

# Chloride Monitoring Volunteer Manual 2017<sup>1</sup>

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## **I. Project Goal**

The goal of the project is to determine if wadable streams of Wisconsin are experiencing acute or chronic chloride impairments by assessing specific conductance and chloride levels over time.

## **II. Volunteer Time Commitment**

Volunteers must commit to attending a three-hour training in its entirety prior to beginning participation in this monitoring project. Once trained, volunteers should expect to monitor specific conductance monthly April to November, and at least twice a month, generally every other week, between December and March. In addition, if a target specific conductance is observed, volunteers are asked to monitor for chloride at that time and again daily for four consecutive days following that observation.

It takes approximately 10 minutes to calibrate the specific conductance meter at home. Once at the monitoring site, it takes about five minutes to conduct the monitoring. Volunteers must enter their data as soon as possible after collection to an online-accessible Department of Natural Resources' database. It takes approximately five minutes to enter data once logged in to the site. Finally, volunteers must commit to mailing up to five water samples to the lab to be analyzed for chloride as soon as possible after completing the five consecutive days of sampling if the target specific conductance level is observed. All postage will be paid by the project sponsors, however, the volunteer will need to package the sample, print a mailing label and arrange for the package to be picked up by FedEx and/or delivered to a local drop off point for delivery.

We estimate the time commitment per volunteer to be about 20-30 hours per year if one site is monitored.

## **III. What is Monitored**

The main parameters to be monitored are specific conductance and chloride. Specific conductance, a measure of how well water can conduct an electric current, is monitored in the field. Chloride is a key element used in traditional road deicing methods across the northern U.S. When it enters waterways in runoff, it can be toxic to aquatic organisms. Chloride concentrations are determined in a lab from water samples that are collected by volunteers and shipped to the lab. EPA and states have water quality standards based on chloride concentrations. Wisconsin's acute chloride standard is 757 mg/L while the chronic standard is a four-day average of 395

mg/L. Neither value should be exceeded more than once every three years. Further, at least two observations of such chloride levels must be made within a three-year time period for the standard to be exceeded. Federal EPA standards are similarly defined. The acute standard of 860 mg/L should not be exceeded more than once every three years, and the four-day average concentration of chloride should not exceed 230 mg/L more than once every three years.

Specific conductance has been demonstrated to be a good surrogate for chloride in many situations. In fact, regional relationships between the two parameters have been developed based on volunteer monitoring at more than 100 sites across Wisconsin and Iowa. This allows for prediction of chloride levels when only specific conductance is monitored at any stream site in the state. Since specific conductance monitoring is more inexpensive than chloride monitoring, volunteers can keep an eye out for potentially troublesome levels of chloride by monitoring for specific conductance. If a target level of specific conductance is observed, a water sample can be collected and analyzed at the lab for chloride. Department of Natural Resource employees can then use the information to inform management decisions, such as whether waterbodies should be listed as impaired for chloride.

Specific conductance is measured in  $\mu\text{S}/\text{cm}$  (microSiemens per centimeter). This can also be written as  $\text{mS}/\text{cm}$  (milliSiemens per centimeter) when higher salt concentrations are present. When monitoring, volunteer monitors should use extreme caution to read the units displayed on the meter. The units on the meters used in this project switch automatically depending on the specific conductance level in the stream.

Specific conductance is expected to be higher in chloride-enriched waters as might occur during winter storms when roads are being salted and runoff enters nearby streams. Other ions – or salts – can also affect specific conductance levels, including phosphate, nitrate, magnesium, calcium, sodium, or potassium which may be present in urban, industrial or agricultural runoff. At lower specific conductance levels (less than  $1540 \mu\text{S}/\text{cm}$ ), these other ions tend to play a bigger role in affecting specific conductance. At higher specific conductance levels, chloride tends to be the dominant salt playing a role in affecting specific conductance levels in Wisconsin streams.

## IV. Volunteer Duties and Monitoring Schedule

Sites to be monitored fall into two categories: new and follow-up. Each of these has slightly different monitoring schedules which are described below and in the tables on the following pages. **New sites** have not been monitored as part of this project in the past. The goal of monitoring these sites is to assess if specific conductance levels near or above target levels of concern are observed. **Follow-up sites** are those which have data suggesting possible water body impairments due to chloride (Table 2).

### Specific Conductance Monitoring

Specific conductance monitoring will be carried out using a handheld meter (i.e., *Oakton ECTestr 11*). Prior to monitoring on each sampling date, volunteers should calibrate their ECTestr following procedures recommended by USGS and the manufacturer. These methods are described in detail in this volunteer manual. A calibration log should be kept for each meter and turned in to project staff annually. Note to volunteers who monitor at more than one location: calibration is not required between sites; it is only required between sampling dates.

**At new sites**, between April and November, volunteers should collect monthly specific conductance samples (Table 3). Between December and March, volunteers should assess specific conductance twice per month, about every other week (Table 3). During these winter months, occasional additional specific conductance monitoring may be triggered by real-time specific conductance measurements at nearby USGS-maintained continuous monitoring stations or by project coordinator observations of current weather conditions. For these triggered monitoring events, volunteer monitors will be notified by text message and/or email. Whenever possible, volunteers should monitor within 48 hours of receiving the notification.

**At follow up sites**, volunteers may opt to follow the same monitoring schedule as new sites, or they can use past results to inform when they monitor. For instance, if chloride levels have not been observed or predicted to be approaching acute or chronic chloride levels except during winter storm events or during a warm up period following a winter storm, volunteers might select to only monitor at such times. Volunteers can use Table 1 and/or previous years' site reports as a guide for when chloride levels have been predicted or measured to be nearing chronic or acute levels. Reports are available at:

<http://watermonitoring.uwex.edu/level3/UrbanRoadSaltReports.html>.

**At both types of sites,** if the volunteer observes that the target level of specific conductance has been met or exceeded, they should collect a water sample that may be analyzed at the lab for chloride. In addition, for follow-up sites being monitored for chronic exceedences (Table 1) the volunteer is requested to return to the site to monitor specific conductance on four consecutive days following that sampling date. On each occasion, they are asked to again assess specific conductance and collect a water sample for chloride analysis if specific conductance remains at or above the target level.

### **Chloride Monitoring**

Water samples to be analyzed for chloride will be delivered to the Wisconsin State Lab of Hygiene in Madison.

**At new sites,** a water sample to be analyzed for chloride should only be collected when specific conductance at the site is at or above 3200  $\mu\text{S}/\text{cm}$ . The goal for first year sampling is to identify the range of specific conductance levels observed and to assess for acute chloride exceedences. Please contact Kris Stepenuck or Jeanne Scherer to set up new stations in the SWIMS database.

