year history)  
AFS, PCS, RCRAInfo, NCDB

Statute	Source ID	Type of Action	Lead Agency	Date	Penalty	Penalty Description
CWA	SD-N00000116	Administrative - Informal	State	10/20/2005		

ICIS

Primary Law/Section	Case Number	Case Type	Lead Agency	Case Name	Issued/Filed Date	Settlement Date	Federal Penalty	State/Local Penalty	SEP Cost	Comp Action Cost
No data records returned.										

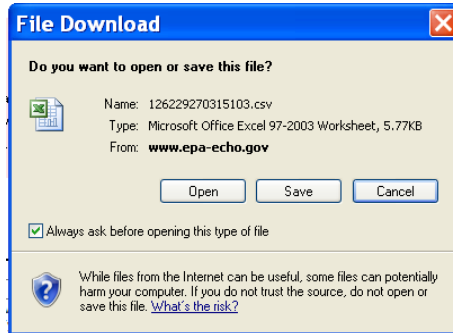
Scrolling through the table of data, what is the average limit number for BOD?  
\_\_\_\_\_

Still looking at the table of recorded data, on which date were violations reported for BOD? \_\_\_\_\_

8.11 Scroll up and click the **green Download box**.



8.12 A file download box will appear. Select **Save** and the data can be opened in an Excel spreadsheet.



8.13 Return to the Detailed Facility Report page, Three Year Compliance Status by Quarter. Notice the “NMth” row for BOD, coliform and nitrogen.

**Where can the meaning of “NMth” be found?** \_\_\_\_\_

**What is the meaning of NMth?** \_\_\_\_\_

(Hint: Press Ctrl + F to help find NMth)

8.14 Return to ECHO’s Home page, and select **Water Data Search** from the list on the left-hand side.

8.15 Click **ICIS**.



8.16 Scroll down the Search Compliance Form to the **Watershed Criteria** section.


8.17 Click the **Map** link and choose **Colorado**.

8.18 Click the city of **Denver** on the map. The Watershed Criteria box automatically fills in the Denver HUC.

Select a watershed address by clicking on it:



Watershed Address (HUC, Name):

- 
- 8.19 Click the **Search** button.
- 8.20 Click the purple **E** in the first column next to Suncor Energy (USA) INC.RY. The E provides a direct link to the effluent charts and data. 
- 8.21 Click the **Back** button and return to the Search Results page.
- 8.22 Click the **Suncor Energy (USA) INC.RY** hyperlink and review the detailed facility report.

**What do the red numbers indicate?** \_\_\_\_\_

## 9. Watershed Central

Watershed Central supports the development and implementation of effective watershed management programs by providing guidance, tools, case studies, data sets and data analysis. Watershed Central's stakeholders and data providers include:



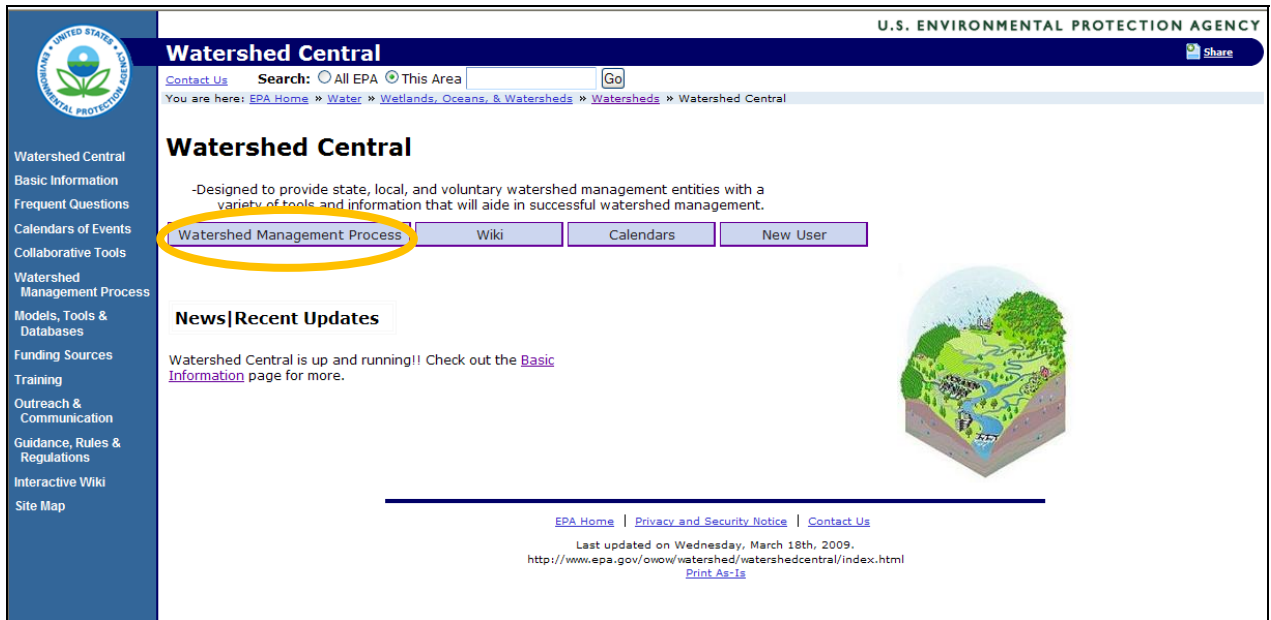
- Local watershed management groups
- Regulated entities subject to EPA's various Clean Water Act provisions
- EPA Headquarters and the Office of Water
- EPA regional water and water management offices
- Fish and Wildlife Service and National Marine Fisheries Service on issues related to electronic access to data submitted
- States
- Tribes
- Public

Watershed Central includes a “public” side that provides watershed management process information that is accessible to everyone and a “wiki,” a Web site that allows users to submit and edit content so that the information is constantly updated by the watershed community (just like Wikipedia). The wiki is only available to registered users and everyone is encouraged to join the wiki. The wiki includes case studies, information on watershed organizations and various watershed management tools. Submitted content will be reviewed every two weeks and key items will be published to the public-facing Watershed Central Web site on a regular basis. The wiki contains the following information:

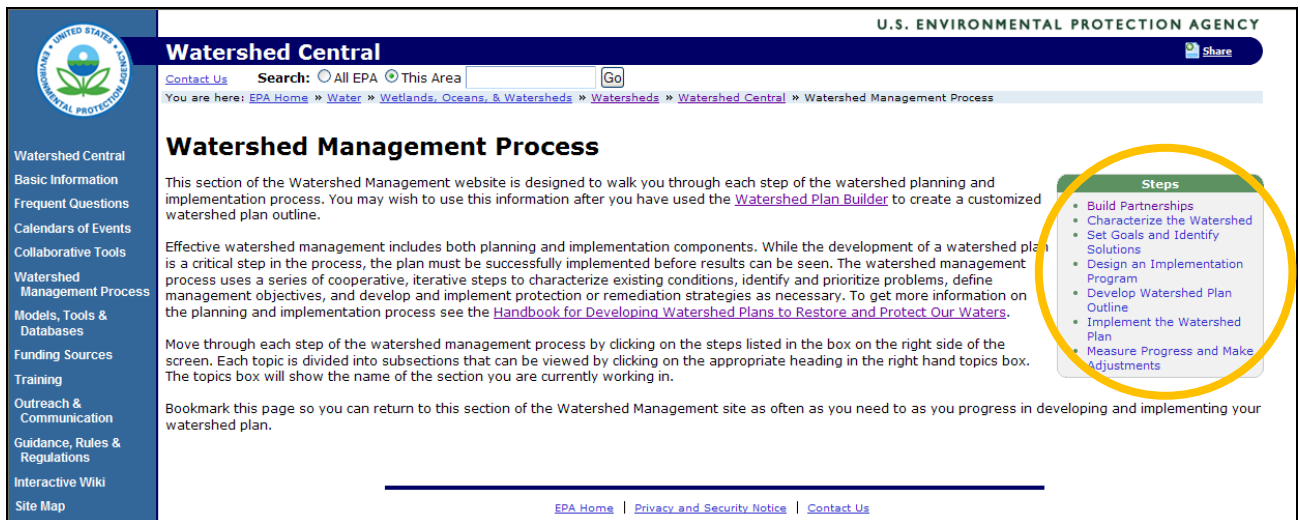
- Tools & models for every step in the watershed management process
- Articles on watershed organizations, written by watershed organizations
- A map view into watershed activities & experts around the country
- Spatial data such as land use, impaired streams, water quality monitoring station locations and information, permitted facility locations, watershed boundaries, and much more
- Calendars for events, workshops and trainings around the country
- Information resources on regulations, guidance and funding sources

9.1 Go to the [Watershed Central](#) site.

9.2 On the front page of the Watershed Central site, there are links to the watershed management process, the wiki, calendars and new user information. Click on the **Watershed Management Process** link.



9.3 The Watershed Management Process page provides links to detailed sections for each of the watershed planning and implementation steps through the Steps quick link box on the right side. Click on the step that is of interest to you.



- 9.4 Each hyperlinked step takes the user to a page that provides a brief description of the step. Notice that the quick links box on the right side of the page is now titled More info on...(insert name of selected step) and contains links to sub-steps.

### Build Partnerships

The very nature of working at a watershed level means you should work with at least one partner to improve watershed conditions because it is often too complex and too expensive for a single entity. New ideas and input from partners not only provides a more solid commitment to solutions, but also helps to leverage resources. Stakeholders' involvement also increases the probability of long-term success through trust, commitment, and personal investment.

**Build Partnerships Links**

[EPA Adopt your Watershed](#) - This on-line database can help you learn about opportunities to get involved in activities in your community, such as monitoring, cleanups, and restoration projects. You can download the Adopt Your Watershed Brochure to find out more about stewardship opportunities or add your watershed group to the searchable database.

[The River Network](#) (EXIT Disclaimer) - Visit this resource (for River Network members only) for the Directory of Funding Sources for Grassroots River and Watershed Conservation Groups. It lists private and corporate sources, as well as federal sources.

[EPA / Source Water Protection](#) - EPA Headquarters, Regional and State Contacts for Source Water Protection, Underground Injection Control, and Sole Source Aquifers

[More ...](#)

**More info on Build Partnerships**

- [Identify Key Stakeholders](#)
- [Identify Issues of Concern](#)
- [Set Preliminary Goals](#)
- [Develop Indicators](#)
- [Conduct Public Outreach](#)
- [Results and Next Steps](#)

[+] Steps

[Watershed Management Process](#)

- 9.5 Each subpage contains links to relevant sections of the Handbook for Developing Watershed Plans to Restore and Protect Our Waters as well as other EPA sites.

U.S. ENVIRONMENTAL PROTECTION AGENCY

Watershed Central
Share

Contact Us    Search:  All EPA    This Area     

You are here: [EPA Home](#) » [Water](#) » [Wetlands, Oceans, & Watersheds](#) » [Watersheds](#) » [Watershed Central](#) » [Watershed Management Process](#) » [Build Partnerships](#) » [Identify Issues of Concern](#)

### Build Partnerships - Identify Issues of Concern

One of the first activities in developing a management plan is to identify issues of concern. These issues will help to shape the goals for your watershed and determine what types of data you will need to collect.

Set up a meeting with stakeholders to identify what they feel are the major concerns in the watershed. At this stage, you can start to link the problems in the watershed with possible causes or sources. As an example, stakeholders might identify beach closures as an issue of concern. This could lead to a discussion of sources of the bacteria that led to the closures.

It is often useful to diagram the links between problems and causes and present them as a picture, or a conceptual model (see [Figure 4-1 \(PDF\)](#), 615 kb, 20 pp.) on page 4-4 of EPA's Watershed Handbook for an example of a conceptual model). These diagrams provide a graphical representation that you can present to stakeholders, helping to guide the subsequent planning process. The conceptual model can be used to clarify the relationships between the possible causes and sources of impacts seen in the watershed and identify what types of data you need to collect later. [Figure 4-2 \(PDF\)](#), 615 kb, 20 pp.) on page 4-4 of EPA's Watershed Handbook shows an example of an initial conceptual model of impairment developed to facilitate the identification of problems and their probable causes for the Greens Creek watershed in North Carolina. The conceptual model was presented to stakeholders for discussion at a meeting at which they identified upland loading of sediment and subsequent impacts on water clarity (turbidity) as the key risk pathway for support of uses in Greens Creek.

As you move through the process and gather more data, these links will become more discernible. Establishing these links between pollutants or stressors and the impacts in the watershed is one of the keys to developing a successful watershed management plan.

For more information on the development of conceptual models as part of the watershed planning process, refer to [EPA's Guidelines for Ecological Risk Assessment](#). Build your own conceptual model using [Worksheet 4-2 \(PDF\)](#), 320 kb, 28 pp.), provided in appendix B of EPA's Watershed Handbook. [CADDIS](#), the Causal Analysis/Diagnosis Decision Information System, is another useful tool when identifying causes of biological impairments.

**More info on Build Partnerships**

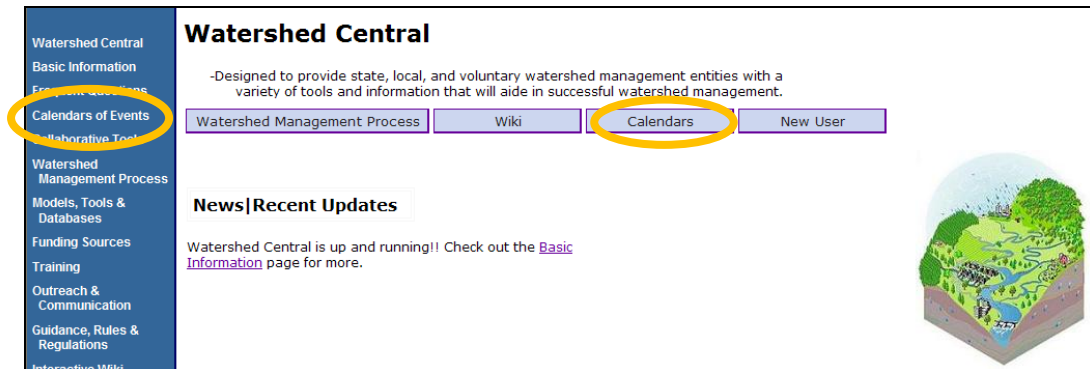
- [Identify Key Stakeholders](#)
- [Identify Issues of Concern](#)
- [Set Preliminary Goals](#)
- [Develop Indicators](#)
- [Conduct Public Outreach](#)
- [Results and Next Steps](#)

[+] Steps

[Watershed Management Process](#)

- 9.6 Click the **Watershed Central** link at the top of the blue menu bar on the left to return to Watershed Central's Home page.

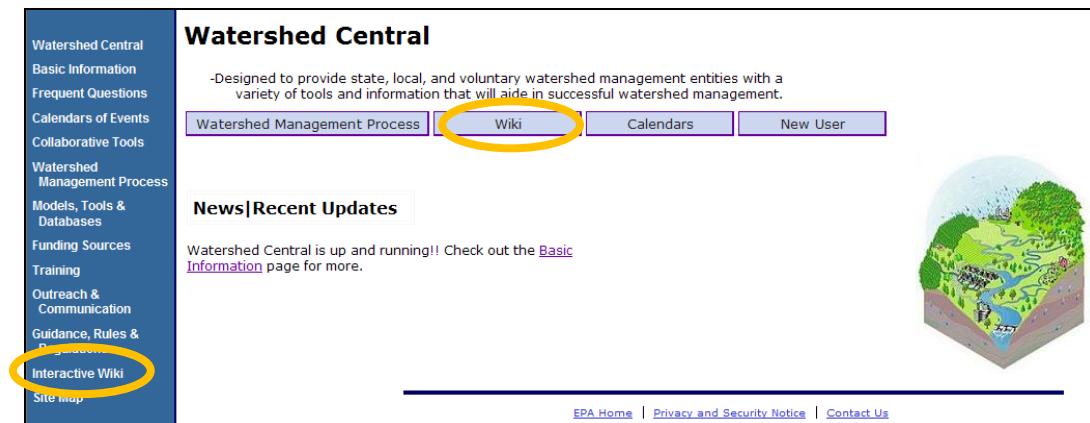
- 9.7 Click on the **Calendars** link on the Home page. The calendar page lists several EPA water-related and nonpoint source calendars.



- 9.8 Return to the Watershed Central Home page by either clicking the **Back** button at the top left of your screen or by clicking the **Watershed Central** link at the top of the blue menu bar on the left side of the screen.

## Accessing Watershed Central's Wiki

- 9.9 On the Home page, click on the **Wiki** link.



- 9.10 First-time visitors to the wiki will need to register. Registration instructions can be found on the [Watershed Wiki Privacy Statement page](#).

- 9.11 **Sign-in** to the wiki. (Approval of the request to join the wiki is required before a new user can sign in.)



The Watershed Central Wiki is designed to:

- Facilitate technical exchange between people involved in the watershed planning process.
- Provide improved networking and encourage discussion of issues related to watershed planning.
- Provide improved access to recommended processes, tools and data required to prepare and implement watershed management plans.

The wiki is not an appropriate place to post a commercial advertisement. Anyone who is willing to become a registered user is welcome to read and contribute to the wiki. Some of the content knowledge captured in the wiki will be published on Watershed Central's public-facing Web site.

- 9.12 New wiki members will benefit from the getting started tutorials. To access the tutorials, click on the **Getting Started** link in the community box on the lower, left menu bar.

Getting Started with the Watershed Central Wiki

Are you new to the Watershed Central Wiki? We have a [training module](#) in Adobe Flash that takes just a few minutes to run and teaches you **how to add a page** - correctly nested within a category (which makes for easier search and discovery), **how to add a map** into your article, and also **how to add a tag** to your article.

[Click here for training](#)

*(Please be patient as it takes a few minutes initially to load the files. Your speakers cannot be on mute to hear the voiceover. The last page of the training is a blank page - be sure to close out the training window only when you are done and not the wiki window!). If video is not working, try installing [Adobe Flash Player](#) on your computer. ALSO: Please note that the training initially refers to a [Special pages link](#) - this can be found in the left-hand navigation bar toolbox area down below.)*

Check out the following few additional pages that will give you a good overview of what this site is about and how to contribute.

- [How Do I...? - Additional written tutorials on a growing list of subjects](#)
- [WatershedCentral:About](#) - Why the Watershed Central Wiki?
- [User Guidelines](#) - A couple of "rules of thumb" for community members
- [Watershed Central Wiki:Wishlist](#) - leave suggestions for improvements that you would like to see to Watershed Central
- [Discussion Board](#) - Use this page for posting questions to the entire WC community - such as where do I find certain data, experiences applying for certain funding, etc.

Category:

- 9.13 Click on the **Home** link on the top, left menu bar to return to the wiki Home page.

- 9.14 Click on the **Case Study** link in the center of the wiki Home page. The next page to appear will have a complete listing of case studies.

Watershed Central Wiki

Page [discussion](#) [view source](#) [history](#) [watch](#)

Main Page

*The watershed management resource website that you can edit*

How can I participate in the Watershed Central Wiki?

TO:

- Share your best [practices, case studies](#) and lessons learned;
- See what other [watersheds](#) are up to & learn from them;
- Identify partners in your watershed [area](#);
- Rate and comment on [watershed management tools](#) or report on new tools;
- View a [map](#) with water monitoring stations, land use types, watershed boundaries, high-resolution aerial photography, and more for your watershed;
- Provide a link to your watershed management plan for others to learn from;
- Create a page about your organization, add a [map](#), and share it amongst members of your group; and

Thanks for helping us build this community knowledge base for more effective watershed management and implementation! You can contact us at [watershedcentral@epa.gov](mailto:watershedcentral@epa.gov).

Please note: this site contains a number of links to non-EPA web pages.

**What do YOU think of Watershed Central Wiki?**

This site is all about you, the user. Let us know what you think of the wiki, rate it, and suggest improvements

**Calendar of Events**

[Click here to see full calendar & add your event](#)

**Map Your Watershed**

Zoom to your local watershed here on this Google map! It also features geotags - each pushpin represents a link to a wiki article helping to link you to potential partners in your watershed. You can also view impaired waters, monitoring stations and more, as well as link to EPA's ArcGIS Server EnviroMapper for Water (EMR) map application featuring many of the Agency's waters-related geospatial data (just click on the small graticule floating over the lower left-hand corner of the mapper). [How to Add a Pushpin in the Map Below to Your Wiki Article!](#)

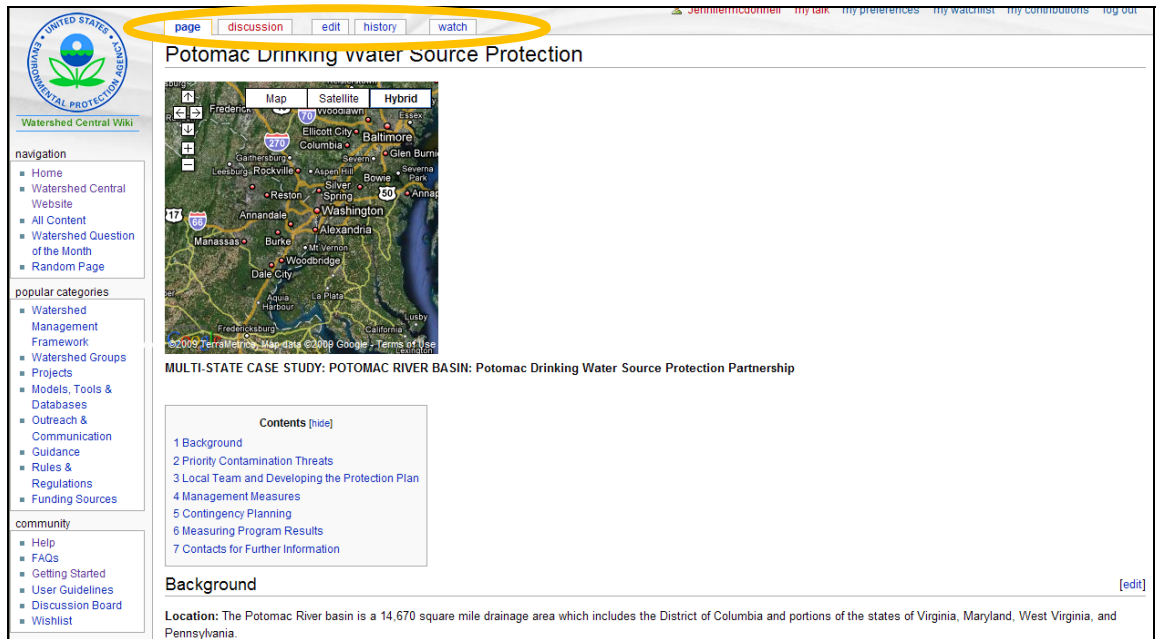
**Top Categories**

This is a **tag cloud**: a list of tags where size reflects popularity.

[Basic Facts & Information](#) [Best Management Practices](#) [Case Study](#) [Chemicals Conferences](#) [Data Analysis](#) [Data Provider](#) [EPA Funding Sources](#) [Guidance Documents](#) [Laws & Legislation](#) [Main Inventory Mapped](#) [Models](#) [Outreach and Communication](#) [Projects by state](#) [Tools](#) [Tools for Developing Management Practices to Achieve Goals](#) [Tools for Setting Goals and Identifying Solutions](#) [Training](#) [Water](#) [Watershed Characterization Tools](#) [Watershed Group](#) [Watershed Management Framework](#)

**Top 10 Rated Pages**

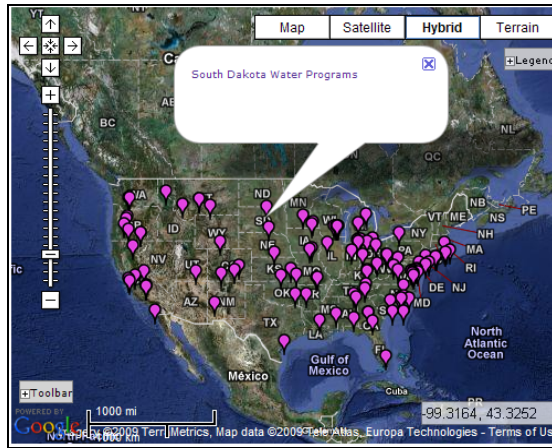
- 9.15 Click on any case study to see an example. If a security warning box appears on the screen, click **No**.
- 9.16 At the top of the selected case study, note the Discussion, Edit, History and Watch Tabs.



- 9.17 Click on the **Discussion** tab to post questions or responses to a page's content.
- 9.18 Click on the **Edit** tab to update a page's content.
- 9.19 Click on the **History** tab to learn when the most recent updates to a page were made and by whom. If a large error is made such as accidentally erasing a page's content, go to the History page and load a previous version of the page.
- 9.20 Return to the wiki Home page by clicking the **Back** button or by clicking **Home** at the top of the left menu bar.
- 9.21 Scroll down the Home page to the **Map Your Watershed** section.
- 9.22 Each purple pushpin on the map indicates an existing article related to that location. Click on the **pushpin** closest to your location. (Zoom into your region of the United States if many pushpins are close together.)



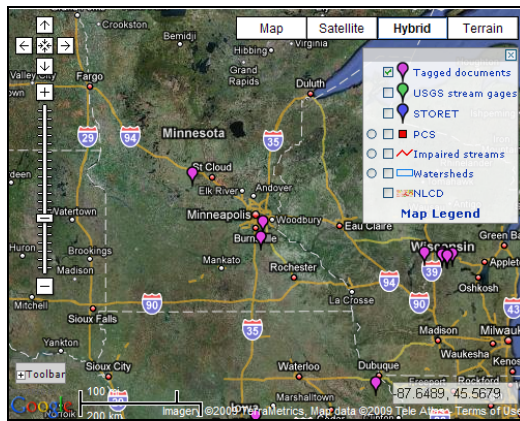
9.23 The name of the program associated with the pushpin will appear. Double click on the **hyperlinked name** of the organization to visit their wiki page.



**What is the name of the organization that was selected?**

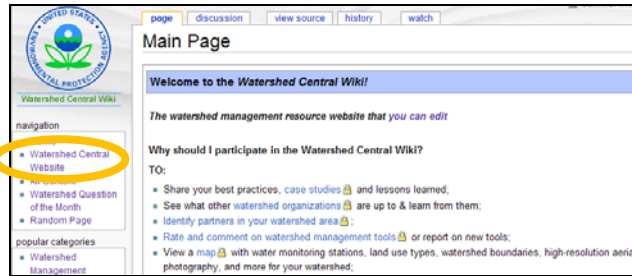
9.24 Click the **Back** arrow to return to the Home page.

9.25 **Zoom** to a region of interest on the map and open the map legend by clicking on the + sign.

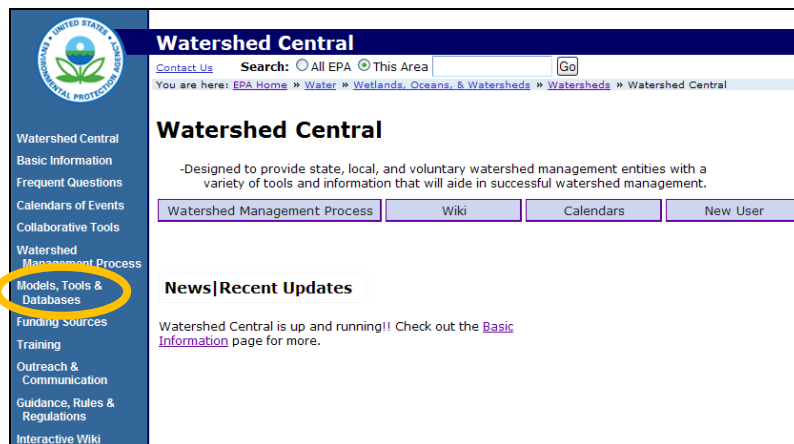


The map contains information on the location of USGS steam gauges, STORET collection sites, PCS-reporting facilities, impaired waters, watershed boundaries and national land cover data (NLCD). Further land cover details are available in the map legend. Some map features only function if the map is adequately zoomed in. Select a map feature by checking the box to the left of the feature in the legend. The map will refresh with the data.

- 9.26 Return to the “public” side of Watershed Central by clicking on the **Watershed Central Website** link, located on the left side menu, second from the top.



- 9.27 Click on **Models, Tools & Databases** on the left, blue menu bar. The next page provides links to tools that help gather data and conduct data analyses to characterize the condition of a watershed and its waterbodies, identify pollutant sources, and support quantification of the pollutant loads.



# 10. Water Quality Standards

## Water Quality Standards Database Reports

Water quality standards define the goals for a waterbody by designating its uses and defining criteria to protect those uses. They also establish provisions to protect water quality with anti-degradation policies and specific caveats on implementing standards such as low-flow variances or mixing zones.

The National Water Quality Standards Database (WQSDB) is an on-line database consisting of a compilation of "designated uses," used by each state to describe the functions each waterbody is intended to support—fishing, swimming, drinking water source, etc. Last updated in December 2007, the WQSDB includes state approved information on designated uses for 50 states, the District of Columbia, two territories, and one tribe. EPA does not plan to update this database in the future and is transitioning from the centralized WQSDB to a distributed set of state databases that will provide access to water quality standard information.

EPA no longer provides public access to the WQSDB, however you can access WQS reports with information about designated uses, waterbody names, state numeric water quality criteria, and EPA recommended numeric water quality criteria. Using these standard reports, WQS information from across the country can be compared.

- 10.1 Open the [Water Quality Standards Database](#).
- 10.2 Click [WQS Reports](#).
- 10.3 Scroll down the page and click the first link, [Designated Use and Class Data by State](#). Through this link, a listing of designated uses and classes for a state can be accessed.
- 10.4 Choose **Florida** from the dropdown list. Click **Run Report**.  
**How many different State DU Names exist in Florida? \_\_\_\_\_**
- 10.5 Use the **Back** button to return to the Reports page.
- 10.6 Click [Designated Use and Class Data by State Waterbody](#) (third link).
- 10.7 Choose **Florida** from the dropdown list. Click **Run Report**.
- 10.8 Scroll down to the Waterbody Names dropdown list. Select **Woods Creek** and click the **Run Report** button.

**What are the 3 state designated uses for the segments of this waterbody?**

1. \_\_\_\_\_
2. \_\_\_\_\_
3. \_\_\_\_\_

## Locating Waterbody Classifications in a State

EPA's State, Tribal & Territorial Standards pages are continually updated as water quality standards (WQSs) are approved by EPA. Searching for water quality standards is simple through the Home page's dropdown list and clickable map of the United States and territories.

- 10.9 Open the [Water Quality Standards Home Page](#). State-specific waterbody classifications and definitions are found here.
- 10.10 On the map click **North Carolina**.
- 10.11 Select **Sections .0100-.0300, Classifications and Water Quality Standards Applicable to Surface Waters and Wetlands of North Carolina (PDF) (145 pages, 931 K)**.

This is known as the *Red Book* and it contains the Standards for North Carolina waters. North Carolina has different classifications for its waters. The letters **WS-I, C**, and so on, describe different uses supported by each classification that must be protected by the water quality standards code.

**How is WS-IV different from WS-I?**

\_\_\_\_\_

**What are two sensitive activities supported by Class C waters?**

\_\_\_\_\_

**What is the numeric criterion for Dissolved Oxygen in Class C waters?**

**Trout waters:** \_\_\_\_\_ **Non-Trout waters: Daily Average:** \_\_\_\_\_

**Non-Trout waters: Instantaneous Value:** \_\_\_\_\_

**What is the numeric criterion for Fecal Coliform?** \_\_\_\_\_

## Locating a Particular Waterbody of Interest and Its Classifications

- 10.12 Click the **Back** button to close out of the first PDF. Select [Section .0302-.0317, Designated Uses for Waters of the State by Major River Basin \(PDF\) \(291 pp, 742 K\)](#).
- 10.13 Click the binoculars tool in the Adobe Reader to search the document. In the search text box type in **Crowders Creek** and click **Search**.
- 10.14 Result listings can appear on different pages. Confirm that you are on PDF document page 113 of 291.

**What is Crowders Creek's classification?** \_\_\_\_\_

- 10.15 A listing of links to all available state, tribe and territory water quality Web sites can be found on EPA's [State, Tribal and Territorial Standards](#) page.

# 11. ATTAINS

The Assessment TMDL Tracking & Implementation System (ATTAINS) lets you view tables and charts that summarize state-reported data for the nation as a whole, individual states, individual waters and the 10 EPA regions. The *full story* of assessed waters that are impaired, are currently being restored or have been restored is provided.

## 11.1 Open [ATTAINS](#).

**Watershed Assessment, Tracking & Environmental Results**

Recent Additions | Contact Us Search:  All EPA  This Area

You are here: [EPA Home](#) » [Water](#) » [WATERS](#) » [Water Quality Assessment and TMDL Information](#)

### Water Quality Assessment and Total Maximum Daily Loads Information

This site provides information reported by the states to EPA about the conditions in their surface waters. This information is required every two years under Clean Water Act Sections 305(b) and 303(d).

Because of differences in state assessment methods, the information in this site should not be used to compare water quality conditions between states or to determine water quality trends. Check out the Frequent Questions box on the right to learn more.

[Which state reports are available?](#)      [National Summary of State Assessments](#)

**Frequent Questions**

- [About This Database \(Integrated Report\)](#)
- [Assessing Water Quality \(Questions and Answers\)](#)
- [2006 Integrated Reporting Guidance](#)
- [Previous National Water Quality Reports](#)
- [EnviroMapper for Water](#)
- [AskWATERS](#)
- [EPA WATERS Homepage](#)

**Legend**

- States
- Trust Territories
- American Samoa
- Northern Mariana Islands

## 11.2 Click the **About this Database** link within the Frequent Questions box in the upper, right portion of the screen.

This page provides an overview of the reported data, details which information can be extracted from the data, and defines the water quality terms used such as “good,” “threatened” or “impaired.”

Use the keyboard shortcut for the menu item (under Edit) for Find (on This Page):  
CTRL + F

**How is “impaired” defined?**

---

**How is “threatened” defined?**

---

## 11.3 Click the browser’s **Back** button.



11.4 Click the top hyperlink, **Which state reports are available?** The chart on the next page lists the specific reports available for each state.

State	2004	2006	2008
Alabama	<a href="#">Separate Impaired and Assessed Waters Reports</a>	<a href="#">Available Integrated Report</a>	<a href="#">Available Integrated Report</a>
Alaska	<a href="#">Separate Impaired and Assessed Waters Reports</a>	<a href="#">Separate Impaired and Assessed Waters Reports</a>	<a href="#">Available Integrated Report</a>
American Samoa	<a href="#">Impaired Waters report only</a>	<a href="#">Impaired Waters report only</a>	<a href="#">Available Integrated Report</a>
Arizona	<a href="#">Available Integrated Report</a>	Unavailable	<a href="#">Assessed Waters report only</a>
Arkansas	<a href="#">Separate Impaired and Assessed Waters Reports</a>	Unavailable	<a href="#">Available Integrated Report</a>
California	<a href="#">Separate Impaired and Assessed Waters Reports</a>	<a href="#">Impaired Waters report only</a>	Unavailable
Colorado	<a href="#">Separate Impaired and Assessed Waters Reports</a>	<a href="#">Available Integrated Report</a>	<a href="#">Available Integrated Report</a>
Connecticut	<a href="#">Separate Impaired and Assessed Waters Reports</a>	<a href="#">Available Integrated Report</a>	<a href="#">Available Integrated Report</a>
Delaware	<a href="#">Separate Impaired and Assessed Waters Reports</a>	<a href="#">Available Integrated Report</a>	Unavailable
District Of Columbia	<a href="#">Separate Impaired and Assessed Waters Reports</a>	<a href="#">Available Integrated Report</a>	<a href="#">Available Integrated Report</a>
Florida	Unavailable	Unavailable	Unavailable
Georgia	<a href="#">Separate Impaired and Assessed Waters Reports</a>	<a href="#">Separate Impaired and Assessed Waters Reports</a>	<a href="#">Available Integrated Report</a>
Guam	<a href="#">Impaired Waters report only</a>	<a href="#">Separate Impaired and Assessed Waters Reports</a>	<a href="#">Available Integrated Report</a>
Hawaii	<a href="#">Impaired Waters report only</a>	<a href="#">Separate Impaired and Assessed Waters Reports</a>	Unavailable
Idaho	Unavailable	Unavailable	<a href="#">Available Integrated Report</a>
Illinois	<a href="#">Separate Impaired and Assessed Waters Reports</a>	<a href="#">Separate Impaired and Assessed Waters Reports</a>	Unavailable

11.5 Click the Texas 2004 **Separate Impaired and Assessed Waters Reports**.

11.6 On the next page, click **Assessed Waters Report**. Texas’ 2004 305(b) information appears.

11.7 Under Water Quality by Waterbody Type – Rivers, Streams, and Creeks, click **Individual Use Support for Assessed Waters**. An overview of the assessed waters’ conditions and their support of designated uses can be found here.

11.8 Scroll down to look at the other summary tables for rivers and streams in Texas.

**What are the three top impairment causes?**

1. \_\_\_\_\_
2. \_\_\_\_\_
3. \_\_\_\_\_

**What are the three top probable sources of impairments?**

1. \_\_\_\_\_
2. \_\_\_\_\_
3. \_\_\_\_\_

## Locating TMDL Information from an Integrated Report

More information is available on the state's Web site. **Note:** Each state may vary in the way it organizes its information.

- 11.9 Click the browser's **Back** button three times, arriving at the ATAINS Status of Available Data chart. Select **Texas 2008 – Available Integrated Report**.
- 11.10 On the lower, left portion of the Texas 2008 Water Quality Assessment Report page, click **State Water Quality Program**.
- 11.11 At the top of Texas' TCEQ page, click **Surface Water Quality Monitoring** (5<sup>th</sup> choice on the list) and select **Texas Integrated Report for Clean Water Act Sections 305 (b) and 303 (d)** (3<sup>rd</sup> on the list).