**At follow-up sites,** if an acute chloride exceedence has not been previously documented with a lab-analyzed chloride sample, this will be indicated in Table 1. For these sites, the target specific conductance at which to grab a water sample for chloride analysis is 3200  $\mu\text{S}/\text{cm}$ .

In addition, Table 1 lists stations (grouped by assessment unit) at which chronic exceedences have been observed. These are highest priority to monitor in 2015, but any site can be monitored. Table 2 indicates the target specific conductance levels at which to collect water samples for chloride analysis. These vary based on geographic location. If, on any site visit, specific conductance meets or exceeds the target level for your area, please collect a water sample to be analyzed for chloride and return to the monitoring location 24 hours later. At that time, again monitor specific conductance; if it still meets or exceeds the target level, collect another water sample to be analyzed for chloride. Repeat this process for a total of five consecutive days. If on any of the days the specific conductance drops below the target level, you need not return the following day(s) unless triggered due to weather or if it is your regular monitoring day. A water sample collected at the acute target level can serve as the first of five days of consecutive samples to support presence of a chronic chloride exceedence.

Since chronic levels of chloride must be maintained for four consecutive days to exceed the standard, if specific conductance falls below the target level on any of the days, our assumption is that chloride has also fallen below the standard. **However, please submit any water samples you did collect to the lab for analysis. Any sample in exceedence of the water quality standards is sufficient to demonstrate chloride impairment.**

**Table 1. Follow-up sites at which Wisconsin acute (797 mg/L) and chronic chloride levels (395 mg/L) have been previously observed or predicted on at least one occasion. Stations within the same table cell are in the same assessment unit. Data to confirm acute and/or chronic chloride exceedences are only needed from one station within an assessment unit.**

Urban Area	Station Name (Station ID)	Previous Chronic Exceedence(s)	Acute Exceedence Sample Needed?
Black River Falls	Robinson Creek DS HWY 27 (10039117)	Winter*	No
Eau Claire	Little Niagara Creek at UWEC Campus (183137)	Winter	Yes
	Sherman Creek at Race St (10034891)	Winter	Yes
Fox Valley	Campbell Creek at Witzel Ave (10034848)	Winter & Spring**	Yes
	• Mud Creek at CTH BB (453258) <b>OR</b> • Mud Creek at Spencer St (10011423)	Winter	No
	Neenah Slough at Cameron (10031789)	Winter	Yes
	Badger Mill Creek at Bruce St (10011965)	Winter	Yes
Madison	Cadwallader Washburn Spring (10036931)	Winter	Yes
	• Pheasant Branch at USH 12 (133315) <b>OR</b> • Pheasant Branch DS of Century Ave at foot bridge (10033405) <b>OR</b> • N. Br. Pheasant Branch DS of pond at Deming Way (10032762)	Winter	No
	• E. Br. Starkweather Creek at Commercial (10032759) <b>OR</b> • E. Br. Starkweather Creek at Milwaukee (133076) <b>OR</b> • Starkweather Creek at Atwood Ave (USGS station) (10034910)	Winter	No
	W. Br. Starkweather Creek at Daley Dr (10034911)	Winter	No
	• Galloway Creek at 3rd St (10037540) <b>OR</b> • Galloway Creek at 9th St (10039077) <b>OR</b> • Galloway Creek at Red Cedar River (10037920)	Winter	No
	• Jarrett Creek 10m US Middle Branch (10041498) <b>OR</b> • Jarrett Creek 100m US Lake Menomin (10038741) <b>OR</b> • Jarrett Creek at Schneider Ave (10039038) <b>OR</b> • Jarrett Creek E. Br., 10m US main branch (10041500) <b>OR</b> • Jarrett Creek Middle Br., 10m US main branch (10041499)	Winter (except Spring too at site above Lake Menomin)	No

Urban Area	Station Name (Station ID)	Previous Chronic Exceedence(s)	Acute Exceedence Sample Needed?
Milwaukee	Hoods Creek at Brooks Rd (523106)	Winter	Yes
	Kinnickinnic River at 11th St (413817)	Winter and Spring	No
	Lily Creek at Good Hope Rd near Menomonee Falls (10032538)	Winter	Yes
	Lincoln Creek at Sediment Trap /46th St (413806)	Winter	No
	• Little Menomonee River 100ft DS HWY 45 (10032751) <b>OR</b> • Little Menomonee River at W Leon Terr (10031614)	Winter	No
	Oak Creek US of 15th Ave, N of Beech St (413913)	Winter	No
	• Root River at Grange Ave (CTH HH) (413716) <b>OR</b> • Root River at Layton Ave (10031473) <b>OR</b> • Root River at Puetz Rd (10032787)	Winter and Spring	No
	Ulao Creek at Hwy 60 East of Hwy 43 (10028775)	Winter, Spring, & Fall***	No
Racine-Kenosha	Pike Creek – 41 (10010491)	Winter	No
	Pike River along Pike River Pathway at intsn of Lannon Terr and Oakes Rd (10034958)	Winter and Spring	Yes
	Pike River Along the Pike River Pathway S side of 1st walking bridge crossing river (10034959)	Winter	Yes
	Pike River N of mouth to Lake Michigan (10034962)	Winter and Spring	No
	Pike River West side of walking bridge at middle entrance to Carthage College (10034957)	Winter and Spring	Yes
	• Pike River at CTH A (10010400) <b>OR</b> • Pike River South side of first bridge at northern entrance to Carthage College (10034956) <b>OR</b> • Pike River south side of walking bridge (10034960) <b>OR</b> • Pike River W side of CTH E btwn CTH Y & Sheridan Rd (10034955) <b>OR</b> • Pike River W of first bridge on CTH Y north of CTH E (10034954)	Winter and Spring	No
Waukesha	Meadow Brook at CTH SS (10030297)	Winter	Yes
	• Pewaukee River at Capitol Dr crossing near Village Park (10029788) <b>OR</b> • Pewaukee River at STH 164 (683228)	Winter	No

\*Winter sampling was conducted between December and March.

\*\*Spring sampling during which exceedences were observed was conducted in April and May.

\*\*\*Fall sampling during which exceedences were observed was conducted in September and October.