This is the state report that is used by EPA to generate the information in ATTAINS.

- 11.12 Return to the [ATTAINS Status of Available Data](#) chart by clicking **Back**. Select the **Louisiana 2006 Integrated Report**.

The screenshot shows the EPA's Watershed Assessment, Tracking & Environmental Results website. The page title is "Louisiana 2006 Water Quality Assessment Report". The navigation bar includes "Recent Additions", "Contact Us", and a search function. The breadcrumb trail reads: "You are here: EPA Home » Water » WATERS » Water Quality Assessment and TMDL Information » Louisiana Water Quality Assessment Report".

On the left side, there is a "Return to home page" link and a section titled "On This Page" with a list of links: "Louisiana Assessment Summary", "Water Quality by Waterbody Type" (with sub-links for Rivers and Streams, Lakes, Reservoirs, and Ponds, Bays and Estuaries, and Wetlands), "Causes of Impairment", "Probable Sources Contributing to Impairments", "Previously Impaired Waters Now Attaining All Uses", "TMDL Alternatives by Cause of Impairment", "Causes of Impairment for 303(d) Listed Waters", "Cumulative TMDLs by Pollutant", and "Cumulative Number of TMDLs". Below this is a section "Data are also available for these years:" with links for "2002-2004", "303(d) Listed Waters for 2006", "Waterbody Changes from Prior Cycle", and "Comparison Summary by Reporting Year".

The main content area features a map of Louisiana with a dropdown menu for "Assessed Waters of Louisiana by Watershed" set to "Amite" and a "GO" button. Below the map is a search box for "Search for a Waterbody within Louisiana" with a "Search" button and a checkbox for "Display impaired waters and TMDL information only".

On the right side, there is a "Frequent Questions" section with links to "About This Database (Integrated Report)", "Assessing Water Quality (Questions and Answers)", "2006 Integrated Reporting Guidance", "Previous National Water Quality Reports", "EnviroMapper for Water", "AskWATERS", and "EPA WATERS Homepage".

- 11.13 Click **Rivers and Streams** (at the top, left of the page) and notice how the three pie charts differ from the non-integrated reports. Scroll down to the Causes of Impairments and Sources of Impairments tables.
- 11.14 Return to the top of the page. Click **Cumulative TMDLs by Pollutant**.  
**How many TMDLs have been established for fecal coliform? \_\_\_\_\_**
- 11.15 Click the number next to the bar graph for **Fecal Coliform**.
- 11.16 Click the fourth TMDL document – **Bayou Chauvin – Headwaters to Ouachita River**.
- 11.17 To download the TMDL document in PDF format, click **TMDL Document**.

11.18 Click the **Back** button.

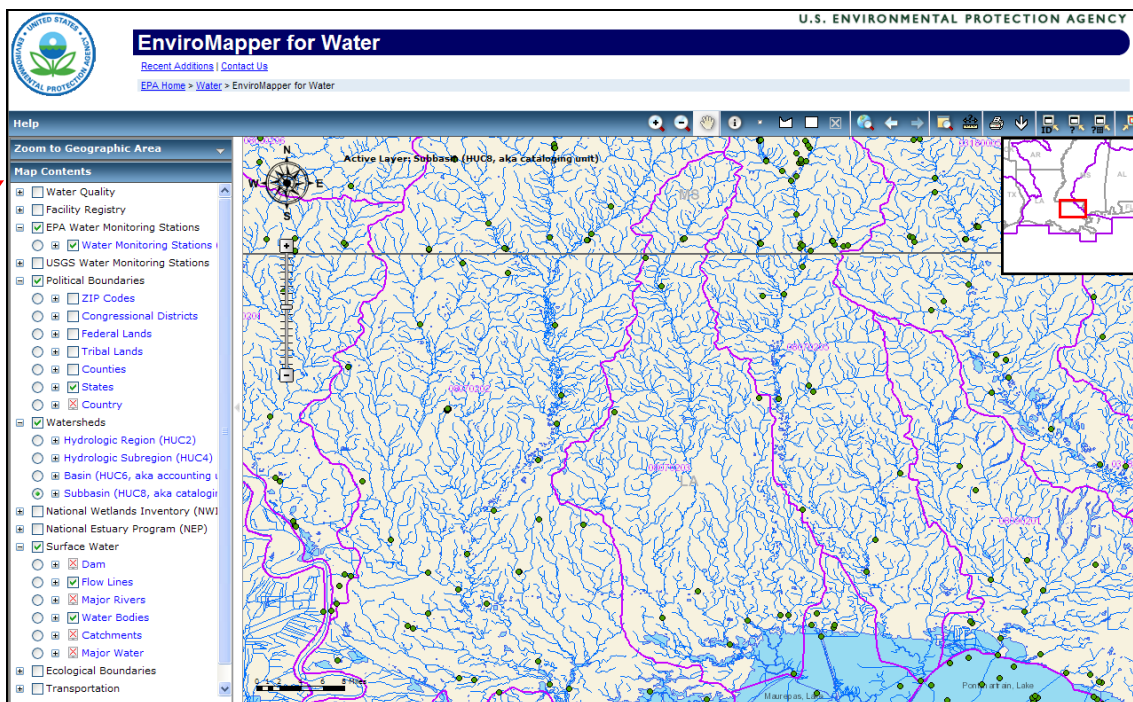
11.19 Click the hyperlinked Waterbody ID **LA-080102**. The Listed Water Information page appears, providing information on additional impairments and links to their TMDL documents.

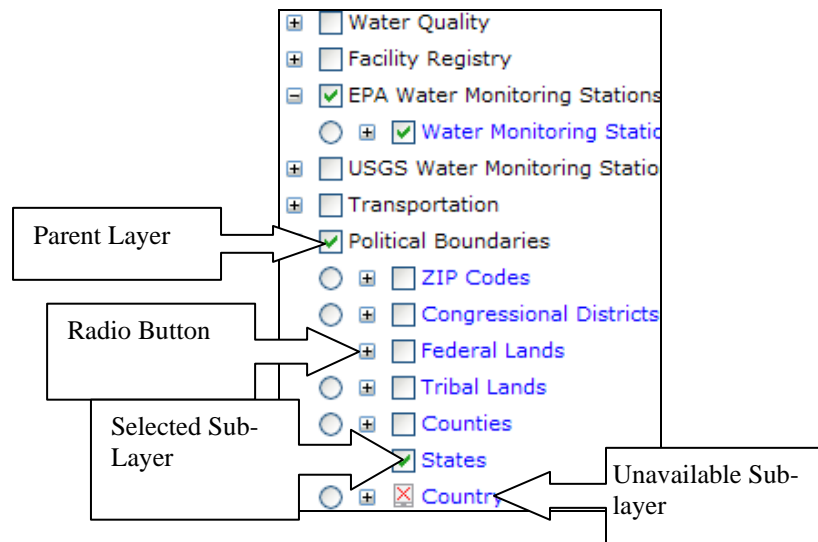
To learn more about ATTAINS, view the June 18, 2008 Watershed Academy Webcast Seminar, “[ATTAINS –A Gateway to State-Reported Water Quality Information.](#)”


# 12. Enviromapper for Water

*EnviroMapper for Water* offers map tools that are similar to tools found in other programs like MapQuest and ArcMap such as zoom in, identify features and display layers. *EnviroMapper for Water* is not only a map-based interface to visualize and display geographic information, but data stored in EPA's water program databases (e.g., Water Quality Standards, ATTAINS and STORET) can be accessed through the map.

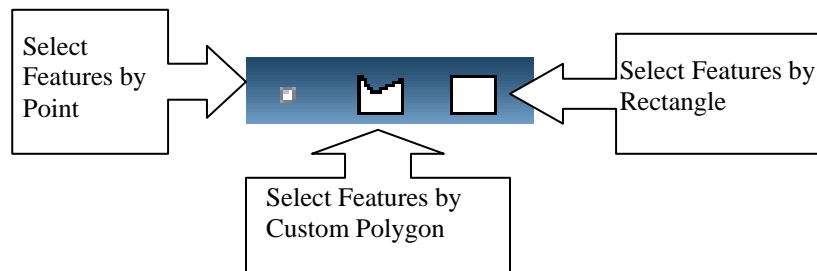
Within *EnviroMapper for Water*, the Map Contents box in the upper left corner provides the user many different data layer options. If there is a plus sign next to a content item, additional sub-layers are available. To see the sub-layers, click on the plus sign to expand the layers. For example, ZIP Codes, Congressional Districts and Federal Lands are three sub-layers of Political Boundaries. A layer is selected by clicking the box next to it. A checkmark will appear within the box of the selected layer. A minus sign indicates that there are no further sub-layers available. To collapse the list, click the minus sign. Note that for a sub-layer's information to appear on the map, the parent layer's box must be checked.





 If a red 'X' appears in a box next to a layer, then the sub-layer or layer is not available at the current map scale. Zoom out or zoom in to find the scale where the information is viewable.

Multiple sub-layers (boxes) can be selected at one time, but only radio button (circle) can be selected at once. Map Features, or individual geographic data layers, lie on top of each other. The working data layer is specified by making it the Active Map Feature or Active Data Layer. By selecting a radio button, that selected map layer becomes the active layer. When using the Select Feature by Point, Select Features by Custom Polygon or Select Features by Rectangle tools in the top toolbar, an active layer must be selected.



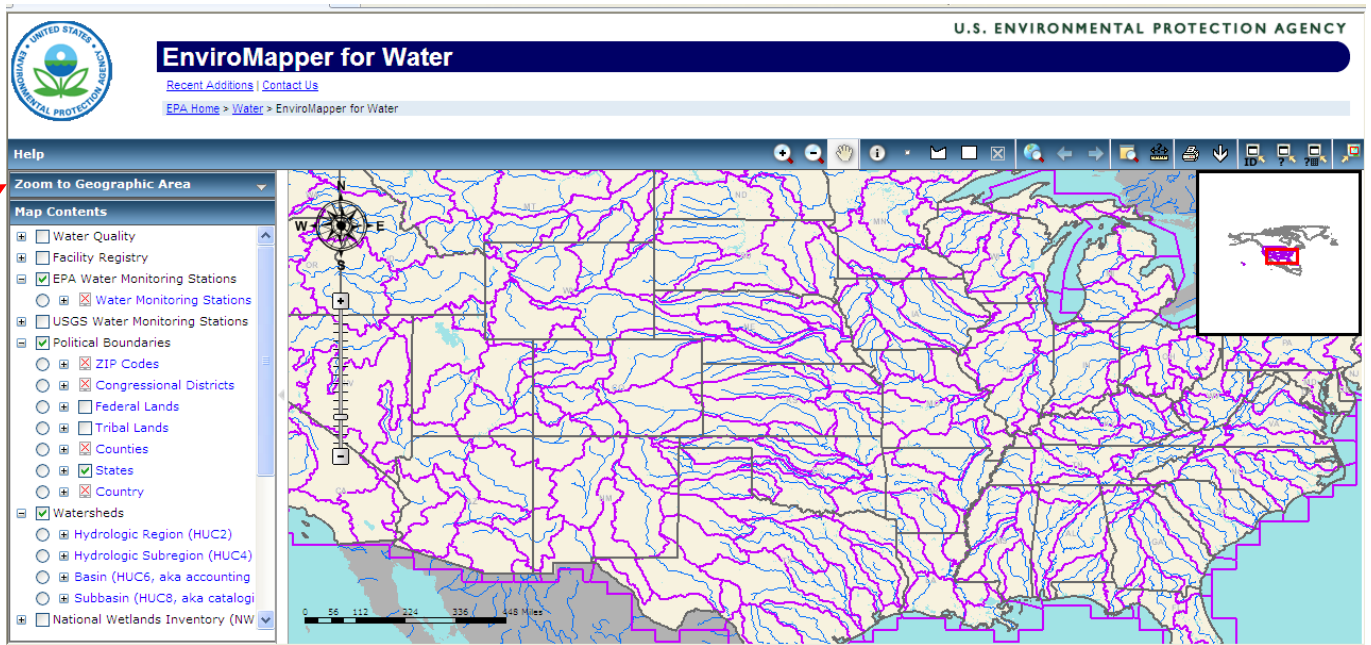
For guidance and tips for using *Enviromapper for Water*, select the **Help** button located at the top, left of the screen.

### Searching for a Specific Watershed in Enviromapper

The user can drill down to a specific HUC 8 watershed in *Enviromapper for Water* by either going directly to *Enviromapper for Water* or by clicking on the watershed map in ATTAINS.

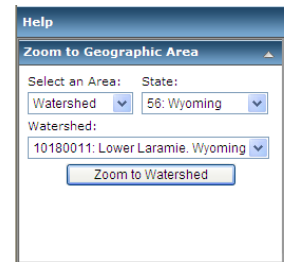
### Accessing Enviromapper Directly

- 12.1 Go to the [Enviromapper for Water](#) site.

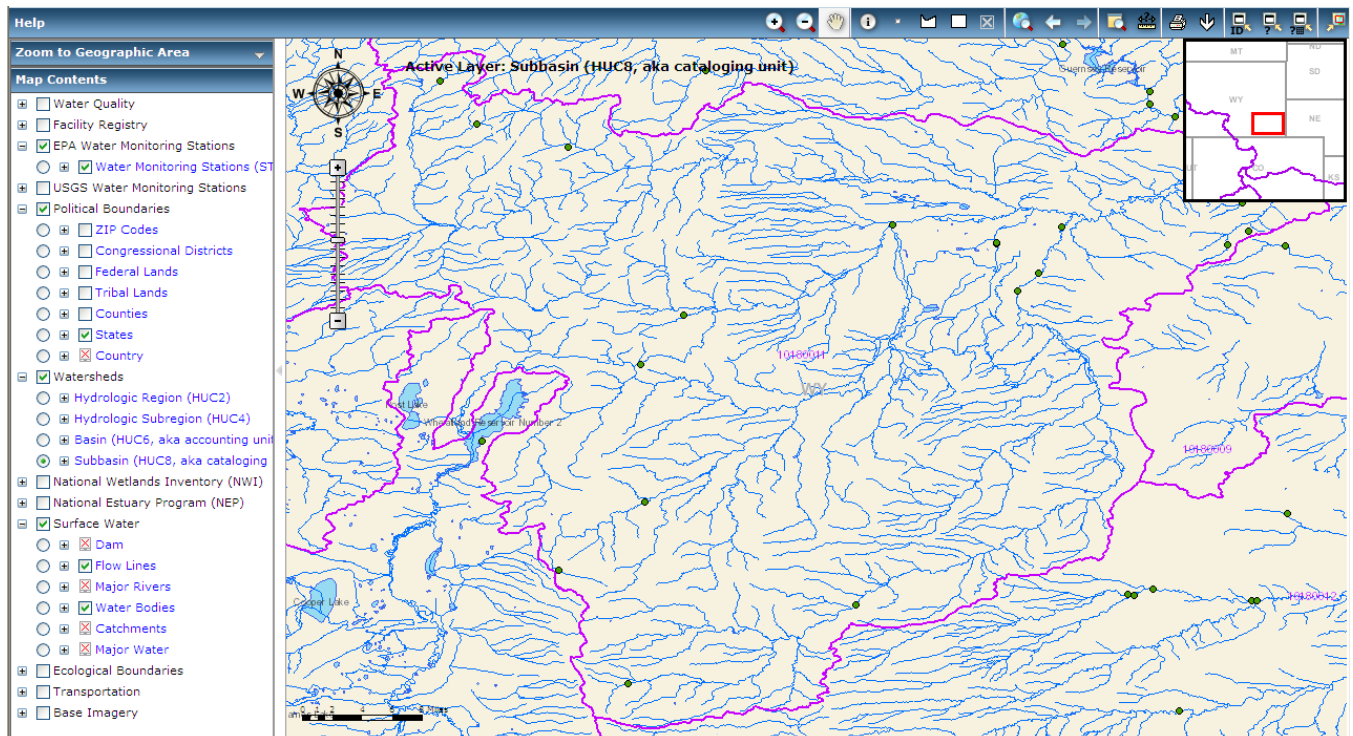


12.2 Click the dropdown arrow next to **Zoom to Geographic Area**.

12.3 From the dropdown options, select:  
**Select an Area: Watershed**  
**State: Wyoming**  
**Watershed: 10180011: Lower Laramie, Wyoming**