**Table 2. Follow-up sites target chronic and acute specific conductance levels. These are the levels at which to collect water samples if they are needed.**

Urban Area	Target Chronic Specific Conductance (uS/cm)	Target Acute Specific Conductance (uS/cm)
Black River Falls	≥1550	≥3200
Eau Claire	≥1800	
Fox Valley	≥2100	
Madison	≥2100	
Menomonie	≥1800	
Milwaukee	≥2100	
Poynette	≥1800	
Racine / Kenosha	≥1800	
Waukesha	≥2100	
Other areas of the state	≥2100	

**Table 3. Monitoring Schedule**

	Dec	Jan	Feb	Mar	April	May	June	July	Aug	Sept	Oct	Nov
Chloride Grab Samples	<b>New sites</b> <b>Acute: Up to one sample</b> collected if specific conductance is recorded to be 3200 μS/cm or higher.											
	<b>Follow-up sites</b> <b>Acute: If an acute exceedences has not been previously confirmed (see Table 1), up to one sample</b> collected if specific conductance is recorded to be 3200 μS/cm or higher. <b>Chronic: Up to five samples</b> collected and submitted to the lab if specific conductance initially meets and remains at or above a target specific conductance level (see Table 2) for five consecutive days. (Note: Additional samples may be collected but then not be submitted to the lab if specific conductance falls below the target level during the five-day period.)											
Specific Conductance Monitoring	<b>New sites</b> Twice per month (about every other week) plus triggered monitoring					<b>New sites</b> Monthly monitoring						
	<b>Follow-up sites</b> Follow new site monitoring schedule or use past monitoring results as a guide for when to monitor (see Table 1). Carry out 5-day consecutive monitoring if 3200 μS/cm or chronic target conductance level (see Table 2) observed.*											

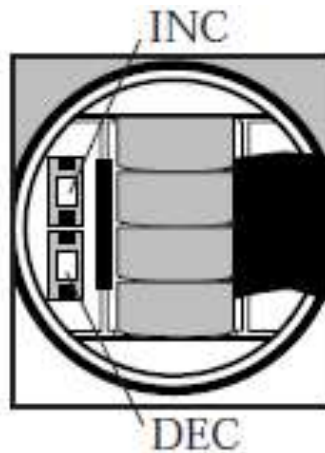
\* Note: Once lab results confirm acute and chronic chloride exceedences, sampling at the site can cease as sufficient data have been collected to address Department needs.



## V. Oakton ECTestr 2-point Calibration Set-up

Your meter should come to you set up to conduct 2-point calibration. However, we provide these instructions in the event that for some reason it is not set up for you. After you follow steps 1-4 below, your meter will be set up for 2-point calibration unless you change it. You will not have to repeat steps 1-4 each time you calibrate.

1. Turn meter off, press and hold 'INC' (see figure below) while turning meter back on.



2. Meter should say 'ACAL' on bottom of screen while flashing 'no'. Press 'HOLD/ENT' to accept.  
**Note:** If 'ACAL' flashes 'yes', press 'INC' to change to 'no', then press 'HOLD/ENT' to accept.
3. Meter should now say '1.Pnt' on bottom of screen while flashing 'yes'. Press 'INC' to change to 'no'. Press 'HOLD/ENT' to accept.
4. Your meter should now be ready for 2-point calibration.

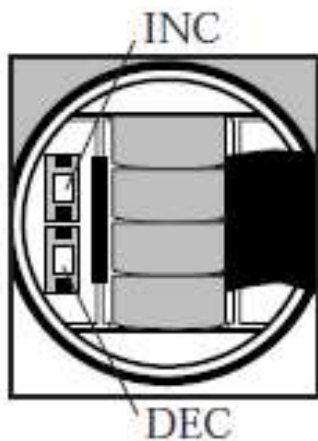
## VI. Oakton ECTestr 2-point Calibration Procedure

1. **Record date, time and calibration analyst's name on the 2-point calibration log.**
2. Unscrew and remove cap from top of the meter as well as the protective cap on the probe.
3. Turn the meter on.
4. Make sure tester is in measuring mode (MEAS will appear in the upper left corner of the screen).
5. Rinse electrode with high standard (10,000  $\mu\text{S}/\text{cm}$  which can also be written as 10  $\text{mS}/\text{cm}$ ) THREE times in 30 ml Nalgene jar, pouring out standard into waste tray between each rinse.
6. Fill 30 ml Nalgene jar with high standard a fourth time.
7. Fully submerge probe in 30 ml Nalgene jar with standard and swirl gently to create a homogenous sample and allow reading to stabilize.

**Note:** Upper reading displays measured conductivity reading, lower reading displays temperature.

8. **Record measured specific conductance reading (make sure to record units) under 'initial reading' on calibration log under appropriate standard.**
9. **Record temperature.**
10. Keeping the probe submerged in solution, press the 'INC' button to enter calibration mode (see figure below). 'CAL' should appear on the screen and briefly show the number of points the tester will calibrate. (Notice the meter now says '2.PNT' instead of '1.PNT'. If it does not say '2.PNT', repeat steps 1-4 in calibration set-up section above.)

**Note:** Upper reading displays measured conductivity reading, lower reading displays default uncalibrated conductivity reading.



11. If value on meter does not match standard, use the 'INC' or 'DEC' to correct the conductivity value to the calibration solution. Once the meter has been corrected, the screen displays confirmation, 'CO' and returns to measuring mode.  
**Note:** If you do not press INC or DEC within 5 seconds, the tester shows confirmation, 'CO' and returns to measuring mode. The tester is not calibrated to new values if this has happened. Repeat steps 10-11 to calibrate.
12. **Record measured specific conductance reading (make sure to record units) under 'adjusted reading' on calibration log.**
13. If the calibrated specific conductance value for the 10,000  $\mu\text{S}/\text{cm}$  (10  $\text{mS}/\text{cm}$ ) standard is outside the range of 9667-10333  $\mu\text{S}/\text{cm}$  (9.7 – 10.3  $\text{mS}/\text{cm}$ ) recalibrate the meter by repeating steps 10 and 11. Note this occurred and record results on the next row in your calibration log.
14. Rinse probe with distilled or deionized water THREE times.
15. Repeat steps 5-14 with low standard (1413  $\mu\text{S}/\text{cm}$ ). Note: Set meter to 1410  $\mu\text{S}/\text{cm}$  when calibrating using this standard.
16. If the calibrated specific conductance value for the 1413  $\mu\text{S}/\text{cm}$  standard is outside the range of 1366-1460  $\mu\text{S}/\text{cm}$ , recalibrate the meter with this standard. Note this occurred and record results on the next row in your calibration log.

***Check Measurement with Deionized or Distilled Water:***

17. Rinse probe with distilled or deionized water THREE times.
18. Fill 30 ml Nalgene jar with distilled or deionized water. Fully submerge probe in 30 ml Nalgene jar with water and swirl gently to create a homogenous sample and allow reading to stabilize.
19. **Record measured specific conductance reading (make sure to record units) under 'distilled or deionized water' on calibration log. (This measured specific conductance should be zero.)**
20. **Record temperature.**

## VII. Field Sampling Methods<sup>2</sup>

Prior to monitoring, calibrate ECTestr following procedures listed above. At the monitoring site:

1. Ensure your site is safe to access. If snow, ice, traffic or other conditions threaten your safety in any manner DO NOT MONITOR. Your safety is of utmost importance in this study.
2. Record collector name(s), date, and start time on data sheet.
3. Record if the sampling event is “primary” (scheduled), “triggered” (when you have been alerted to possible high chloride or specific conductance levels in your area), or “other” on data sheet.
4. Record if the stream is ice covered (Yes or No). Choose “Yes” if the stream is open in areas, but you are unable to sample due to safety concerns. If you indicate that the site is ice covered, this is all you need to do at the site on this date. Your safety is most important.
5. Put on appropriate disposable, powderless gloves.
6. Attach the “ISCO” sample collection bottle to the pole sampler using the large rubber band.
7. Insert rubber stopper with vent tube into sample bottle opening.
8. Partially fill and rinse the sample bottle with the stream water to be sampled (rinse water). Avoid getting bottom sediment/sand in the rinse water.
9. Shake or swirl and then drain the rinse water from the sample bottle.
10. Repeat this rinsing process three times.
11. If a water sample is being collected for delivery to the lab for chloride analysis, rinse the lab bottle three times with stream water at this time as well.
12. To collect the sample to be measured, lower the field-rinsed sample bottle slowly down through the water column, being careful to avoid making contact with the streambed. Raise the sampler at the same rate up through the water column, and lower again as needed until sampler is filled.  

This method is used to minimize collection of water at the surface of the stream and to avoid stirring up sediments at the bottom of the stream, both of which could affect specific conductivity, chloride, and/or BOD/COD measurements.
13. Inspect the sample after it is collected, looking for the presence of anomalously large amounts of particulates that might have been captured because of excessive streambed

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<sup>2</sup> These methods were adapted from the following USGS guidance documents:  
[http://water.usgs.gov/owq/FieldManual/chapter4/pdf/Chap4\\_v2.pdf](http://water.usgs.gov/owq/FieldManual/chapter4/pdf/Chap4_v2.pdf) and  
<http://water.usgs.gov/owq/FieldManual/chapter3/final508Chap3book.pdf>

disturbance during sample collection. If you note any large particles, discard the sample, making sure there are no residual particulates left in the container, and resample.

14. Turn on the ECTestr and dip its electrode into the remaining sample in the ISCO sample collection bottle, making sure the sensor is fully immersed and stirring slowly. Once the reading stabilizes, read and record specific conductance and temperature on the data sheet. The **HOLD button can be pressed** to freeze the display to ensure you have read displayed units and results correctly. It is **highly recommended** that you use this function of the meters to assist you. Note: If meter goes to error message due to cold temperatures, record the last temperature and specific conductance value displayed, if known.
15. Once you know the specific conductance in your sample, you can decide if you will collect a water sample to be shipped to the lab for chloride analysis. Remember if you are monitoring a new site to this project, you want to collect samples to be analyzed for chloride only if specific conductance meets or exceeds 3200  $\mu\text{S}/\text{cm}$ . If you are monitoring a follow-up site, you have defined levels of specific conductance at which to collect water samples to be analyzed for chloride (Table 2).
- 16. If collecting a water sample to be analyzed for chloride at the lab:**
  - a. **On the data sheet**, indicate “yes” that a chloride grab sample will be collected. Also record the “Point/Outfall number (SWIMS Fieldwork Seq No).” This is located about halfway down the “Test Request – Inorganic Surface Water & Microbiology” form, or the “lab slip” (see sample lab slip on the next page).
  - b. **Label the bottle** with site name, date, and “Field Number (Bottle Label ID)” from the lab slip.

- c. **On the lab slip**, fill in the “Date and Time of Sample Collection” and the “Who collected the sample” fields. **Do not fill in any other fields on the lab slip.** Note: Each sample collected should have a separate lab slip. Lab slips will be provided via USPS mail or during training. *Never reuse or alter lab slips. Each sample that is sent to the lab must have a unique lab slip number, and each lab slip contains site-specific information, thus you should never modify them.*

State of Wisconsin  
Department of Natural Resources  
and Laboratory of Hygiene

**Test Request – Inorganic Surface Water & Microbiology**  
Form 4800-024 (4/14) Page 1 of 2

**\*\* DO NOT PHOTOCOPIY \*\***

Billing and Reporting			
Account Number WQ003	Field Number (Bottle Label ID) BRSTH23-1	Report to Address (Non-DNR only)	
DNR User ID STEPEK	Report To Name Kris Stepenuck	City Madison	State   ZIP WI   53703
Date Results Needed (mm/dd/yyyy)	Report to Email (Non-DNR only)		
Date and Time of Sample Collection			
Date (mm/dd/yyyy)	Time (24-hr clock)	End Date	Write the Sample Location and Field Number on the sample bottle
<input type="radio"/> Surface Water <input type="radio"/> EF Effluent (Treated Wastewater) <input type="radio"/> IF Influent (Untreated wastewater) <input type="radio"/> Monitoring Well <input type="radio"/> PO Private Well <input type="radio"/> SE Sediment <input type="radio"/> TI Tissue <input type="radio"/>			
Who collected the sample			
Collected By Name	Telephone	Email	
Fill in "Date and Time of Sample Collection" and "Who collected the sample" boxes.			
Where the sample was collected			
Station ID (STORET #) 573076	Sample Address or Location Description Baraboo River at STH 23-Bridge in Reedsburg	Point / Outfall (or SWIMS Fieldwork Seq No) 81878578	
County 57 - Sauk	Waterbody ID (WBID) 1271100		
Sample Details			
Sample Description / Device Description			
Enforcement? <input type="radio"/> Yes <input type="radio"/> No	If Field QC Sample (select one): <input type="radio"/> Duplicate <input type="radio"/> Blank <input type="radio"/>		
If yes, include chain of custody form.	Grant or Project Number		
Is Sample Disinfected? <input type="radio"/> Yes <input type="radio"/> No	Write the "Point/Outfall (or SWIMS Fieldwork Seq No)" on your data sheet.		
If yes, how?			
Analyses Requested			

17. Once you have labeled the bottle and the lab slip, fill the lab-provided bottle by pouring some of the sample from the ISCO sample collection bottle into it. Cap the sample and set it aside.
18. Record air temperature (° C) on your data sheet.
19. Rinse the pole sampler, sample bottle and stopper with deionized water (DIW).
20. Use detergent to clean the sampler between DIW rinses if excessively contaminated.