12.4 Click **Zoom to Watershed**. The Lower Laramie Watershed map will appear in Enviromapper.

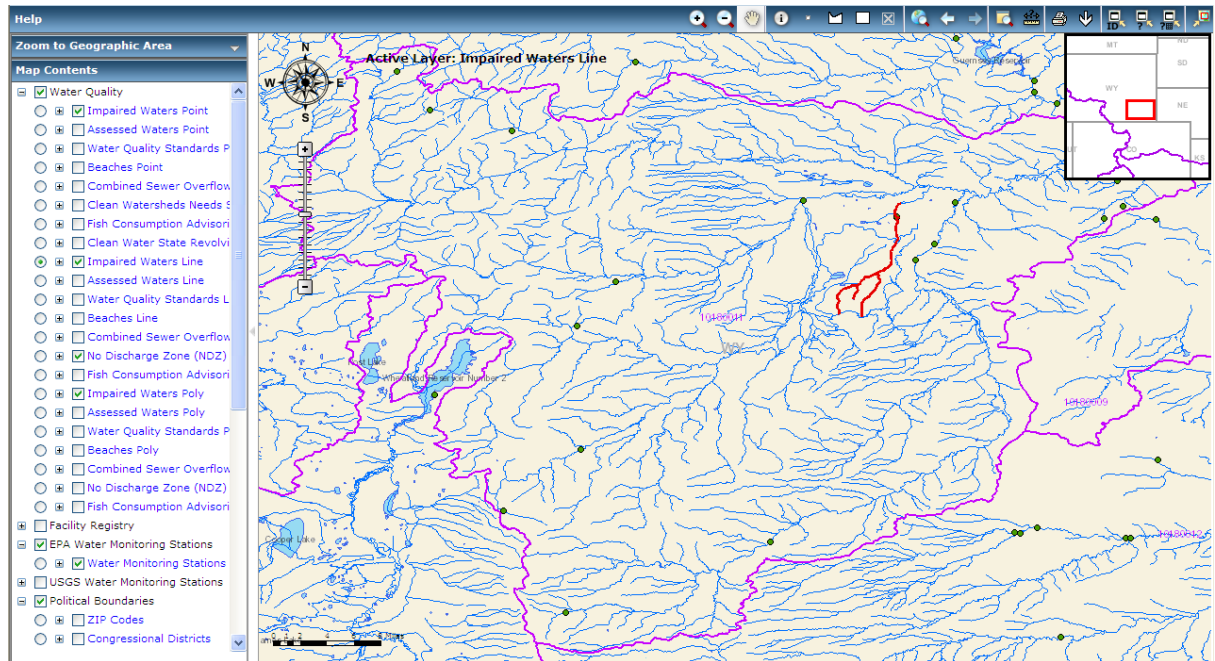


## Accessing Enviromapper Through ATTAINS

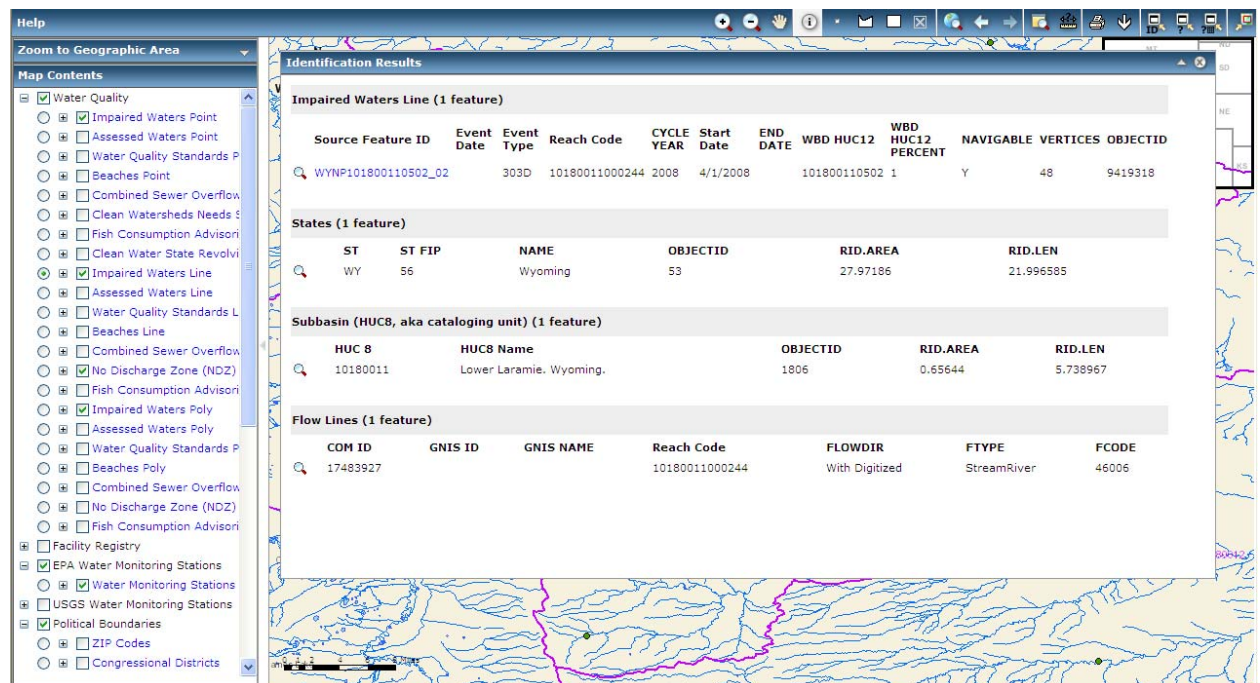
- 12.5 Go to the [ATTAINS](#) site.
- 12.6 Select **Wyoming** from the clickable map of the United States.
- 12.7 Select **Lower Laramie** from the dropdown menu of watersheds at the top of the page. Click **Go**.

- 12.8 A Lower Laramie Watershed page will appear. Click on the **Lower Laramie map** in the center of the screen. Enviromapper will automatically open to the Lower Laramie Watershed.

- 12.9 Click the “+” sign next to Water Quality to dropdown the list of choices. Select the box and radio button next to **Impaired Waters Line**. The map will automatically re-draw itself.



- 12.10 Select the **Identify Tool** from the top tool bar. Using the left mouse button, click on an impaired waterway (red line).




The Identification Results box will be populated with information and links for the active layer as well as additional available water program data for the same selected segment.

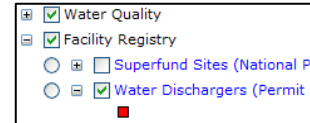


## Using *Enviromapper* to Query Facilities

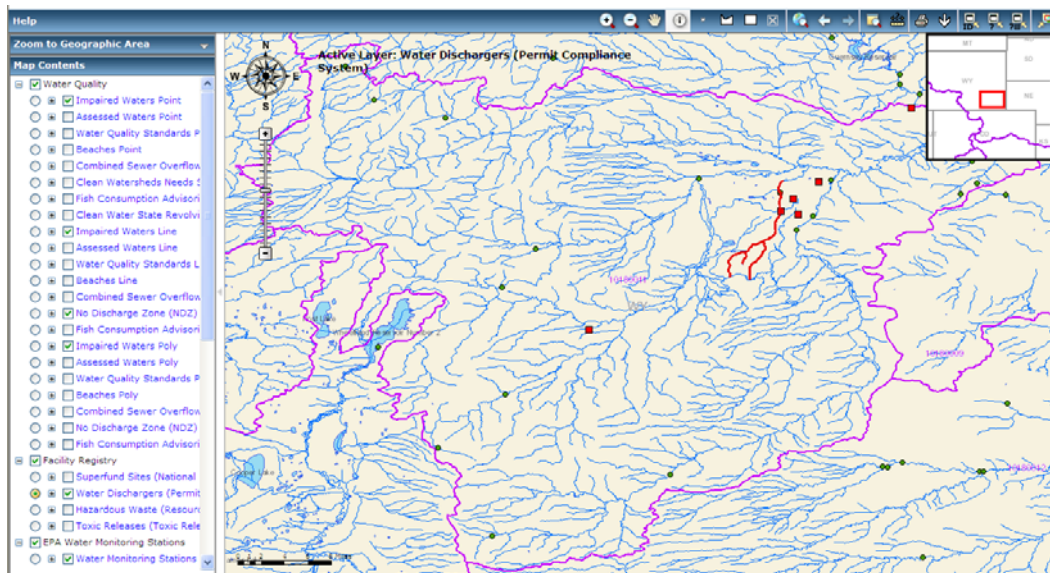
**Point source** is a term used to describe facilities such as industrial plants, businesses, institutions and municipal treatment plants that discharge effluent through a discernible, confined and discrete conveyance into waters of the United States. Permits usually outline the terms and conditions under which effluent may be discharged.

12.11 Within the Map Contents box, expand the Facility Registry sub-layers by clicking on the plus sign next to Facility Registry. 

12.12 Click the box next to Facility Registry and Water Dischargers, a sub-layer of Facility Registry. The map will automatically update itself.



12.13 Select the **Water Discharges** radio button, making it the active layer.

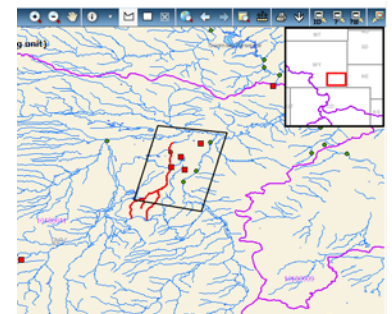


**Note:** The user can select more than one point on the map with *Enviromapper for Water* using the Select Features by Custom Polygon and Select Features by Rectangle.

12.14 Select the Select Features by Custom Polygon tool bar.



12.15 Move the cursor over the map and it will appear as a black cross. Click on a point on the map to form one corner of the polygon. As you move the cursor, a line will form, creating the side of a polygon. Click the mouse at the location of the next corner and repeat until the polygon is the desired shape and encompasses the discharging facilities of interest. When the polygon is finished, double click the mouse on the final corner. An example polygon is in the screenshot.



12.16 The map will automatically re-draw itself, indicating the selected facilities with blue dots.

12.17 The Identification Results Box will automatically populate with information on each of the facilities that was located within the polygon.

**Identification Results**

Water Dischargers (Permit Compliance System) (4 features)

ID	PGM SYS ACRNM	LDIP CODE	FACILITY NAME	FACILITY UIN	Latitude	Longitude
WY0024074	PCS	02	BASIN ELECTRIC LARAMIE	110000468075	42.104095	-104.887522
WYR000358	PCS	02	WHEATLAND FACILITY	110009761230	42.054379999999995	-104.950735
WYR000051	PCS	02	BIG PINEY FACILITY	110010856181	42.048068	-104.92093
WY0042773	PCS	02	4S CATTLE COMPANY	110010138788	42.074048999999995	-104.929041

Legend:

- No Discharge Zone (NDZ)
- Fish Consumption Advisory
- Facility Registry
- Superfund Sites (National)
- Water Dischargers (Permit)
- Hazardous Waste (Resource)
- Toxic Releases (Toxic Release Inventory)
- EPA Water Monitoring Stations
- Water Monitoring Stations

What is the name of one of the selected facilities? \_\_\_\_\_

# 13. Ask WATERS

EPA's Watershed Assessment and Tracking Environmental ResultS (WATERS) tool offers reports that integrate data from multiple, independent databases.

## Waters Simple Query Tool

- 13.1 WATERS can be accessed through the **AskWaters** link in the Frequent Questions in ATTAINS (see below). An alternative method to reach this page is to open the [Watershed Assessment and Tracking Environmental Results](#) page. On the left sidebar, select **Tools**. Select **Ask WATERS**. Click **Simple Query**. A green and blue table of questions appears.

[Return to home page](#)

### Louisiana 2006 Water Quality Assessment Report

Assessed Waters of Louisiana by Watershed

Select a watershed from the list: [Amite] GO  
or click on the map to choose a watershed:

**On This Page**

- [Louisiana Assessment Summary](#)
- [Water Quality by Waterbody Type](#)
  - [Rivers and Streams](#)
  - [Lakes, Reservoirs, and Ponds](#)
  - [Bays and Estuaries](#)
  - [Wetlands](#)
- [Causes of Impairment](#)
- [Probable Sources Contributing to Impairments](#)
- [Previously Impaired Waters Now Attaining All Uses](#)
- [TMDL Alternatives by Cause of Impairment](#)
- [Cumulative TMDLs by Pollutant](#)
- [Cumulative Number of TMDLs](#)

**Data are also available for these years:** [2002](#) [2004](#)

[303\(d\) Listed Waters for 2006](#)

[Waterbody Changes from Prior Cycle](#)

[Comparison Summary by Reporting Year](#)

**For More Information:**

[Louisiana Assessment Report](#)  
[EXIT Disclaimer](#)

[State Water Quality Program](#)  
[EXIT Disclaimer](#)

[Download Excel compatible information](#)

[Download GIS Information](#)

**Search for a Waterbody within Louisiana**  
Enter Waterbody Name:   
 Display impaired waters and TMDL information only

**NOTE:** The data provided in this report may differ from the information provided in the original Louisiana 2006 Water Quality Integrated Report. This is a result of differences between the Louisiana State assessment database and the summary data provided in Louisiana's 2006 Integrated Report, which is available at <http://www.deq.louisiana.gov/portal/tabid/99/Default.aspx>.

**Frequent Questions**

- [About This Database \(Integrated Report\)](#)
- [Assessing Water Quality \(Questions and Answers\)](#)
- [2006 Integrated Reporting Guidance](#)
- [Previous National Water Quality Reports](#)
- [EnviroMapper for Water](#)
- [AskWATERS](#)
- [EPA WATERS Homepage](#)

- 13.2 Click **What causes of impairments for an impaired water have been de-listed and what were their reasons for de-listing?**
- 13.3 Select **Michigan** from the list of states and regions.
- 13.4 Type in a date range: **01-01-2007 to 01-01-2009**.

- 13.5 Click **Run Report**. For each waterbody listed in the report, the state's waterbody identifier code, the reporting cycle when the water was listed, the cause of impairment, the date the waterbody was de-listed, and the basis for the de-listing is provided.

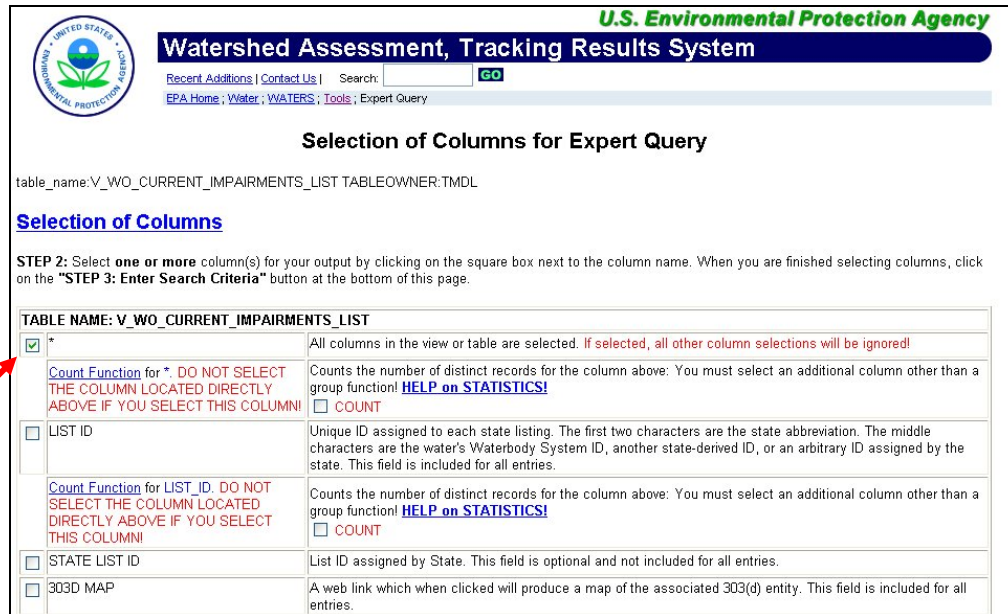
## WATERS Expert Query Tool

- 13.6 Open [WATERS](#).
- 13.7 Click **Tools** (on the left-hand sidebar).
- 13.8 Click the fifth bullet [WATERS Expert Query Tool](#).

Notice the [Expert Query User Manual \(PDF\)](#) link. This manual provides a detailed explanation of the databases available to query through this tool, as well as how to operate and execute effective searches. For example, the manual explains how to run **statistical summary operations** like average, maximum, sum or standard deviation on **numeric database fields**, such as **ACRES 303D** and **MILES 303D**.

This exercise covers the three steps for an **Expert Query**: (1) select a preset view, (2) filter fields, and (3) enter search criteria. All impaired or 303(d) listed waters in the Catawba River Basin in North Carolina will be queried.

- 13.9 Click the second link under the 303(d) Listing & TMDL Information section - **Current 303(d) Listed Impaired Waters and their Causes of Impairment**.
- 13.10 Select all available columns to be viewed by selecting the **asterisk checkbox** at the top.



**U.S. Environmental Protection Agency**

**Watershed Assessment, Tracking Results System**

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### Selection of Columns for Expert Query

table\_name: V\_WO\_CURRENT\_IMPAIRMENTS\_LIST TABLEOWNER: TMDL

#### Selection of Columns

**STEP 2:** Select **one or more** column(s) for your output by clicking on the square box next to the column name. When you are finished selecting columns, click on the **"STEP 3: Enter Search Criteria"** button at the bottom of this page.

TABLE NAME: V_WO_CURRENT_IMPAIRMENTS_LIST	
<input checked="" type="checkbox"/> *	All columns in the view or table are selected. If selected, all other column selections will be ignored!
<input type="checkbox"/> Count Function for *. DO NOT SELECT THE COLUMN LOCATED DIRECTLY ABOVE IF YOU SELECT THIS COLUMN!	Counts the number of distinct records for the column above: You must select an additional column other than a group function! <a href="#">HELP on STATISTICS!</a> <input type="checkbox"/> COUNT
<input type="checkbox"/> LIST ID	Unique ID assigned to each state listing. The first two characters are the state abbreviation. The middle characters are the water's Waterbody System ID, another state-derived ID, or an arbitrary ID assigned by the state. This field is included for all entries.
<input type="checkbox"/> Count Function for LIST_ID. DO NOT SELECT THE COLUMN LOCATED DIRECTLY ABOVE IF YOU SELECT THIS COLUMN!	Counts the number of distinct records for the column above: You must select an additional column other than a group function! <a href="#">HELP on STATISTICS!</a> <input type="checkbox"/> COUNT
<input type="checkbox"/> STATE LIST ID	List ID assigned by State. This field is optional and not included for all entries.
<input type="checkbox"/> 303D MAP	A web link which when clicked will produce a map of the associated 303(d) entity. This field is included for all entries.

- 13.11 Scroll down and click the **STEP 3** button.

If no selection is made within Step 3, the entire national database will be called up.

- 13.12 Scroll down to **STATE** (not STATE LIST ID). Type **NC** in the textbox.

- 13.13 Scroll all the way down to **State Basin Name**. Click the dropdown arrow next to Equal To and select a new search operator: **Containing**. Type **Neuse**.

- 13.14 Now click the **Search Database** button. Do not click the button twice; it takes a minute to load.

- 13.15 In the resulting table, click the hyperlinked column header, **List\_ID**.

**What does the field List\_ID mean?** \_\_\_\_\_

- 13.16 Close the metadata popup window.

- 13.17 Scroll down to the bottom to find the total number of unique impairments for waterbodies listed on the state's 303(d) list in this river basin. You might have to scroll horizontally to find the number.

A waterbody is listed by individual segments, and each has its own data record in the impaired waters database. Each segment can be listed for one or multiple impairments.

## What is the total number of unique impairments in the Neuse River Basin?

**Note:** This file can be downloaded into a comma separated file and opened in Excel.

U.S. Environmental Protection Agency  
**Watershed Assessment, Tracking Results System**  
 Recent Addresses | Contact Us | Search:  GO  
 EPA Home | Water | WATERS | Tools | Expert Query

**Expert Query**  
 Page No. 1  
 STATE Equal to NC  
 STATE BASIN NAME Containing Neuse

LIST ID	STATE LIST ID	303D MAP	303D REPORT	CAUSE ID	CAUSE DESCRIPTION	CYCLE	STATE	STATE EPS CODE	STATE NAME	REGION	ASSESSMENT METHOD	PRIORITY	RANKING	TARGETED FLAG	ANTICIPATED TMDL SUBMITTAL DATE	LISTING CRITERIA	EPA DELISTED COMMENTS	EF DELT DA
NC 27- (118)B	NC 27- (118)B	No Spatial Data	<a href="#">303(d) REPORT</a>	259	FECAL COLIFORM	2004	NC	37	NORTH CAROLINA	4		HIGH						
NC 27- (118)C	NC 27- (118)C	No Spatial Data	<a href="#">303(d) REPORT</a>	259	FECAL COLIFORM	2004	NC	37	NORTH CAROLINA	4		HIGH						
NC 27- (118)D	NC 27- (118)D	No Spatial Data	<a href="#">303(d) REPORT</a>	259	FECAL COLIFORM	2004	NC	37	NORTH CAROLINA	4		HIGH						

13.18 Scroll up to the top. (Drag the vertical sidebar to the top of the page.)

It is possible to summarize this information more succinctly. The following examples illustrate how to create tables that can be easily inserted into a watershed plan using Expert Query.

13.19 Return to the **Selection of Columns for Expert Query** by clicking twice on the **Back** button.

13.20 Select the fields below to limit the number of columns that will appear in the final output:

**CAUSE DESCRIPTION**

**STATE**

**WATERBODY NAME**

**STATE BASIN NAME**

MILES 303(d)—select the **SUM** checkbox to the right (*in red type*). Do not select the main box.