## VIII. QA/QC—Duplicate samples

To ensure the accuracy and precision of the field data collected by volunteers 10% of the grab samples to be collected and analyzed for chloride will be chosen each year to participate in collection of quality assurance/quality control (QA/QC) samples. The samples are randomly selected from the list of stations that are monitored.

Two types of QA/QC samples will be collected: field blank and field replicate (duplicate) samples. Project coordinators will let you know if your site(s) have been selected at random for QA/QC sampling.

The result of this additional sampling is that you will be mailing a total of three water samples to the lab following one of your site visits: one regular sample, one duplicate, and one blank. Each sample should be placed in a separate Ziploc bag inside the box in which you ship them.

Please prepare this sample at the same time as your regular samples, as follows: **Collect a second sample from the same location** following the directions in Section VI of this manual. **Label the bottle with site name, date, and Point or Outfall number associated with lab slip for the duplicate sample. Also write “DUPLICATE” on the bottle after the lab slip number.** Find the lab slip you were provided that is pre-marked with the word “DUPLICATE” near the upper right corner, fill the required fields, and place in the Ziploc bag containing lab slips before shipping.

## IX. QA/QC—Blank samples

Please prepare this sample after the collection of your regular samples, as follows: **Rinse a lab-provided sample bottle three times with distilled water and then fill it with distilled water and cap. Label the bottle with site name, date, and Point or Outfall number associated with lab slip for the blank sample. Also write “BLANK” on the bottle after the lab slip number.** Find the lab slip you were provided that is pre-marked with the word “BLANK” near the upper right corner, fill the required fields, and place in the Ziploc bag containing lab slips before shipping.

## **X. Delivery of Samples to the Lab**

Madison area volunteers should deliver their samples to Kris Stepenuck or to the Wisconsin State Laboratory of Hygiene (2601 Agriculture Drive Madison, WI 53718).

Volunteers in other areas of Wisconsin should contact Kris Stepenuck or Jeanne Scherer to obtain a prepaid shipping label via e-mail or to obtain a prepaid USPS flat rate shipping box.

All samples must be *analyzed* within 28 days after sampling. The lab is not open on weekends, and these samples have lesser priority than any drinking water health-related samples the lab receives. Thus, **please plan to ship your samples as soon as possible after collecting them** to ensure this time requirement is met.

## **XI. Submitting Data**

After each stream-monitoring event, someone (only one person, please) must enter your team's data into SWIMS. SWIMS is the acronym for the Wisconsin Department of Natural Resources (WDNR) Surface Water Integrated Monitoring System database. This database is available to biologists across the state of Wisconsin and is an integral part of how the Water Action Volunteers (WAV) Stream Monitoring data are communicated to those individuals working on various water quality issues on rivers and streams in Wisconsin.

All volunteers are encouraged to view and explore the data available in SWIMS. Occasional online trainings are held to introduce citizens to searching the database. If this is of interest to you, contact the WAV program staff.

Any volunteer who wishes to enter, edit, or view data must follow steps described in detail on the following pages to initially obtain a username and password for access, and then to learn how to enter, edit or view data in the database.

### **A. How to Get a WAMS User ID and Password**

Volunteers need a User ID and Password to enter and edit data using the SWIMS database on an internet-connected computer. The State of Wisconsin established the Wisconsin Web Access Management Systems (WAMS) to allow access by authorized individuals to State forms and databases available through the Internet. The simple self-registration procedure creates a



personal Wisconsin Login Account ID that allows you access to SWIMS. If you already have a WAMS ID, you can use this ID to access the SWIMS database. If you do not already have a WAMS ID, follow the directions below.

**NOTE: Your [web browser](#) should be Microsoft Internet Explorer version 5.5 or higher. For more information on the purpose of WAMS, their web site and account management tips see Appendix A.**

### 1. Access on.wisconsin.gov

Click open your [Microsoft Internet Explorer browser](#) and type in the URL:

<https://on.wisconsin.gov/WAMS/home>



[Wisconsin User ID](#)

**Wisconsin User ID**

**Web Access Management System (WAMS)**

The State's Web Access Management System (WAMS) allows authorized individuals to access State Internet applications using the same means of identification for all State Web applications. For example, a citizen can use the same Wisconsin User ID and password to acquire overweight trucking permits and Emergency Medical Technician certification.

When access to information or services is restricted, to protect your privacy or the privacy of others, you will be asked to provide a Wisconsin User ID and password. Your Wisconsin User ID and password verifies your identity so that we can provide you with access to your information and services and prevent access by unauthorized individuals.

Please note that only certain types of information will be stored in your user profile, as described in the [User Acceptance Agreement](#). Your user profile will never collect or contain information about you, such as your driving history, tax information, unemployment compensation or vehicle registrations.

[Self-Registration](#) (Request a Wisconsin User ID and Password.)

## 2. Access WAMS

Use the vertical scroll bar on the right-hand of the screen to move down the page if necessary. Click on the [Self-Registration](#) (Request a Wisconsin User ID and Password) link as shown below.

**Wisconsin User ID**  
**Web Access Management System (WAMS)**

The State's Web Access Management System (WAMS) allows authorized individuals to access State Internet applications using the same means of identification for all State Web applications. For example, a citizen can use the same Wisconsin User ID and password to acquire overweight trucking permits and Emergency Medical Technician certification.

When access to information or services is restricted, to protect your privacy or the privacy of others, you will be asked to provide a Wisconsin User ID and password. Your Wisconsin User ID and password verifies your identity so that we can provide you with access to your information and services and prevent access by unauthorized individuals.

Please note that only certain types of information will be stored in your user profile, as described in the [User Acceptance Agreement](#). Your user profile will never collect or contain information about you, such as your driving history, tax information, unemployment compensation or vehicle registrations.

[Self-Registration](#) Request a Wisconsin User ID and Password.)

Self-Registration allows you to create **your personal** Wisconsin Login Account. This is your key to doing secure business with the State of Wisconsin over the Internet. This account belongs to you. It does not belong to your current employer.

**Note:** You must provide a valid, unique e-mail address to self-register for a Wisconsin Login Account. Correspondence regarding your Wisconsin User ID, password or other information about your Wisconsin Login Account will be sent to this e-mail address.

[Profile Management](#)

Profile Management allows you to change your account information, e-mail address, password and other information.

[Logout](#) (Terminate your account session.)

Logout shuts down your current session. To access a secured application you will have to login again.

**Note:** If Logout takes you to the Login panel, you are already logged out of the account session and no action is needed.

## 3. Accept User Acceptance Agreement

The next screen is the WAMS [Self-Registration](#) screen. The screen explains the WAMS registration process. Scroll down and read the State of Wisconsin Web Access Management System User Acceptance Agreement. Click on the [Accept](#) button at the bottom of the page to move to the next screen.

**Access and Correction of Personal Information**

Individuals will be allowed to view personal information relating to their user profile and to update the contact information in their user profile (address, telephone, or e-mail address). Passwords will be secured and will be stored in an encrypted format.

**Use of Cookies**

A cookie is a small amount of data, which may include an anonymous unique identifier, that is sent to your browser from a Web site's computers and may either be used during your session (session cookie) or may be stored on your computer's hard drive (persistent cookie). Cookies may contain data about a user's movements during their visit to the Web site. If your browser software is set to allow cookies, a Web site can send its own cookie to you. A Web site that has set a cookie can only access those cookies it has sent to you, it cannot access cookies sent to you by other sites.

When you request a Wisconsin User ID and password, and when you use your Wisconsin User ID to access State services over the Internet, a session cookie will be sent to your browser and stored in your computer's memory. The cookie will be used to maintain session information, so that you do not have to re-enter your Wisconsin User ID and password when you navigate different pages and/or services. Your privacy is best protected if you close your browser after you are done using applications that use session cookies.

For assistance send an e-mail to [Help.Wisconsin.Support](#)

#### 4. Complete the Profile Information

Fill in your name and email in the **Profile Information** section.

**NOTE:** Only fields with a **Red \*** next to them are required. There is a bug with entering postal addresses. We suggest **leaving the address blank**. Addresses for volunteers are kept separately in the SWIMS database system. We will have your address in the SWIMS database if you have already given it to us (during your training, for instance).

#### 5. Create your User ID and Password

Enter the requested information in the **Account Information** section including a User ID and Password (both of which you pick), and your personal e-mail address. See Appendix A for tips on Passwords.

**NOTE:** You can click on the printer icon on your tool bar to print out a copy of this screen if you wish to retain a record of your User ID and Password for future reference. Be sure to record your User ID and Password, and keep this information in a handy but secure location.

Click on the **Submit** button.

#### Self-Registration

\* Indicates Required Field

Profile Information	
First Name	<input type="text"/>
Middle Initial	<input type="text"/>
Last Name	<input type="text"/>
Suffix	<input type="text" value="v"/> e.g., JR, SR, I, II, III
E-Mail	<input type="text"/> e.g., username@host.domain
Phone #	<input type="text"/>
If you provide address information it must be complete and correct. A United States Postal Service data base is used to verify each address.	
Home Residence Address	
Street	<input type="text"/>
Unit Number	<input type="text"/>
City	<input type="text"/>
State	Select a State
Zip Code	<input type="text"/>
Home Mailing Address	
<input type="checkbox"/> Mailing address is the same as Residence Address.	
Address(1)	<input type="text"/>
Address(2)	<input type="text"/>
City	<input type="text"/>
State	Select a State
Zip Code	<input type="text"/>

Account Information	
Your User ID must be between 5-20 characters and <b>CAN</b> be a combination of letters and numbers. Your Password must be between 7-20 characters and <b>MUST</b> contain a combination of letters and either numbers or special characters (except the @ sign). User IDs and Passwords are case sensitive.	
User ID	<input type="text"/>
Password	<input type="text"/>
Re-enter Password	<input type="text"/>

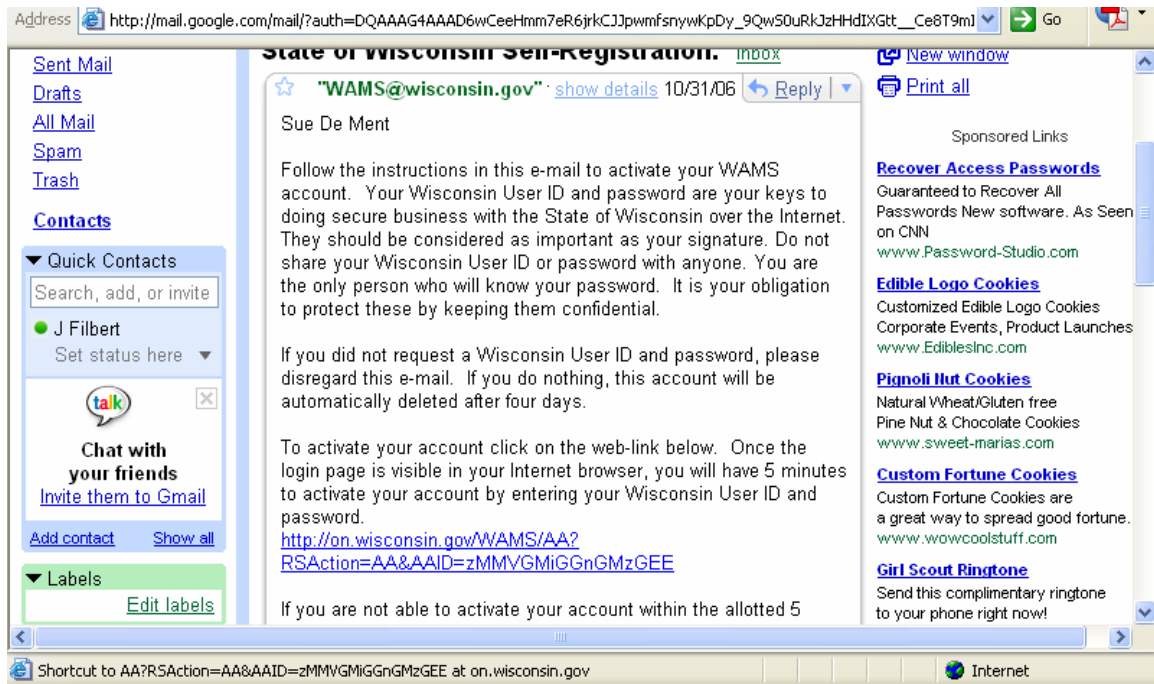
Account Recovery	
Compose a question and answer for account recovery purposes. <a href="#">Click here for Guidelines.</a>	
Secret Question	<input type="text"/>
Answer to Secret Question	<input type="text"/>

Submit

## 6. Open Your Personal E-mail Account and Log In

Open your personal e-mail account. Check your mailbox for a message from “Wisconsin.gov” thanking you for registering with the State of Wisconsin Web Access Management System (WAMS).