ACRES 303(d)—select the **SUM** checkbox (*in red type*). Do not select the main box.

13.21 Click **STEP 3** to Enter Search Criteria.

13.22 For State, type **NC**.

13.23 For State Basin Name, type **Neuse**. The Search Option can remain Equal to.

13.24 In the **Column Display Order** column, enter the following in the fields from the top to the bottom: 2, 6, 1, 5, 3, 4. (See the figure below.)

13.25 Under the **Sort Column**, type a **2** and in the Cause Description row, type a **1** in the Water Body Name row.

**Selection Criteria for Expert Query**

**STEP 3: Enter Search Criteria and Organize the Output**

[Output Options for Selected Columns](#)

Column Name	Search Option Help!	Search Value	Column Display Order	Sort Column	Sort Order	Where Only
<a href="#">Cause Description</a>	Equal to <input type="text"/>	<input type="text" value="List Impairment_Description Values"/>	<input type="text" value="2"/>	<input type="text" value="2"/>	Ascending <input type="text"/>	<input type="checkbox"/>
<a href="#">State</a>	Equal to <input type="text"/>	<input type="text" value="NC"/> <input type="text" value="List State Values"/>	<input type="text" value="6"/>	<input type="text"/>	Ascending <input type="text"/>	<input type="checkbox"/>
<a href="#">Water Body Name</a>	Equal to <input type="text"/>	<input type="text"/>	<input type="text" value="1"/>	<input type="text" value="1"/>	Ascending <input type="text"/>	<input type="checkbox"/>
<a href="#">State Basin Name</a>	Equal to <input type="text"/>	<input type="text" value="Neuse"/>	<input type="text" value="5"/>	<input type="text"/>	Ascending <input type="text"/>	<input type="checkbox"/>
<a href="#">Sum(Miles 303d)</a>	Equal to <input type="text"/>	<input type="text"/>	<input type="text" value="3"/>	<input type="text"/>	Ascending <input type="text"/>	<input type="checkbox"/>
<a href="#">Sum(Acres 303d)</a>	Equal to <input type="text"/>	<input type="text"/>	<input type="text" value="4"/>	<input type="text"/>	Ascending <input type="text"/>	<input type="checkbox"/>

Comma Separated
  Tab Delimited

13.26 Click the **Search Database** button.

It displays an alphabetically sorted table of the 303(d) listed waterbodies in North Carolina’s Neuse River Basin, including the impairment cause and the total miles and total acres listed, for the individual cause.

**For Little Contentnea Creek, how many total miles are impaired for Low Dissolved Oxygen? \_\_\_\_\_**

13.27 Return to the Selection of Columns for Expert Query by clicking the browser’s **Back** button.

13.28 Select the **asterisk** checkbox at the top to select all columns.

**U.S. Environmental Protection Agency**  
**Watershed Assessment, Tracking Results System**  
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[EPA Home](#) | [Water](#) | [WATERS](#) | [Tools](#) | [Expert Query](#)

**Selection of Columns for Expert Query**

table\_name:V\_WO\_CURRENT\_IMPAIRMENTS\_LIST TABLEOWNER:TMDL

**Selection of Columns**

**STEP 2:** Select **one or more** column(s) for your output by clicking on the square box next to the column name. When you are finished selecting columns, click on the **"STEP 3: Enter Search Criteria"** button at the bottom of this page.

TABLE NAME: V_WO_CURRENT_IMPAIRMENTS_LIST	
<input checked="" type="checkbox"/> *	All columns in the view or table are selected. <i>If selected, all other column selections will be ignored!</i>
<input type="checkbox"/> Count Function for *. DO NOT SELECT THE COLUMN LOCATED DIRECTLY ABOVE IF YOU SELECT THIS COLUMN!	Counts the number of distinct records for the column above: You must select an additional column other than a group function! <a href="#">HELP on STATISTICS!</a> <input type="checkbox"/> COUNT
<input type="checkbox"/> LIST ID	Unique ID assigned to each state listing. The first two characters are the state abbreviation. The middle characters are the water's Waterbody System ID, another state-derived ID, or an arbitrary ID assigned by the state. This field is included for all entries.
<input type="checkbox"/> Count Function for LIST_ID. DO NOT SELECT THE COLUMN LOCATED DIRECTLY ABOVE IF YOU SELECT THIS COLUMN!	Counts the number of distinct records for the column above: You must select an additional column other than a group function! <a href="#">HELP on STATISTICS!</a> <input type="checkbox"/> COUNT
<input type="checkbox"/> STATE LIST ID	List ID assigned by State. This field is optional and not included for all entries.
<input type="checkbox"/> 303D MAP	A web link which when clicked will produce a map of the associated 303(d) entity. This field is included for all entries.

13.29 Click **STEP 3: ENTER SEARCH CRITERIA**.

13.30 All the selection operators are Equal to. For Cause Description, type **Low Dissolved Oxygen**.

13.31 For State, type **NC**.

13.32 For State Basin Name, type **Tar Pamlico**.

13.33 Scroll down and click **Search Database**.

13.34 Click the **303(d) REPORT** link. Maximize this newly opened window.

**U.S. ENVIRONMENTAL PROTECTION AGENCY**  
**Total Maximum Daily Loads**  
[Recent Additions](#) | [Contact Us](#) | Search:  All EPA  This Area   
 You are here: [EPA Home](#) > [Water](#) > [Watersheds/Oceans/Watersheds](#) > [TMDLs](#) > [TMDL Reports](#)

**Listed Water Information**  
**CYCLE : 2006**  
 Click [here](#) to see metadata for this report.

Cycle: 2006 State: NC List ID: NC\_28-101  
 Waterbody Name: CHICCOO CREEK  
 State Basin Name: TAR PAMLICO  
 Listed Water Map Link: [Map Impaired Water](#)

**Other Impaired Water 303(d) List Information**  
 The most current report available for this water body is 2006.  
 Data are also available for these years: [2004](#) [2002](#) [2000](#) [1998](#)

Comments:  
 CLASS C

**State List IDs:**

Cycle	State List ID
2004	NC_28-101
2006	NC_28-101

**State Impairments:**

State Impairment	Parent Impairment	Priority	Rank	Targeted Flag	Anticipated TMDL Submittal
BIOLOGICAL INTEGRITY	CAUSE UNKNOWN - IMPAIRED BIOTA				
LOW DISSOLVED OXYGEN	ORGANIC ENRICHMENT/OXYGEN DEPLETION				

**Total Maximum Daily Load (TMDL) Information:**

Note: Click on the underlined TMDL Document Name for a detailed TMDL Document Report.

TMDL Document Name	Status	Actual TMDL Establishment Date	TMDL Pollutant Description	TMDL Pollutant Test	Cycles Listed	State Impairment
<a href="#">CHICCOO CREEK.FECAL COLIFORM</a>	APPROVED/ESTABLISHED	AUG-13-2004	FECAL COLIFORM	NONPOINT SOURCE 2006, 2004, 2002, 2000, 1998	FECAL COLIFORM	

**Watershed Information:**

Watershed Name	Watershed States
LOWER TAR	NORTH CAROLINA



Which year was this waterbody first listed on the 303(d) Report? \_\_\_\_\_

Under Comments, how is this creek classified in North Carolina’s water quality standards system? \_\_\_\_\_

Scroll down and note that a TMDL was developed for fecal coliform in Chicod Creek.

13.35 Open the Detailed TMDL Report Web page by clicking the link in the **TMDL Information table: [CHICOD CREEK FECAL COLIFORM](#)**.

**Detailed TMDL Report**

**TMDL Document Information**

TMDL ID: 10698      TMDL Name: CHICOD CREEK FECAL COLIFORM  
 TMDL Status: APPROVED/ESTABLISHED    EPA Action: EPA APPROVED  
 Lead State: NC      TMDL Date: 08/13/2004

**TMDL Documents**

Click on the underlined Document Type to retrieve the actual document in PDF format.

Document Type	Upload Date
<a href="#">TMDL Document</a>	11/18/2004

---

**TMDL Pollutants**

Pollutant: FECAL COLIFORM

Total Waste Load Allocation:  
Margin Of Safety:  
Units for Total Waste Load Allocation,  
Total Load Allocation, and Margin of  
Safety:

TMDL Type: NONPOINT SOURCE

Total Load Allocation:  
Implicit Margin Of Safety: Not Reported

TMDL End Point: WITHIN A 30 DAY PERIOD FECAL COLIFORM CONCENTRATION LESS THAN OR EQUAL TO GEO MEAN OF 200#/100ML AND LESS THAN OR EQUAL TO 400#/100ML IN 80% OF SAMPLES.

**Listed Water Causes of Impairment for FECAL COLIFORM**

Click on the underlined List ID for a Listed Water Information Report. Click on the underlined "MAP 303(d)" literal for a map of the Listed Water.

List ID	State List ID	Waterbody Name	Listed Water Map	Cycles Listed	Cause of Impairment
<a href="#">NC_28-101</a>	NC_28-101	CHICOD CREEK	<a href="#">Map Impaired Water</a>	2004, 2002, 2000	FECAL COLIFORM

What date was the TMDL established/approved? \_\_\_\_\_

What type of TMDL study is it? Does it include point sources? \_\_\_\_\_

The TMDL sets an endpoint or a target concentration to bring Chicod Creek back into compliance with water quality standards.

What is the geometric mean? \_\_\_\_\_

---

# 14. Useful Web sites

## National Management Measures to Control NPS Pollution

- 14.1 Go to the [NPS Categories page](#). Notice the different NPS pollution categories.
- 14.2 Click **Urban Areas**.
- 14.3 Click [National Management Measures to Control Nonpoint Source Pollution from Urban Areas](#) within the Guidance Documents and Manuals section. This Web site provides guidance on management methods to control nonpoint source and stormwater pollution from urban sources.

Look through the contents in the different chapters in this volume.

**List two ways you could get a copy of this guidance.**

1. \_\_\_\_\_
2. \_\_\_\_\_

## 319 Success Stories

- 14.4 Look at the [Section 319 Nonpoint Source Success Stories](#). Click a state and look at one of the success stories listed there.

## Smart Growth

One of the most significant sources of stress on water resources is a result of the urban imprint on watersheds due to growth patterns. Growth can be managed more carefully to ensure that water resources are protected. EPA offers guidance to show local government and interested citizens how different growth patterns and urban design elements can better protect water resources.

- 14.5 Go to the [Smart Growth](#).
- 14.6 On the left sidebar, click [Publications](#).
- 14.7 Click [Water](#) and review the list of publications

## Model Ordinances

Local ordinances have the potential to put in place regulated measures protective of land and water resources in communities. EPA offers a data bank of ordinances developed by places around the country that are protective of water resources and watersheds. Local governments can use these ordinances as foundations for their own ordinance proposals and revisions.

- 14.8 Go to [Model Ordinances to Protect Local Resources](#).

## 14. Useful Web sites

- 14.9 Check out model ordinances on Aquatic Buffers, Erosion and Sediment Control, Open Space Development, Stormwater Control Operation and Maintenance, Illicit Discharges, and others on the left-hand sidebar.
- 14.10 Select [Open Space Development](#). Open space development is an alternative site planning technique that concentrates dwelling units in a compact area. An introduction to the concept and techniques and example ordinances are provided.
- 14.11 Interested in developing an ordinance? Click the [model open space ordinance](#) link. This page maps out key elements to be included in an ordinance.

## Volunteer Monitoring

- 14.12 Open the [Volunteer Monitoring Home Page](#).

There are fact sheets on this page that provide an overview and resources for volunteer monitoring programs.

- 14.13 Under the Volunteer Methods Manuals section, click [The Volunteer Monitor's Guide to Quality Assurance Project Plans](#).

The screenshot shows the EPA's Volunteer Monitoring page. The main heading is "Volunteer Monitoring". Under the "Volunteer Methods Manuals" section, a red arrow points to the link: "The Volunteer Monitor's Guide to Quality Assurance Project Plans". Other links in this section include "Volunteer Library Monitoring: A Methods Manual", "Volunteer Lake Monitoring: A Methods Manual", "Volunteer Stream Monitoring: A Methods Manual", and "Volunteer Wetland Monitoring: An Introduction and Resource Guide".

This guide assembles all the needed elements of a QAPP and how to write a plan for volunteer monitoring. When funding has been received from EPA, you must submit a QAPP to document monitoring results.

- 14.14 Click the browser's **Back** button to return to the Volunteer Monitoring page and click the fourth bullet under **Volunteer Methods Manuals: [Volunteer Stream Monitoring: A Methods Manual](#)**.

This guidance provides information on how to plan and carry out a study. Sections 4 and 5 provide detailed links on assessing biological parameters as well as chemical and

physical parameters such as turbidity, temperature, pH, nitrates, phosphorus and total solids. Each parameter links to the monitoring methods and other relevant information.

Often a quick-and-dirty survey is necessary to establish baseline conditions. A ready-to-download form is available here for use.

14.15 Click [Watershed Survey Visual Assessment](#) (Under 3.2).

This form is a comprehensive checklist of things to assess while conducting a visual assessment.

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Stream name: _____	1. Specific uses identified (check as many as apply) <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th></th> <th style="text-align: center;">Streamside</th> <th style="text-align: center;">Within 1/4 mile of Stream</th> <th style="text-align: center;">Within Watershed</th> </tr> </thead> <tbody> <tr> <td colspan="4"><i>Residential:</i></td> </tr> <tr> <td>Single-family housing</td> <td style="text-align: center;">0</td> <td style="text-align: center;">0</td> <td style="text-align: center;">0</td> </tr> <tr> <td>Apartment building</td> <td style="text-align: center;">0</td> <td style="text-align: center;">0</td> <td style="text-align: center;">0</td> </tr> <tr> <td>Lawns</td> <td style="text-align: center;">0</td> <td style="text-align: center;">0</td> <td style="text-align: center;">0</td> </tr> <tr> <td>Playground</td> <td style="text-align: center;">0</td> <td style="text-align: center;">0</td> <td style="text-align: center;">0</td> </tr> <tr> <td>Parking lot</td> <td style="text-align: center;">0</td> <td style="text-align: center;">0</td> <td style="text-align: center;">0</td> </tr> <tr> <td>Other _____</td> <td style="text-align: center;">0</td> <td style="text-align: center;">0</td> <td style="text-align: center;">0</td> </tr> <tr> <td colspan="4"><i>Commercial / Industrial / Institutional:</i></td> </tr> <tr> <td>Commercial development (stores, restaurants)</td> <td style="text-align: center;">0</td> <td style="text-align: center;">0</td> <td style="text-align: center;">0</td> </tr> <tr> <td>Auto repair/gas station</td> <td style="text-align: center;">0</td> <td style="text-align: center;">0</td> <td style="text-align: center;">0</td> </tr> <tr> <td>Factory/Power plant</td> <td style="text-align: center;">0</td> <td style="text-align: center;">0</td> <td style="text-align: center;">0</td> </tr> <tr> <td>Sewage treatment facility</td> <td style="text-align: center;">0</td> <td style="text-align: center;">0</td> <td style="text-align: center;">0</td> </tr> <tr> <td>Water treatment facility</td> <td style="text-align: center;">0</td> <td style="text-align: center;">0</td> <td style="text-align: center;">0</td> </tr> <tr> <td>Institution (e.g., school, offices)</td> <td style="text-align: center;">0</td> <td style="text-align: center;">0</td> <td style="text-align: center;">0</td> </tr> <tr> <td>Landfill</td> <td style="text-align: center;">0</td> <td style="text-align: center;">0</td> <td style="text-align: center;">0</td> </tr> <tr> <td>Automobile graveyard</td> <td style="text-align: center;">0</td> <td style="text-align: center;">0</td> <td style="text-align: center;">0</td> </tr> <tr> <td>Bus or taxi depot</td> <td style="text-align: center;">0</td> <td style="text-align: center;">0</td> <td style="text-align: center;">0</td> </tr> <tr> <td>Other _____</td> <td style="text-align: center;">0</td> <td style="text-align: center;">0</td> <td style="text-align: center;">0</td> </tr> <tr> <td colspan="4"><i>Forest / Parkland:</i></td> </tr> <tr> <td>Recreational park</td> <td style="text-align: center;">0</td> <td style="text-align: center;">0</td> <td style="text-align: center;">0</td> </tr> <tr> <td>National/State Forest</td> <td style="text-align: center;">0</td> <td style="text-align: center;">0</td> <td style="text-align: center;">0</td> </tr> <tr> <td>Woods/Greenway</td> <td style="text-align: center;">0</td> <td style="text-align: center;">0</td> <td style="text-align: center;">0</td> </tr> </tbody> </table>		Streamside	Within 1/4 mile of Stream	Within Watershed	<i>Residential:</i>				Single-family housing	0	0	0	Apartment building	0	0	0	Lawns	0	0	0	Playground	0	0	0	Parking lot	0	0	0	Other _____	0	0	0	<i>Commercial / Industrial / Institutional:</i>				Commercial development (stores, restaurants)	0	0	0	Auto repair/gas station	0	0	0	Factory/Power plant	0	0	0	Sewage treatment facility	0	0	0	Water treatment facility	0	0	0	Institution (e.g., school, offices)	0	0	0	Landfill	0	0	0	Automobile graveyard	0	0	0	Bus or taxi depot	0	0	0	Other _____	0	0	0	<i>Forest / Parkland:</i>				Recreational park	0	0	0	National/State Forest	0	0	0	Woods/Greenway	0	0	0
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## Biological Resources

Biological data are used to support waterbody biological assessments. As an indicator of water resource (stream or watershed) health, biological or ecological integrity is often highly visible. A stream with surviving and reproducing aquatic organisms is an indication of a healthy aquatic ecosystem. Remember that biological communities often show a delayed response to pollutants or stressors due to bioaccumulation, and these organisms often provide a better measure of waterbody condition than a more rapidly changing water chemistry measurement or a toxicity test.

Those who work with biological data often rely on **biological indicators** to assess waterbody health and ecological conditions. Indicators are types of biological resources that are monitored to create a measurement or an *index* of the ecological condition of the waterbody. EPA offers Internet-available resources on using biological indicators to measure a waterbody's condition using **benthic macroinvertebrate communities** and **fish samples** to assess watershed health.

14.16 Go to the [Biological Indicators for Watershed Health](#) page.

## 14. Useful Web sites

The screenshot shows the EPA website for Biological Indicators of Watershed Health. The left sidebar has a red arrow pointing to the 'Key Concepts' link. The main content area includes a 'Quick Finder' section with a grid of links to various topics. Below this is a paragraph of text about biological indicators and their use in water quality assessments, followed by a 'Read more' link. On the right side, there are two interactive widgets: 'MyEnvironment' and 'Find Your Watershed'.

14.17 Click [Key Concepts](#) on the left-hand sidebar.

The Key Concepts page has links to detailed information on setting up a step-by-step process to use biological data in water quality assessments. For example, the sampling effort must be designed first.