Open the email and click on the link in the e-mail. **You must complete this final step within four days of receiving the message**, or you will need to repeat the registration process.



## 7. Log-in to WAMS with Your New User ID and Password

When you click on the Web link in the e-mail message from “Wisconsin.gov”, it will take you back to the WAMS web site. You will see the WAMS Account Activation - Final Step screen. Log in your User ID and Password again in the Account Activation Screen, and click on the **Login** button. You will receive your final e-mail message that your self-registration is complete. Now you have completed the WAMS registration process and you can exit the WAMS web site.

## 8. Use your WAMS ID to register for SWIMS access

Now that you have your WAMS ID, it's time to visit the SWIMS page to complete your monitoring registration for SWIMS access.

Go to: <https://dnrx.wisconsin.gov/swims>

Enter your WAMS User ID and Password and click the **"Sign In"** button.

This form will appear:

Enter your User ID and Password to sign in

User ID

Password

**DNR Staff:**

Log in with your Oracle ID and Password

---

**Volunteers and Others:**

Our log-in screen has changed. Log in with your Wisconsin User ID and Password above.

Forgot your password?

Get a Wisconsin User ID and Password

### Surface Water Integrated Monitoring System (SWIMS)

You have successfully logged into SWIMS using your DNR/Wisconsin.gov (WAMS) ID (JEN917)

SWIMS is personalized based on what and where you monitor. To streamline your experience for you, we need to ask a few more questions. After answering these questions, you will soon receive an email from us, letting you know you are all set up. Thank you for your dedication to protecting and improving Wisconsin's waters!

First Name:

Last Name:

Email Address:

What activities are you involved in?

**Rivers & Streams**

Citizen Based Stream Monitoring / Water Action Volunteers

DNR River Grant

Project Riverine Early Detectors (RED)

**Lakes**

Lake Water Quality Monitoring (Secchi, etc.)

**Other**

Just looking to view/download data

Other

If you know the Station ID(s) of the sites you will monitor, please provide those here:

Other Comments: If you received this notice when accessing SWIMS after successfully logging onto the system, please describe what you were trying to do.

Complete the boxes at the top with your name and email address. Next, check any and all boxes that apply to the type of monitoring projects you are currently involved in (e.g., Citizen Lake Monitoring, Project Riverine Early Detectors, etc.).

In the first box at the bottom of the form please enter the following:

- The **name(s) of your monitoring site(s)**
- Each site's **Station ID**, if known

In the **Other Comments** box at the bottom, enter your responses to these two questions:

1. Are you a WAV volunteer monitor or a WAV local coordinator?
2. Are you doing WAV Level 1, 2 AND/OR 3?

### Troubleshooting

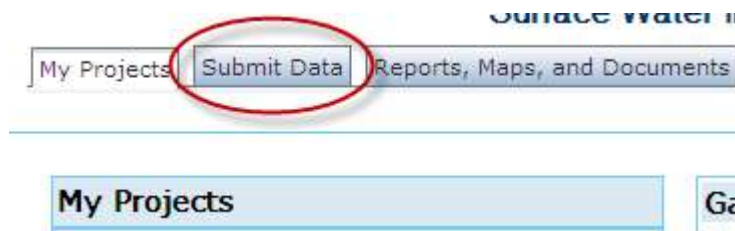
If the form does not pop up automatically on your first log in, even though your log in appears successful, there may be a problem. Please email Jeanne Scherer at [Jeanne.scherer@wisconsin.gov](mailto:Jeanne.scherer@wisconsin.gov) for assistance.

## B. How to Enter Your Data into SWIMS

1. Login to SWIMS
  - a. Using Internet Explorer navigate to: <https://dnrx.wisconsin.gov/swims>
  - b. Type your WAMS User ID and Password and click **Sign In**

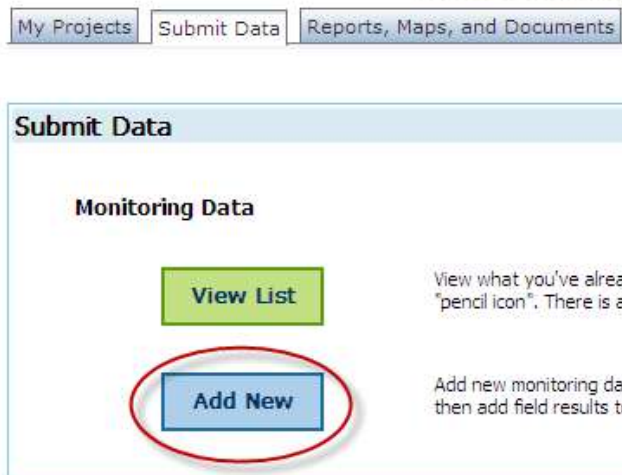


2. Click the **Submit Data** tab.



3. Click the **Add New** link.

Note: Use the **View List** link if you wish to view or edit previously entered data.





**4. Select the project and then the station.**

- a. The project you should select from the **Project** dropdown list will be called “Urban Road Salt Study” followed by the name of your urban area.
- b. Select the station for which you wish to enter data from the **Station** dropdown list. If your monitoring location is not listed in the drop down Station list, please do not enter your data at this time and instead contact your project leader or the WAV data manager to get your SWIMS account assigned to the correct station(s).

Home -> Enter Monitoring Data  
Fields denoted with an asterisk (\*) are REQUIRED.

Project \* Urban Road Salt Study - Madison Sites

Data Collectors \* CHRISTINA ANDERSON

Station \* 10017429, Lake Mendota -- Tenney Park Show Map

Start Date \* Select Date

Time

Form \* WT-2011-2 Urban Road Salt

Optional Fields

I want to enter latitude and longitude on the next page (optional)

End Date Select Date

Time

**5. Select or create your group of Data Collectors.**

My Projects Find Data Submit Data Stations Forms Reports, Ma

Home -> Enter Monitoring Data  
Fields denoted with an asterisk (\*) are REQUIRED.

Project \* Urban Road Salt Study - Madison Sites

Data Collectors \* CHRISTINA ANDERSON

Station \* 10017429, Lake Mendota -- Tenney Park Show Map

Start Date \* Select Date

Time

Form \* WT-2011-2 Urban Road Salt

If the correct list of data collectors is not in the list, contact your project leader or the WAV data manager to get the correct collectors added to the dropdown menu.