14.18 Click [Statistical Primer](#) on the left-hand side. These links present an overview of working with data statistics.

14.19 For an overview of technical documentation about the level of sampling necessary to answer specific questions, click [Statistical Power Analysis](#).

14.20 Click the browser's **Back** button twice. Then click the link for [Biological Indicators of Watershed Health](#) in the left-hand sidebar.

14.21 In the Quick Finder at the top of the page, click [Photo Library](#). This contains high-quality photographs that you may use in publications and for government and not-for-profit Web sites.

14.22 Click [Invertebrates](#).

14.23 Click [Caddisflies](#).

14.24 Scroll to the bottom of the page and click the [caddisflies](#) link in the last paragraph.

On the right-hand side list, notice that caddisflies are categorized as a **moderately pollution tolerant** species.

**What are two benthic macroinvertebrate species that might be found in a very high quality stream?**

- 14.25 Click the **Back** button and then click [caddisfly families](#) in the same paragraph used in step 14.24.



- 14.26 Click any caddisfly family link to learn more.

## Water Quality Models and Tools

- 14.27 Open the [Water Science Models Home Page](#).

Geared to water quality managers, this page provides access to a number of specialized models and tools. When developing a pollutant TMDL, reduction allocations need to be applied to the various sources that are inputting the pollutant into the waterbody. Load reduction allocations are based on **cost effectiveness** and **equity of pollutant load reductions**. EPA demonstrates a **cost-minimization framework** and provides examples of load allocations and cost distributions for a case study watershed. A spreadsheet can be downloaded to use it in your own case study.

- 14.28 Click [Allocating Loads and Wasteloads](#) – first bullet under the Tools column.

This case study is of a 10,000-acre watershed (primarily rural and agricultural land) surrounding a stream reach of approximately 6 miles. The stream is impaired by fecal coliform bacteria. There are three stakeholders identified in the TMDL study who are responsible for the fecal coliform loads. They each have to take on **load reductions** (changes in their management practices to reduce discharges of fecal coliform into the stream).

- 14.29 Scroll down and click [Source Loads](#).

**Water Quality Models and Tools**

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You are here: [EPA Home](#) » [Water](#) » [Water Science](#) » [Water Quality Models and Tools](#) » [Allocating Loads and Wasteloads](#) » [Case Study](#) » [Impairments and Loads](#)

### Case Study: Impairments and Loads

The designated use for this waterbody is secondary contact recreation, and applicable water quality criteria for fecal coliform bacteria are:

- 200 cfu/100ml - 30-day Average for each month, and
- 400 cfu/100ml - 30-day 90% upper-bound for each month
- 2000 cfu/100ml - not to be exceeded at any time.

Current instream concentrations exceed these criteria, implying the need for abatement action and load reductions. There are three principle stakeholders responsible for fecal coliform loads (see below), and a variety of [best management practices \(BMPs\)](#) and [technology options](#) are available for reducing these loads.

**Table 1: Case Study Characteristics**

Stakeholders	Bacteria Sources ( <a href="#">details</a> )
Hog and Dairy Operations	Manure Applied to Cropland
Beef Cattle	Runoff from Dry Lots, and Cattle Wading in the Stream
Wastewater Treaters	Failing Septic Systems, and Wastewater Treatment Plant

**Table of Contents**

- Definitions and Allocation Options
- Case Study
  - **Source Loads**
  - Allocations
  - Costs
- Modeling Framework
- Download Model
- Next Steps

14.30 Click [best management practices \(BMPs\) and technology options](#) - an overview of different management techniques available to each source to reduce their pollutant loading is provided.

14.31 Click the **Back** button.

14.32 Click [Modeling Framework](#) in the right-hand box.

The decisions of how to allocate reductions among the three sources must be negotiated and are ultimately policy decisions. They will reflect acceptable tradeoffs between these measures. As an example, allocation strategies that *minimize* costs may be weighed against allocation strategies on the basis of *equal load reductions*. A TMDL includes *optimization*.

**Table of Contents**

- Definitions and Allocation Options
- Case Study
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- Download Model
- Next Steps

Optimization consists of an iterative search for an optimal solution. The process begins by selecting values for a certain management decision scenario. Then the cost distribution and water quality concentration distributions are determined. If water quality criteria or constraints are not satisfied or if the objective is not being met, the optimization would be worked up again by selecting new values for decision variables. Iterations continue until criteria, constraints and objectives are met.

Instead of running time-consuming hydrology models, these allocation scenarios come up with *impact coefficients* based on source pollutant load levels. The impact coefficients are surrogates for running the hydrology model and help to develop an optimal pollutant load reduction allocation. The spreadsheet model can be customized to apply to any comparable situation.

## CADDIS

Not to be confused with the caddisfly, the Causal Analysis/Diagnosis Decision Information System (CADDIS) is an online software application. Thousands of waterbodies in the United States are listed by states as biologically impaired because of fish kills or poor biological samples. For many of these, the cause of the impairment is also reported as *unknown*. Before an appropriate management action can be formulated, the *cause* of the biological impairment must be determined. The mechanisms, symptoms and stressor-response relationships for different stressors must be researched to analyze the causes. This information is then used to draw the appropriate conclusions.

CADDIS is designed to step you through that decision-making process to establish the sources and causes of adverse effects on the biological community using available watershed and stressor data information.

14.33 Go to the [Biological Integrity](#) page.

14.34 Scroll down to the Identifying the Causes of Biological Impairments section and click [Causal Analysis/Diagnosis Decision Information System](#).

14.35 Click the [Step-by-Step Guide](#).

A Web application is launched that takes the concepts in the book *Stressor Identification Guidance Document* (EPA 2000) and provides them in an interactive way using links and sequential steps.

14.36 Click the [Summary Tables of Types of Evidence](#) on the left-hand sidebar under step 5.

If there are numerous sites or instances where data supports a conclusion of co-occurrence of stressor and adverse biological response, a case can be built that that stressor is a probable cause of an adverse biological response. One of the types of data used to determine whether a stressor is a cause of the biological impairment is **Spatial/Temporal Co-occurrence** data.

14.37 Click [Spatial/Temporal Co-occurrence](#) in the first table.

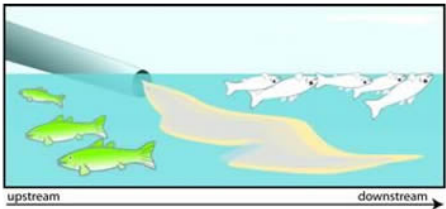
### 3.2.1. Spatial/Temporal Co-Occurrence

Links to Types of Evidence that Use Data from the Case  
[\[Click to Expand/Collapse\]](#)

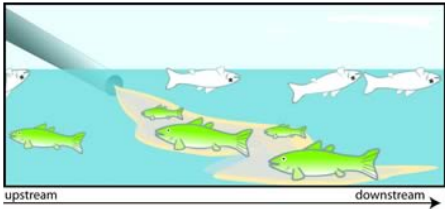
[Back to Evaluate Data from the Case: In-Depth Look](#)

**Concept**

The biological effect must be observed where and when the cause is observed, and must not be observed where and when the cause is absent.



**Figure 3-1a. Spatial/Temporal Co-occurrence with Upstream/Downstream Comparisons, Supports.** The impairment (dead fish) occurs downstream of the source of the causal agent (effluent) but not upstream. [\(General explanation of symbols\)](#)



**Figure 3-1b. Spatial/Temporal Co-occurrence with Upstream/Downstream Comparisons, Refutes.** The impairment (dead fish) occurs both upstream and downstream of the source of the causal agent (effluent).



The biological effect must be observed where and when the cause is observed and must not be observed where and when the cause is absent.

The picture on the left shows fish kills when there is effluent from a pipe coming into the stream – supports. The picture on the right shows fish kills even upstream of the pipe effluent coming into the stream – does not support.

14.38 Click [Additional illustrations](#).

**Write down one case where data on a particular stressor will not support the spatial/temporal co-occurrence concept:**

14.39 Close the popup window.

Notice the example and example analyses to show how this concept has been applied with the Little Scioto River, Ohio.

14.40 Scroll down the page and click the [Little Scioto River, OH, USA](#) example analysis worksheet. Notice that sediment is one of the candidate causes.

14.41 Scroll down to the bottom of the page.

**Does the data support the case that sediment could be a candidate cause of the biological impairment?\_\_\_\_\_**

### WARSSS - Technical Tools for Hydrology and Sediment Assessment

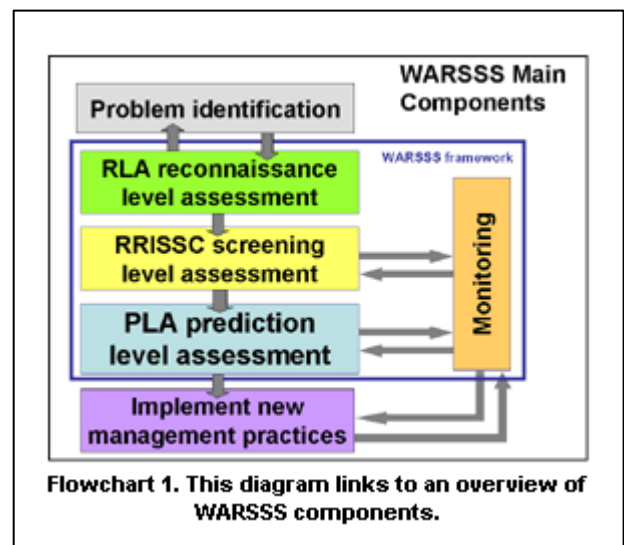
Sediment pollution can create turbid water and form silt deposits that can harm aquatic life and reduce recreational uses of our waters. Excess sediment impairments are among the most common river and stream water quality problems reported by state monitoring programs.

**WARSSS stands for Watershed Assessment of River Stability & Sediment Supply** and is a technical procedure developed by Dr. David L. Rosgen for water quality scientists to use in evaluating streams and rivers impaired by excess sediment. **WARSSS** has been adapted into a Web-based assessment tool.

WARSSS can be used to analyze known or suspected sediment problems, to develop sediment remediation and management components of watershed plans, and to develop sediment TMDLs.

**WARSSS** hinges on a three-phase technical assessment framework.

- Phase I: RLA (Reconnaissance Level Assessment)
- Phase II: RRISSC (Screening Level Assessment)
- Phase III: PLA (Prediction Level Assessment)



Each phase has a flowchart of decision-making and screening steps. Each step in the process has its own explanation, worksheets and resources.

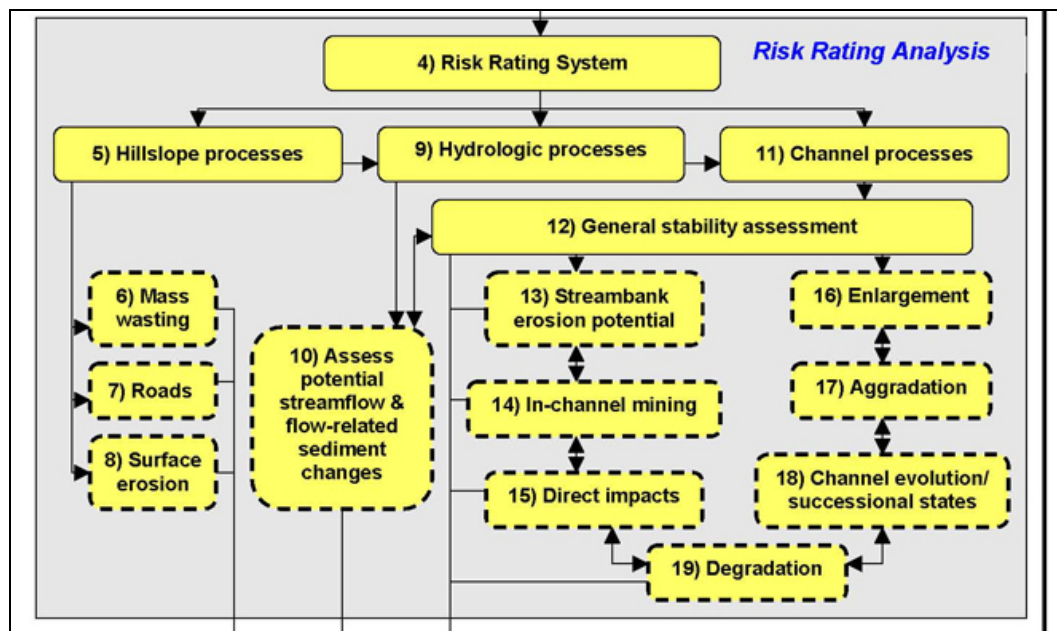
14.42 Open [WARSSS](#).

14.43 Click [RRISSC](#) - **Rapid Resource Inventory for Sediment and Stability Consequence**.

14.44 Scroll down to the bottom of the page and click [Begin RRISSC](#).

This is the decision and process flowchart for the RRISSC Screening Level Assessment.

14.45 Under Risk Rating System, click **flow chart box # 10**, Assess Potential Streamflow and Flow-related Sediment Changes. This step gives a good example of the assessment explanations, figures and worksheets available.



## National Pollution Discharge Elimination System (NPDES)

14.46 Open the [National Pollutant Discharge Elimination System](#) Home page.

14.47 On the left-hand sidebar, select [Stormwater](#) (under Program Areas).

14.48 On the left-hand sidebar, click [Menu of BMPs](#).

Most stormwater discharges are considered point sources and require coverage by an NPDES permit. Local authorities—local city, county or incorporated municipal area—known as **Municipal Separate Storm Sewer Systems (MS4s)** are permitted. **MS4 permits** regulate the



quantity and quality of stormwater.

An MS4 is required to address six minimum control measures for stormwater pollution in their community. The primary method to control stormwater discharges is through the use of **Best Management Practices (BMPs)**. The Menu of BMPs is like a service center for the **Stormwater Phase II Rule**.

14.49 Scroll down to identify the six BMPs.

Each minimum measure involves a number of different practices that local authorities can use. EPA provides the Menu of BMPs as an Internet-available resource so that MS4s and others have guidance, examples and resources with which to start implementing the six minimum measures.

14.50 Click [1. Public Education](#) - BMPs for MS4s to inform individuals and households about ways to reduce stormwater pollution.

14.51 Scroll down under Key BMPs and Resources and click [Developing an Outreach Strategy](#) BMP Fact Sheet.

This information is applicable to those planning to reach out to the public regarding watershed or stormwater pollution issues.

## NPS Toolbox

14.52 Visit the [Nonpoint Source Outreach Digital Toolbox](#).

This interactive catalog is geared for municipalities and watershed groups that are developing watershed and stormwater outreach campaigns targeted to suburban residential populations. The toolbox includes a catalog of more than 800 outreach products and media materials including television spots, radio spots, newspapers ads, brochures and ideas for slogans around the topic of stormwater pollution control. Permission-to-use information is included for each product. Many products were created using public funding and are copyright-free, so others can use them in their own areas by just changing the name of the local watershed or local agency.



## After the Storm

14.53 Visit the [After the Storm](#) site.

This television program is available in broadcast quality and DVD formats to screen at local events, local cable access television stations or for educational purposes. It covers the topic of polluted stormwater and actions that can be taken to prevent it at the individual and community levels. This television program was created by EPA and The Weather Channel.





# Key EPA Internet Tools for Watershed Management Worksheet

*Now that you have completed the instruction component of the course, take a few minutes to revisit the EPA Web resources that were covered today and locate the following information for your watershed.*

- 1) Locate the HUC 8 watershed number. Which tool did you use to find this number?
  
- 2) Is your organization listed in the Adopt Your Watershed Database?
  
- 3) Do you or your colleagues need additional training and information on a specific watershed-related subject area? Please list this subject area.
  - a) Is there a webcast or module available on this subject? Which tool did you use to find this information? If a webcast or module was not available, please make a note on your evaluation form and it will be submitted for consideration in the future.
  
- 4) How many watershed organizations are participating in the Watershed Central Wiki from your state? How did you determine the answer to this question?
  
- 5) If your organization is participating in the watershed planning process, which step are you currently in?
  - a) List the new resources provided today that will augment your effort.
  
- 6) How many organizations have submitted water quality data to STORET for your watershed?
  
- 7) Is your organization/agency seeking data for a specific parameter? Is there data for this parameter available in STORET?

- 8) Is your state currently within the PCS or ICIS system? Which tool provided you with this information?
  
- 9) Are there any water discharging facilities that are currently in noncompliance in your watershed?
  
- 10) What is the number one pollutant and pollutant source in your state?
  
- 11) Within your watershed, are there impaired waterbodies? Which tool did you use to find this information?
  
- 12) Does the NPS Toolbox contain any PSAs or other information from your state? List them.
  
- 13) Are there sources of additional funding that could support your efforts? List them below.
  
- 14) Which Ask Waters Expert Query is the most useful to your organization?
  
- 15) Which of the data layers within Enviromapper for Water are the most useful to you?
  - a) Do you foresee future opportunities to use an Enviromapper-created map? (Presentations, data searches, etc.) Please list them.

# Resource Listing:

## Key EPA Internet-based Tools for Watershed Management

### Self-Paced Tutorials for Online EPA Tools Available!

Visit: [www.epa.gov/owow/watershed/wacademy/epatools/](http://www.epa.gov/owow/watershed/wacademy/epatools/)

### Introduction

When developing a watershed plan that addresses impaired or threatened waterbodies, EPA recommends implementing a six-step process:

1. Build partnerships
2. Characterize your watershed
3. Set goals and identify solutions
4. Design implementation program
5. Implement watershed plan
6. Measure progress and make adjustments

The six-step process is the framework of action steps that EPA recommends in its publication, *Handbook for Developing Watershed Plans to Restore and Protect Our Waters*. This handbook and complementary Web tool, Watershed Plan Builder, provide a planning approach to undertaking watershed management and restoration. The handbook is at [www.epa.gov/owow/nps/watershed\\_handbook/](http://www.epa.gov/owow/nps/watershed_handbook/). The online Watershed Plan Builder tool is at [www.epa.gov/owow/watershedplanning/](http://www.epa.gov/owow/watershedplanning/).

EPA offers the following variety of resources to guide the watershed practitioner through these six steps. Additional non-EPA resources are noted as appropriate.

### STEP 1: BUILD PARTNERSHIPS

Groups need to organize and involve interested parties by identifying stakeholders, integrating other key programs, and conducting outreach.

#### EPA Resources for Step 1

##### Education and Outreach Tools

- *Adopt-Your-Watershed* ([www.epa.gov/adopt/](http://www.epa.gov/adopt/)). This Web site includes a catalog of watershed groups, which is a voluntary, national catalog of organizations involved in protecting local waterbodies, including formal watershed alliances, local groups, and schools that conduct activities such as volunteer monitoring, cleanups and restoration projects.
- *EPA's Watershed Hub* ([www.epa.gov/watershed/](http://www.epa.gov/watershed/)). From this site, launch to various watershed initiatives supported by EPA as well as discussion, news, funding and training.
- *EPA's Watershed Listserves* ([www.epa.gov/owow/watershed/talk.html](http://www.epa.gov/owow/watershed/talk.html)). This contains a host of links to electronic mailing lists and newsletters on watershed topics.
- *EPA's Tribal Portal* ([www.epa.gov/tribalportal/](http://www.epa.gov/tribalportal/)). A site that unites program information, contacts at EPA, data, and maps pertinent to cross-media tribal efforts to protect the environment.



- *EPA's NPS Outreach Digital Toolbox* ([www.epa.gov/nps/toolbox/](http://www.epa.gov/nps/toolbox/)). A resource on developing an outreach campaign for your watershed and stormwater pollution control efforts along with a catalog of more than 800 outreach products and media materials.
- “*Getting in Step*” Series ([www.epa.gov/owow/watershed/outreach/documents](http://www.epa.gov/owow/watershed/outreach/documents)). Includes (1) *Getting In Step: Engaging and Involving Stakeholders in Your Watershed*, which explains how to form watershed stakeholder groups, keep a group motivated, conduct outreach, resolve conflict, and make decisions using consensus, and (2) *Getting In Step: A Guide for Conducting Watershed Outreach Campaigns*, which explains how to address public perceptions, promote management activities, and inform or motivate stakeholders.
- *Getting in Step: An online training module* ([www.epa.gov/watertrain/gettinginstep/](http://www.epa.gov/watertrain/gettinginstep/)). This training course conveys the main messages of the book in a shorter format.
- *Getting in Step: Engaging and Involving Stakeholders in Your Watershed* ([www.epa.gov/owow/watershed/outreach/documents/](http://www.epa.gov/owow/watershed/outreach/documents/)). Effective stakeholder involvement provides a method for identifying public concerns and values, developing consensus among affected parties, and producing efficient and effective solutions through an open, inclusive process.
- *Getting in Step: A Video Guide for Conducting Watershed Outreach Campaigns* (VHS tape) (EPA 841-V-03-001) is the 35-minute companion video to the guidebook of the same name (EPA 841-B-03-002). The video reinforces the steps of strengthening watershed outreach campaigns and includes four very different examples of watershed outreach campaigns from different parts of the United States. It is intended for watershed stakeholders, educators, local government officials and others interested in watershed campaigns and examples of approaches used by other watershed organizations.
- *EPA's Surf Your Watershed* (<http://cfpub.epa.gov/surf/locate/index.cfm>). This Web site database is searchable by state, keyword, or information type and lists numerous organizations around the country that offer resources for watershed practitioners.
- *EPA's Directory of Environmental Monitoring Programs* (<http://yosemite.epa.gov/water/volmon.nsf/Home?openform>). This Web site lists information about communities with volunteer monitoring programs.
- *Monitoring Consortiums* ([www.epa.gov/watertrain/consortium/](http://www.epa.gov/watertrain/consortium/)). This training module is about cooperating with others on monitoring the health of waterbodies in the watershed. Monitoring consortiums involve parties working together to share equipment, costs, expertise, and knowledge on monitoring.
- *EPA Online Discussion ListManager* ([https://lists.epa.gov/read/all\\_forums/](https://lists.epa.gov/read/all_forums/)). EPA supports online discussion forums on a wide variety of topics including water-related topics. These forums are valuable sources of information on topics including training opportunities, recent updates and developments, clarification of issues, and practical experience shared by working professionals in the field and other interested parties. You must have an e-mail subscription to participate in a discussion forum. A forum allows subscribers to e-mail questions to, receive news from, and discuss topics in detail with others who are interested in the same topic. This site is a portal to the full list of EPA forums and includes a brief description of each forum and a link to subscribe. The following forums might be of interest to those in the water resources field: basinsinfo, decentralized, news-notes, npsinfo, volmonitor, waternews, watershed-news, and wqs-news.
- *EPA's Nonpoint Source News-Notes* ([www.epa.gov/owow/info/NewsNotes/](http://www.epa.gov/owow/info/NewsNotes/)). This is a quarterly newsletter that covers the condition of the water-related environment, the control of nonpoint sources of water pollution, and the ecosystem-driven management and restoration of watersheds.

### Other Resources for Step 1

- *Local Government Environmental Assistance Network* ([www.lgean.org](http://www.lgean.org)). The Local Government Environmental Assistance Network (LGEAN) provides environmental management, planning, funding, and regulatory information for local government elected and appointed officials, managers and staff. LGEAN is one of EPA's Compliance Assistance Centers that helps businesses, local governments, and federal facilities understand and comply with federal environmental requirements and save money through pollution prevention techniques. Online resources are available on a variety of categories that

span the concerns of watershed organizations, such as **Stormwater, Watersheds, Smart Growth, and Green Buildings**.

- *The Community-Based Collaboratives Research Consortium* ([www.cbrc.org/](http://www.cbrc.org/)). This is a network of researchers, mediators and facilitators, government agencies, community groups, and environmental groups. They offer resources for networking through their Web site and offer venues for emerging stewardship issues.
- *National Watershed Network* ([www.ctic.purdue.edu/KYW/nwn/nwn.html](http://www.ctic.purdue.edu/KYW/nwn/nwn.html)). The National Watershed Network is a registry of locally led watershed partnerships working to meet local goals through voluntary actions. It is run by the Conservation Technology Information Center (CTIC) at Purdue University, under Know Your Watershed, which provides tools to help local residents and landowners establish grassroots watershed partnerships.
- *River Network Directory of Resources* ([www.rivernet.org/](http://www.rivernet.org/)). The River Network provides assistance to growing freshwater-focused organizations in establishing long-term goals, priorities, action plans, securing financial and other resources, cultivate leadership, building public communications programs and measuring the effects of their work. Their publications and Web site provide a wide variety of general information on watershed protection, organizational development, water quality monitoring and the Clean Water Act.

## STEP 2: CHARACTERIZE YOUR WATERSHED

After the partnerships are formed, the watershed should be characterized to develop an understanding of the impacts seen in the watershed, identify possible causes and sources of these impacts, and subsequently quantify the pollutant loads. After these connections have been established, effective management strategies can be developed to address the problems.

Groups need to address the following watershed planning elements:

- Define Scope of Watershed Planning Effort, including defining issues of concern, developing preliminary goals, and identifying indicators to assess watershed conditions
- Gather Existing Information and Create a Data Inventory
- Identify Data Gaps and Collect Additional Data
- Analyze Data and Identify Causes and Sources
- Estimate Pollutant Loads by using watershed models and other tools

### EPA Resources for Step 2

#### Data Collection and Technical Tools

##### General

- *EPA's Web Site for State, Tribal, and Local Wetland Initiatives* ([www.epa.gov/owow/wetlands/initiative/](http://www.epa.gov/owow/wetlands/initiative/)). This Web site provides links to a variety of wetland information, including state/tribal regulatory programs; state/tribal watershed planning; local initiatives; and state, tribal, and local partners.
- *EPA's Council on Regulatory Environmental Modeling Information* ([www.epa.gov/crem/](http://www.epa.gov/crem/)). This Web site provides links to environmental model reviews and resources. Use this to investigate models that can be applied to receiving waters and that relate watershed source loads to watershed indicators.
- *Water Quality Standards Information* (states and territories [www.epa.gov/wqsdatabase/](http://www.epa.gov/wqsdatabase/); tribes [www.epa.gov/waterscience/tribes/](http://www.epa.gov/waterscience/tribes/)). The National Water Quality Standards Database's Water Quality Reports provides access to EPA and state water quality standards (WQS) information. The actual database is no longer accessible to the public. EPA is supporting the states as they develop state-specific water quality standard databases.
- *Assessment TMDL Tracking and Implementation System (ATTAINS)* ([www.epa.gov/waters/ir](http://www.epa.gov/waters/ir)). ATTAINS provides information reported by the states to EPA about the conditions in their surface waters. This information is required every two years under Clean Water Act Sections 305(b) and 303(d).

## Guidance

- *Volunteer Stream Monitoring: A Methods Manual* ([www.epa.gov/volunteer/stream/index.html](http://www.epa.gov/volunteer/stream/index.html)). Use this site to develop data collection techniques and strategies, including the visual assessment technique.
- *Volunteer Monitoring Web site* ([www.epa.gov/owow/monitoring/volunteer](http://www.epa.gov/owow/monitoring/volunteer)). This site provides links to monitoring resources, listserves, newsletters, guidance documents, and fact sheets.
- *Watershed Survey Visual Assessment Form* ([www.epa.gov/owow/monitoring/volunteer/stream/ds3.pdf](http://www.epa.gov/owow/monitoring/volunteer/stream/ds3.pdf)). Use this to develop an overview survey of the watershed including the waterbody and land conditions.
- *EPA's Rapid Bioassessment Protocols (RBPs) for Use in Wadeable Streams and Rivers* ([www.epa.gov/owow/monitoring/rbp/index.html](http://www.epa.gov/owow/monitoring/rbp/index.html)). This guidance document outlines the methods and steps required for conducting rapid bioassessments of three different assemblages—periphyton, benthic macroinvertebrates, and fish. It also contains useful information on conducting physical habitat assessments, performing data analysis, and integrating data and reporting.
- *EPA's Biological Indicators of Watershed Health* ([www.epa.gov/bioiweb1/](http://www.epa.gov/bioiweb1/)). This site provides links to state program Web sites, contacts, and relevant documents.
- *EPA's Stressor Identification Guidance Document* ([www.epa.gov/waterscience/biocriteria/stressors/stressorid.html](http://www.epa.gov/waterscience/biocriteria/stressors/stressorid.html)). This site offers a detailed description of the stressor identification process used when waterbodies experience biological impairment. The stressor identification process helps to narrow down probable causes through formal methods of causal evaluations.
- *EPA's Training on the Rosgen Stream Classification System* ([www.epa.gov/watertrain/stream\\_class/index.htm](http://www.epa.gov/watertrain/stream_class/index.htm)). The Rosgen stream classification can be useful for identifying streams at different levels of impairment and determining the types of hydrologic and physical factors affecting the stream's morphological conditions.
- *Contaminated Sediment in Water* ([www.epa.gov/waterscience/cs/](http://www.epa.gov/waterscience/cs/)). This Web site provides links to sediment quality guidelines, publications, and related links.

## Reports

- *National Water Quality Inventory Report to Congress—305(b) report* ([www.epa.gov/305b/](http://www.epa.gov/305b/)). This document is the primary vehicle for informing Congress and the public about general water quality conditions in the United States. It characterizes our water quality, identifies widespread water quality problems of national significance, and describes various programs implemented to restore and protect our waters.
- *Total Maximum Daily Load (TMDL) Reports* ([www.epa.gov/owow/tmdl](http://www.epa.gov/owow/tmdl)). Under section 303(d) of the 1972 Clean Water Act, states, territories, and authorized tribes are required to develop lists of impaired waters. Impaired waters are those that do not meet water quality standards, even after point sources of pollution have installed the minimum required levels of pollution control technology. The law requires that these jurisdictions establish priority rankings for waters on the lists and develop TMDLs for these waters. Reviewing your state's 303(d) lists will help you identify any impaired waterbodies in your watershed.
- *Wadeable Streams Assessment: A Collaborative Survey of the Nation's Streams* ([www.epa.gov/owow/streamsurvey/](http://www.epa.gov/owow/streamsurvey/)) EPA 841-B-06-002 April 2006. The draft Wadeable Streams Assessment (WSA) is a first-ever, statistically-valid survey of the biological condition of small streams throughout the country. EPA worked with the states to conduct the assessment in 2004–2005. The WSA is designed like an opinion poll: that is, 1,392 sites were selected at random to represent the condition of all streams in regions that share similar ecological characteristics. Wadeable streams were chosen for study because they are a critical natural resource and because there are well-established methods for monitoring them. Participants used the same standardized methods at all sites to ensure results that are comparable across the nation.
- *Concepts and Approaches for the Bioassessment of Non-wadeable Streams and Rivers* ([www.epa.gov/EERD/rivers/](http://www.epa.gov/EERD/rivers/)) EPA/600/R-06/127. The intended readers are primarily program managers and technical staff involved in developing and implementing biological monitoring programs for non-wadeable streams and rivers. This is intended to help users establish or refine protocols, including the

specific methods related to field sampling; laboratory sample processing; taxonomy; data entry, management, and analysis; and final assessment and reporting. This document is also intended to serve as a framework for developing bioassessment programs and biocriteria for large rivers, as needed by water quality management agencies for establishing water quality standards, determining attainment or nonattainment of designated uses, evaluating effectiveness of mitigation or restoration activities, and to contribute to the total maximum daily load (TMDL) process.

## Mapping

- *My Environment* ([www.epa.gov/myenvironment/](http://www.epa.gov/myenvironment/)). This is a powerful, Web-based tool that provides a wide range of federal, state, and local information about environmental conditions and features in the user's area of choice.
- *Watershed Assessment, Tracking & Environmental Results (WATERS)* ([www.epa.gov/waters/](http://www.epa.gov/waters/)). This online database is an integrated information system for the nation's surface waters—uniting water quality information that was previously available only from several independent and unconnected databases. WATERS connects various databases and allows the user to display information by generating maps and reports. WATERS has a number of tools to query and display information that addresses public concerns such as: How healthy is my watershed?, Can I drink the water?, Can I eat the fish?, and Is it safe to swim in the water? The list of databases includes water quality standards, water monitoring, assessment of different pollutants, fish consumption advisories, public water systems, discharge reports from permitted facilities, geographic hydrography data of waterbodies listed on a state's impaired waters list, and others. Multistep data queries enable a user to narrow down a search by geography or other fields. Links are provided to mine displayed query results further.
- *EnviroMapper for Water* (<http://map24.epa.gov/emr/>). This site provides a Web-based mapping connection to a wealth of water data. You can use it to view and map data such as the designated uses assigned to local waters by state agencies, waters that are impaired and do not support their assigned uses, beach closures, and location of dischargers. Water quality data include STORET data, National Estuary Program study areas, and locations of nonpoint source projects.

## Data and Modeling

- *Technical Tools for Watershed Management* ([www.epa.gov/owow/watershed/tools/](http://www.epa.gov/owow/watershed/tools/)). This site offers a collection of links to water-quality-related databases, models and mapping tools.
- *EPA's Quick links to Data, Models, and Tools* ([www.epa.gov/water/soft.html](http://www.epa.gov/water/soft.html)). This is a compilation of resources supporting watershed analyses.
- *BASINS: Better Assessment Science Integrating Point & Nonpoint Sources* ([www.epa.gov/ost/basins/](http://www.epa.gov/ost/basins/)). This multipurpose environmental analysis system integrates a geographical information system (GIS), national watershed data, and state-of-the-art environmental assessment and modeling tools into one convenient package. The Web site includes a link to **Training**, which lists live training opportunities and online materials that cover technical topics, modeling, and tools.
- *Water Quality Models and Tools* ([www.epa.gov/ost/wqm/](http://www.epa.gov/ost/wqm/)). EPA's one-stop page for water quality models including those supported by EPA and other federal agencies, guidance, and training on using the models. Water quality models simulate the movement of precipitation and pollutants from the ground surface through pipe and channel networks and storage treatment units to receiving waters. Models can be used to predict flows, stages and pollutant concentrations.
- *Watershed and Water Quality Technical Modeling Support Center* ([www.epa.gov/athens/wwqtsc/](http://www.epa.gov/athens/wwqtsc/)). The center, which is part of EPA's Office of Research and Development (ORD), is committed to providing access to technically defensible tools and approaches that can be used in developing total maximum daily loads (TMDLs), wasteload allocations, and watershed protection plans.
- *WARSSS - Watershed Assessment of River Stability and Sediment Supply: A Methodology for Assessing Sediment Problems in Rivers and Streams* ([www.epa.gov/warsss/index.htm](http://www.epa.gov/warsss/index.htm)). This is a technical method Web site designed to help watershed managers assess and restore waters with suspended or bedded sediment problems. The centerpiece of the WARSSS Web Site is a step-by-step, three-phase assessment methodology developed by Dr. David L. Rosgen for detecting sediment problems and source areas, estimating excessive sediment loads, and planning to restore normal sediment dynamics in streams and

- rivers. Besides the WARSSS methodology, the site also contains the entire sediment model WRENS, a stream classification tutorial, and a large collection of links to clean sediment information and tools.
- *Envirofacts* ([www.epa.gov/enviro](http://www.epa.gov/enviro)). This Web site provides a single point of access to several EPA databases to provide you with information about environmental activities that can affect air, water, and land anywhere in the United States.
  - *EPA's Permit Compliance System (PCS)* ([www.epa.gov/enviro/html/pcs/](http://www.epa.gov/enviro/html/pcs/)). The PCS provides information on companies that have been issued permits to discharge wastewater into surface waters. You can review information on a permit's issuance and expiration, how much the company is permitted to discharge, and the monitoring data showing what the company has actually discharged.
  - *EPA's Enforcement and Compliance History Online (ECHO)* ([www.epa.gov/echo](http://www.epa.gov/echo)). ECHO is an information system that provides a single place to find detailed, up-to-date, environmental compliance history of EPA-regulated facilities.
  - *STORET (short for STORage and RETrieval)* ([www.epa.gov/storet/](http://www.epa.gov/storet/)). This EPA database supports the storage and retrieval of ground water and surface water quality data. In addition to chemical and physical data, STORET supports a variety of types of biomonitoring data on fish, benthic macroinvertebrates, and habitats. You can query data through several search options, including by geographic location, organization, and station ID. You can also browse STORET data using mapping tools available through STORET's main page.
  - *National Listing of Fish Advisories (NLFA)* ([www.epa.gov/waterscience/fish/advisories](http://www.epa.gov/waterscience/fish/advisories)). The NLFA database includes information describing state, tribe, and federally issued fish consumption advisories in the United States for the 50 states, the District of Columbia, and four U.S. territories. The information is provided to EPA by the states, tribes, and territories. The advisories recommend limiting or avoiding consumption of specific fish species or from specific waterbodies.
  - *Beach Environmental Assessment, Communication, and Health (BEACH) Program Data* ([www.epa.gov/beaches](http://www.epa.gov/beaches)). The BEACH Program provides information on issues and concerns related to bacteria contamination at recreational beaches, provides monitoring data, and assists with educating the public regarding the risk of illness associated with increased levels of bacteria in recreational waters (along the coast and Great Lakes).
  - *EPA's Assessment Database* ([www.epa.gov/waters/adb](http://www.epa.gov/waters/adb)). EPA's Assessment Database (ADB) application provides a framework for managing water quality assessment data. It is designed to serve a range of water quality programs (e.g., CWA sections 305(b), 303(d), and 314.) The ADB stores assessment results related to water quality standards designated use attainment, the pollution associated with use impairments, and documentation of probable pollution sources. You can use the ADB to generate several preformatted reports and conventional data tables and lists. The most recent EPA Integrated Report guidance includes an increased emphasis on using the ADB to meet reporting requirements.
  - *Causal Analysis/Diagnosis Decision Information System (CADDIS)* (<http://cfpub.epa.gov/caddis/home.cfm>). You can use this online tool to support causal determination of biological impairment. It is based on EPA's stressor identification process.