**6. Click the **Select Date** button to enter the **Start Date (mm/dd/yyyy)**.**

**7. Enter the **Time** that you started your data collection work.**

SWIMS requires the start time information for all monitoring data. Be sure to enter **AM** or **PM**, also. Note: 12 NOON is 12:00 PM.

Home -> Enter Monitoring Data  
Fields denoted with an asterisk (\*) are REQUIRED.

Project \* Urban Road Salt Study - Madison Sites

Data Collectors \* CHRISTINA ANDERSON

Station \* 10017429, Lake Mendota -- Tenney Park

Start Date \*  Select Date

Time  :  :

Form \* **WT-2011-2 Urban Road Salt**

Optional Fields

I want to enter latitude and longitude on the next page (optional)

End Date  Select Date

Time  :  :

Comments

**8. Select the Urban Road Salt form.**

The Urban Road Salt form should already be selected. If it is not, select it from the drop down list. If it is not available, you will need to contact the WAV Data Manager to correct this before you will be able to enter your monitoring data.

Home -> Enter Monitoring Data  
Fields denoted with an asterisk (\*) are REQUIRED.

Project \* Urban Road Salt Study - Madison Sites

Data Collectors \* CHRISTINA ANDERSON

Station \* 10017429, Lake Mendota -- Tenney Park

Start Date \*  Select Date

Time  :  :

Form \* **WT-2011-2 Urban Road Salt**

Optional Fields

I want to enter latitude and longitude on the next page (optional)

End Date  Select Date

Time  :  :

Comments

**[SKIP] Do not enter the Latitude and Longitude.**

Form \* Citizen-Based Stream Monitoring

Optional Fields

I want to enter latitude and longitude on the next page (optional)

The location of your monitoring site is already established in SWIMS.

If you do check this box , you will get the following form which allows you to enter additional comments about the location of this monitoring event.



<b>You Are Entering Data For:</b>		<b>Project:</b> Token Creek - Portage Rd
		<b>Start Date Time:</b> 05/22/2008 05:10 PM
		<b>Station:</b> 133427 - TOKEN CREEK MILLPOND
Form:	VCL_RIVER	
Additional Comments about Sample	<input type="text"/>	
Sample Location Desc	<input type="text"/>	
Latitude	<input type="text"/>	
Longitude	<input type="text"/>	
Lat/Long Method	Global positioning system (GPS). Receiver grade and/or differential correction procedures unknown.	
<input type="button" value="Save and Return to List"/>	<input type="button" value="Next"/>	

**9. Enter the **End Date and Time.****

This is the date and time that you completed your monitoring work.

End Date	<input type="text"/>			<input type="button" value="Select Date"/>
Time	<input type="text"/>	<input type="text"/>	<input type="text"/>	

**10. Add any **Comments** you recorded from your field data sheet.**

**11. Click **Next** to go to the field work data entry screen.**

**12. Enter your monitoring data in the **Result** column.**

Enter the values recorded for each measured parameter from your data sheet. Conductivity results should be reported in  $\mu\text{S/cm}$ . **Important: If your meter auto-switched to  $\text{mS/cm}$ , convert to  $\mu\text{S/cm}$  before entering in SWIMS.**

<b>You Are Entering Data For:</b>		<b>Project:</b> Urban Road Salt Study - Madison Sites
		<b>Start Date Time:</b> 02/10/2011 01:00 AM
		<b>Station:</b> 10032544 - Yahara River downstream Tenney locks
<b>WT-2011-2 Urban Road Salt</b>		
If ice covered, complete form through the second question.		
Parameter	Result	Units
Event Type	<input type="text"/>	EVENT_TYPE
Ice Covered Water	<input type="text"/>	
Conductivity Meter Calibration	<input type="text"/>	
Water Temperature	<input type="text"/>	DEGREES C
Air Temperature	<input type="text"/>	DEGREES C
Conductivity	<input type="text"/>	$\mu\text{S/cm}$
Was a Chloride Grab Sample Taken?	<input type="text"/>	
Point or Outfall Number	<input type="text"/>	
Weather	<input type="text"/>	
Water Level	<input type="text"/>	
<input type="button" value="Next Date"/>	<input type="button" value="Next Station"/>	<input type="button" value="Save and Return to List"/>
After entering your data, please retain your records and send them to Christina Anderson, WDNR WT/3 at the end of the season		

$1\text{mS/cm} = 1000\mu\text{S/cm}$ . If your meter displayed a value of  $2.4\text{mS/cm}$ , move the decimal to the right 3 spaces and record  $2400\mu\text{S/cm}$  on the SWIMS form.

If your site is ice covered and you cannot sample, fill out form through “Ice Covered Water”.

### 13. Save your monitoring data.

You have three options to save your data, depending if you have results from only one site and date to report or if you have multiple sites and/or dates from which to report data.

**a. Click [Save and Return to List](#) to enter data for other sites.**

If you choose this option, you will see a list of all data you have entered for your sites.


Parameter	Result	Units
Event Type	<input type="text"/>	EVENT_TYPE
Ice Covered Water	<input type="text"/>	
Conductivity Meter Calibration	<input type="text"/>	
Water Temperature	<input type="text"/>	DEGREES C
Air Temperature	<input type="text"/>	DEGREES C
Conductivity	<input type="text"/>	µS/cm
Was a Chloride Grab Sample Taken?	<input type="text"/>	
Point or Outfall Number	<input type="text"/>	
Weather	<input type="text"/>	
Water Level	<input type="text"/>	



**b. Click [Next Date](#) to enter other data for same site.**

If you have data for several dates at the same site, choose this option.


**c. Choose [Next Station](#) to enter data for a different site on the same date.**

#### A. How to Edit Your Monitoring Data

1. Login to SWIMS at: <https://dnrx.wisconsin.gov/swims>
2. Click the **Submit Data** tab.
3. Click **View List**.
4. Click the pencil  for the date you want to edit.
5. You can edit comments, etc. on the first page, then click **Next**.
6. You can edit results on this screen.
7. Click **Save and Return to List** to save your changes.

View	Edit	Fieldwork Start	Project
		01/21/2011 01:15 PM	Garfoot Creek at Observatory Rd (near Garfoot and Observatory)

#### B. How to View Monitoring Data

1. Login to SWIMS at: <https://dnrx.wisconsin.gov/swims>
2. Click the **Submit Data** tab.
3. Click **View List**.
4. Click the magnifying glass  to View previously entered data.