### Quality Process

- *EPA's Quality Management Tools* ([www.epa.gov/quality/qapps.html](http://www.epa.gov/quality/qapps.html)). In any data collection or monitoring effort a quality assurance project plan (QAPP) is a key element that lays out monitoring design, sampling plan, data collection and management procedures, logistical components and quality assurance/quality control (QA/QC) considerations. It also contains procedures in dealing with errors and uncertainties identified in the data. This resource offers several key guidance documents:
  - *The Volunteer Monitor's Guide to Quality Assurance Project Plans* ([www.epa.gov/volunteer/qapp/vol\\_qapp.pdf](http://www.epa.gov/volunteer/qapp/vol_qapp.pdf))
  - *Guidance for Quality Assurance Project Plans for Modeling* ([www.epa.gov/quality/qs-docs/g5m-final.pdf](http://www.epa.gov/quality/qs-docs/g5m-final.pdf))
- *EPA's Guidance on Quality Procedures for Sampling Plans* ([www.epa.gov/quality/qs-docs/g5s-final.pdf](http://www.epa.gov/quality/qs-docs/g5s-final.pdf)). The sampling plan is a key roadmap in the data collection process to characterize the watershed. This document describes data quality objectives, measurement quality objectives and a QAPP, which helps to validate the data for larger audiences.

## Other Resources for Step 2

Many non-EPA sources are available to help gather agricultural and other data for your watershed.

- *Local Conservation Districts* ([www.nrcs.usda.gov/partners/districts.html](http://www.nrcs.usda.gov/partners/districts.html)). This site offers a listing of conservation districts with links to states across the country.
- *Local Cooperative Extension Offices* ([www.csrees.usda.gov/Extension/](http://www.csrees.usda.gov/Extension/)). The Cooperative Extension System is a nationwide, non-credit educational network. Each state and territory has a state office at its land-grant university and a network of local or regional offices. One or more experts staff these offices and provide useful, practical, and research-based information to agricultural producers, small business owners, youth, consumers, and others in rural areas and communities of all sizes.
- *National NRCS Nutrient Management Tools* (<http://wmc.ar.nrcs.usda.gov/partnerships/MSRB/NationalTools.html>). This site provides tools used in the field for helping producers manage nitrogen and phosphorus and reducing nutrient loads to downstream waters including *A Procedure to Estimate the Response of Aquatic Systems to Changes in Phosphorus and Nitrogen Inputs*.
- *Know Your Watershed* ([www2.ctic.purdue.edu/kyw/](http://www2.ctic.purdue.edu/kyw/)). This online directory, developed by the Conservation Technology Information Center, is designed as an information clearinghouse for watershed coordinators to help assure measurable progress toward local goals. The resource includes general information about watersheds and offers a series of watershed planning tools and management guides.
- *Science in Your Watershed* (<http://water.usgs.gov/wsc/>). The purpose of this U.S. Geological Survey (USGS) site is to help users find scientific information organized by watershed. This information, coupled with observations and measurements made by watershed groups, provides a powerful foundation for characterizing, assessing, analyzing, and maintaining the status and health of a watershed.
- *State GIS Clearinghouse Directory* ([www.gisuser.com/content/view/2379](http://www.gisuser.com/content/view/2379)). This site provides a list of state GIS agencies, groups, or geographic data portals.
- *NWISWeb* (<http://waterdata.usgs.gov/nwis>). This is the USGS's online database for surface water and ground water flow and water quality data.
- *Long-Term Hydrologic Impact Assessment (L-THIA)* ([www.ecn.purdue.edu/runoff/lthianew/Index.htm](http://www.ecn.purdue.edu/runoff/lthianew/Index.htm)). L-THIA (Long-Term Hydrologic Impact Assessment) was developed as an online tool to assess the water quality effects of land use change. On the basis of community-specific climate data, L-THIA estimates changes in recharge, runoff and nonpoint source pollution resulting from past or proposed development. As a quick and easy-to-use approach, you can use L-THIA's results to generate community awareness of potential, long-term problems and to support planning aimed at minimizing disturbance of critical areas. L-THIA is an ideal tool to help evaluate potential effects of land use change and to identify the best location of a land use so as to have minimum effect on a community's natural environment.

## STEP 3: SET GOALS AND IDENTIFY SOLUTIONS

Groups need to

- Set Goals and Identify Load Reductions
- Identify Possible Management Strategies
- Evaluate Options and Select the Preferred Management Strategies

## EPA Resources for Step 3

### Planning Tools

- *TMDL Technical Guidance Documents* ([www.epa.gov/owow/tmdl/techsupp.html](http://www.epa.gov/owow/tmdl/techsupp.html)). EPA protocols for developing TMDLs for various pollutants such as pathogens, sediment, and nutrients are available here for downloading. It also has a clarification on required elements of TMDLs such as load and wasteload allocations, tools to enable the TMDL process, and other resources.
- *EPA's National Management Measures to Control Nonpoint Source Pollution* ([www.epa.gov/owow/nps/pubs.html](http://www.epa.gov/owow/nps/pubs.html)). EPA developed several guidance documents broken out by type of

management measure. Draft and final manuals are available for agriculture, forestry, urban areas, marinas and recreational boating, hydromodification, and wetlands.

- *National Menu of Best Management Practices for NPDES Storm Water Phase II* (<http://cfpub.epa.gov/npdes/stormwater/menuofbmps/post.cfm>). This comprehensive list of BMPs contains information on construction and maintenance costs as well as other monetary considerations. Information is provided on both structural and nonstructural BMPs. This menu of BMPs follows the six minimum measures included in the Phase II rule.
- *Watershed Academy Webcast Seminar: Low Impact Development Strategies, Tools, and Techniques for Sustainable Watersheds* ([www.epa.gov/owow/watershed/wacademy/webcasts/archives.html#20051019](http://www.epa.gov/owow/watershed/wacademy/webcasts/archives.html#20051019)). This webcast focuses on how communities and institutions are using low impact development (LID) techniques to meet a wide range of water resource protection and community development objectives. It features Haymount—a large-scale traditional neighborhood design community in Virginia that incorporates many LID techniques—and highlights other examples of LID designs and projects throughout the country.
- *Protecting Water Resources with Smart Growth* ([www.epa.gov/smartgrowth/pdf/waterresources\\_with\\_sg.pdf](http://www.epa.gov/smartgrowth/pdf/waterresources_with_sg.pdf)). This report covers tools, techniques, and approaches used across the nation to plan and develop communities in ways that help to reduce negative environmental consequences.
- *Model Ordinances To Protect Local Resources* ([www.epa.gov/owow/nps/ordinance/index.htm](http://www.epa.gov/owow/nps/ordinance/index.htm)). A collection of ordinances developed by municipalities and local agencies nationwide under such areas as aquatic buffers, open space development, illicit discharges, and post construction controls.
- *EPA's Green Communities* ([www.epa.gov/greenkit/](http://www.epa.gov/greenkit/)). The Green Communities Web site is a portal to tools and information on the best strategies, programs, and policies to reduce your environmental footprint. A five-step environmental planning framework leads you to a greener, sustainable future.
- *Environmental Planning for Small Communities* ([www.epa.gov/seahome/trilogy.html](http://www.epa.gov/seahome/trilogy.html)). The software and tool called Trilogy, is described as the Swiss Army Knife of local planning. It offers communities the chance to judge their own needs and preferences and to make their own informed decisions.
- *Watershed Academy Web: Online Training on Watershed Management* ([www.epa.gov/watertrain](http://www.epa.gov/watertrain) click **Management Practices Modules**). These modules cover techniques to reduce the environmental effects of watershed management challenges such as urban runoff, cropland management, forestry, and other issues.
- *Local Source Water Protection Tools* (<http://cfpub.epa.gov/safewater/sourcewater/sourcewater.cfm?action=Protection#regulatory>). This page identifies ways that local entities can plan for and implement source water protection. The information below contains links to technical guidance, funding, BMP tools and resources.
- *Watershed Academy Webcast Seminar: Phase II Stormwater* ([www.epa.gov/owow/watershed/wacademy/webcasts/archives.html#20051116](http://www.epa.gov/owow/watershed/wacademy/webcasts/archives.html#20051116)). This webcast opens with an overview of the Phase II requirements, noting particular areas where watershed groups can participate. Arguably, the most important part of the program is the permanent or post-construction minimum measure. The second part of the webcast focuses on this measure and will provide an overview of what municipalities need to do to put these programs in place. New ideas such as low impact development and smart growth can be integrated into these programs to help ensure that real water quality benefits are achieved.
- *Protecting Coastal and Wetlands Resources: A Guide* (EPA842-R-92-002). This hands-on guide is designed to help elected officials and concerned citizens from coastal communities learn about a variety of approaches for managing their coastal and wetlands resources. It contains a comprehensive review of resource management and planning tools as well as 19 case studies. Available free of charge from NCEPI, 11029 Kenwood Road, Building 5, Cincinnati, OH 45242.

### Other Resources for Step 3

- *The Natural Resources Conservation Service's National Handbook of Conservation Practices* ([www.nrcs.usda.gov/technical/standards/nhcp.html](http://www.nrcs.usda.gov/technical/standards/nhcp.html)). This document provides examples of how management measures can be applied in rural and farming areas.
- *International Stormwater BMP Database* ([www.bmpdatabase.org/](http://www.bmpdatabase.org/)). This database provides access to stormwater BMPs. The tool provides users access to consistent and transferable information on stormwater BMPs. The database might help water quality professionals (planners, engineers, scientists, officials and citizens) learn about successful BMPs and apply proven methods to local water quality projects.
- *Stormwater Strategies: Community Responses to Runoff Pollution* ([www.nrdc.org/water/pollution/storm/stoinx.asp](http://www.nrdc.org/water/pollution/storm/stoinx.asp)). This collection of 100 case studies is intended to serve as a guide for local decision makers, municipal officials, and environmental activists. The studies document effective strategies being employed to control urban runoff pollution.
- *Low Impact Development Center* ([www.lowimpactdevelopment.org](http://www.lowimpactdevelopment.org)). This site provides watershed managers with a new set of tools and techniques that can be used to meet regulatory and receiving water protection program goals for urban retrofits, redevelopment projects, and new development sites. It also offers numerous publications and case studies.

## STEP 4: DESIGN IMPLEMENTATION PROGRAM

Groups must

- Establish milestones and implementation schedules
- Identify the technical and financial resources needed to implement the plan
- Use various analyses and products to assemble and document the watershed plan

### EPA Resources for Step 4

#### Education and Outreach Tools

- *EPA's Nonpoint Source Outreach Digital Toolbox* ([www.epa.gov/owow/nps/toolbox](http://www.epa.gov/owow/nps/toolbox)). This online resource provides the information and tools necessary for state and local agencies and organizations to launch their own site-specific, nonpoint source pollution outreach campaigns and includes 800+ outreach materials.
- *EPA's Watershed Academy Webcasts* ([www.epa.gov/watershedwebcasts](http://www.epa.gov/watershedwebcasts)). These webcasts offer live monthly trainings on cutting edge topics related to watersheds.
- *After the Storm* ([www.epa.gov/weatherchannel](http://www.epa.gov/weatherchannel)). Coproduced by EPA and The Weather Channel, this video provides insight into the problems as well as solutions to today's water quality challenges.

#### Planning Tools

- *Stormwater Case Studies* (<http://cfpub.epa.gov/npdes/stormwater/casestudies.cfm>). This online database features a series of stormwater case studies. Each case study is a two- to three-page description of how a Phase I or Phase II municipal separate storm sewer systems (MS4) community has implemented a specific aspect of its stormwater program.
- *Solutions for Sanitary Sewer Overflows* ([http://cfpub.epa.gov/npdes/sso/featuredinfo.cfm?program\\_id=4](http://cfpub.epa.gov/npdes/sso/featuredinfo.cfm?program_id=4)). This highlights community-based projects to find innovative solutions to capacity problems that cause overflows of sanitary sewers. Includes overview of Capacity, Management, Operation, and Maintenance (CMOM) techniques, fact sheets, and outreach materials.
- *Watershed Academy Webcast Seminar: Introduction to Trading for Water Quality* ([www.epa.gov/owow/watershed/wacademy/webcasts/archives.html#20051214](http://www.epa.gov/owow/watershed/wacademy/webcasts/archives.html#20051214)). This webcast covers the basics of trading—where it's happening around the country, why watershed stakeholders might be interested in adopting trading programs, and the rudiments of how such programs work.



### **Funding Tools**

- *A Guidebook of Financial Tools: Paying for Sustainable Environmental Systems* ([www.epa.gov/efinpage/guidebook.htm](http://www.epa.gov/efinpage/guidebook.htm)). This document—developed by EPA’s Environmental Financial Advisory Board and the Agency’s network of university-based Environmental Finance Centers—helps watershed practitioners in the public and private sectors to find appropriate methods to pay for environmental protection efforts.
- *EPA’s Catalog of Federal Funding Sources for Watershed Protection* ([www.epa.gov/watershedfunding](http://www.epa.gov/watershedfunding)). This Web-based, searchable catalog has information about financial assistance sources (grants, loans, cost-sharing) that are available to fund watershed projects.
- *Plan2Fund* (<http://efc.boisestate.edu/efc/Tools/Plan2Fund/tabid/104/Default.aspx>). This watershed-planning tool, developed by the EPA-supported Environmental Finance Center at Boise State University, helps organizations determine the funding needed to meet the goals, objectives, and tasks of their watershed program plan. See also *Watershed Academy Webcast* on this tool: ([www.epa.gov/owow/watershed/wacademy/webcasts/archives.html#20060215](http://www.epa.gov/owow/watershed/wacademy/webcasts/archives.html#20060215)).
- *The Directory of Watershed Resources* (<http://beta.nssg.com/bsuwatershed/website/index.asp>). This online, searchable database includes information about available watershed restoration funding. Developed by EPA-supported Environmental Finance Center Network, the database includes information on federal, state (Oregon, Washington, Idaho, Alaska, Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island, and Vermont), private, and other funding sources and assistance.
- *Watershed Academy Webcast Seminar: Sustainable Finance* ([www.epa.gov/owow/watershed/wacademy/webcasts/archives.html#20060322](http://www.epa.gov/owow/watershed/wacademy/webcasts/archives.html#20060322)). This webcast explores how watershed groups can achieve long-term financial sustainability. It provides basic information about charitable giving and the most promising sources of funding for watershed groups. It also reviews the essential elements your group needs to successfully raise money, examine productive fundraising strategies, and outline how to create a fundraising plan.
- *Environmental Finance Center Network* ([www.epa.gov/efinpage/efcn.htm](http://www.epa.gov/efinpage/efcn.htm)). The Environmental Finance Centers (EFC) provide state and local officials and small businesses with advisory services; education, publications, and training; technical assistance; and analyses on financing alternatives. The EFC network includes centers in universities across the country. These centers have proven to be effective vehicles for promoting innovative environmental financing techniques. While EPA provides seed funding for EFC start-up operations, financial independence of the centers is a major objective.

### **Other Resources for Step 4**

- *Directory of Funding Sources for Grassroots River and Watershed Conservation Groups* ([www.rivernetwork.org/rn/fundraisingguide/government/resources](http://www.rivernetwork.org/rn/fundraisingguide/government/resources)). This Web-based, searchable directory lists private, corporate, and federal funding sources available for watershed projects.
- *Local Government Environment Assistance Network Webcast: Protecting Water Resources through Land Conservation: Funding Options for Local Governments* ([www.lgean.org/financing.cfm](http://www.lgean.org/financing.cfm)). The webcast was sponsored by the International City/County Management Association and the Trust for Public Land, in cooperation with EPA. It provides the context for the role of conservation finance in land conservation and water protection, describes critical components for creating a successful funding effort, and showcases local government success stories.
- The Foundation Center (<http://fdncenter.org>). This organization’s mission is to strengthen the nonprofit sector by advancing knowledge about U.S. philanthropy.
- Grants.gov ([www.Grants.gov](http://www.Grants.gov)). Grants.gov provides information on how to find and apply for federal government grants.
- Chronicle of Philanthropy (<http://philanthropy.com>). *The Chronicle of Philanthropy* is a newspaper dedicated to providing philanthropic information to nonprofit organizations.

## STEPS 5 AND 6: IMPLEMENT WATERSHED PLAN, MEASURE PROGRESS, AND MAKE ADJUSTMENTS

Groups must implement their watershed plan, and then use adaptive management techniques to make changes to the watershed plan and to analyze the monitoring data to determine whether milestones are being met.

### EPA Resources for Steps 5 and 6

- *Section 319 Success Stories* ([www.epa.gov/owow/nps/Success319/](http://www.epa.gov/owow/nps/Success319/)). This Web site lists summaries of communities from across the country that has achieved documented water quality improvements. Water quality improvements are demonstrated by achieving water quality standards for one or more pollutants/uses; nonpoint source TMDL allocations (and removal from the state's section 303(d) list of impaired waters); measurable, in-stream reduction in a pollutant; or improvement in a parameter that indicates stream health (e.g., increases in fish or macroinvertebrate counts). The stories also demonstrate innovative strategies used to reduce nonpoint source pollution, the growth of partnerships, and diversity of funding sources. These are useful as examples for other communities
- *EPA's Community-Based Watershed Management Handbook* ([www.epa.gov/neplessons/handbook.html](http://www.epa.gov/neplessons/handbook.html)). This document describes the highly successful approaches to watershed management implemented by the 28 National Estuary Programs (NEPs). The NEPs—unique partnerships of EPA and numerous federal, state, and local organizations—work together to address coastal watershed management challenges. This document explains how the NEPs develop and implement plans and sustain their efforts by measuring and communicating results.
- *Watershed Academy Webcast Seminar: Getting In Step: Developing Your Message and Publicizing it Effectively* (<http://www.epa.gov/owow/watershed/wacademy/webcasts/archives.html#20050720>). The key to successful outreach campaigns is targeting your message to specific audiences and getting those audiences to respond to your message. This webcast reviews the basic building blocks for developing effective outreach campaigns with a special focus on the tools needed to identify and research target audiences, develop effective messages that help achieve your objectives, and identify the most appropriate formats to display your message. The webcast also features strategies and approaches for working with the media to inform and educate the public on various environmental issues.

### Overview Resources

- *EPA's Watershed Academy* ([www.epa.gov/watershedacademy](http://www.epa.gov/watershedacademy)). This online resource offers a series of resources, including live watershed training courses, Web-based training, and publications.
- *EPA's Drinking Water Academy* ([www.epa.gov/safewater/dwa.html](http://www.epa.gov/safewater/dwa.html)). This program provides classroom and Web-based training for the purpose of expanding EPA, state, and tribal capabilities to implement the 1996 Amendments to the Safe Drinking Water Act (SDWA).

### Other Overview Resources

- *NOAA's Coastal Services Center* ([www.csc.noaa.gov/](http://www.csc.noaa.gov/)). This is the National Oceanic and Atmospheric Administration's one-stop Web site providing links to technical tools, training, guidance for coastal waters, and watershed protection strategies for communities in coastal areas.