

H2O Info

A Web-Based Citizen's Tool for Turning Real-Time
Water Quality Monitoring Data into Information

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Milwaukee Metropolitan Sewerage District

Collaborative Partnership

United States Geological Survey



Milwaukee Metropolitan Sewerage District



H2O Info

1. Project Objectives
2. What is H2O Info?
3. How does H2O Info Work?
4. Why H2O Info?
5. Project Background
6. Real Time Data Transmission
7. Demonstration of H2O Info website tool
8. H2O Info – What's Next

Project 's Multi-Purpose Objectives

- Provide documentation of water quality improvement from implementation of the MMSD's 2020 Facilities Plan and SEWRPC 's RWQMP recommendations.
- Assist in watershed restoration planning.
- Assist communities served by MMSD with their ongoing stormwater permitting requirements.

What is H2O Info?

H2O Info is a geospatial-based public web site for interactive reporting and analysis of real-time factors that affect water quality.

How does H2O Info Work?

An interactive map-based user interface, built upon the Google Map Application Programming Interface (API), provides quick and intuitive navigation to the monitoring network.

The interactive graphing display illustrates both water quality and precipitation data over a user-defined period of time.

Why H2O Info?

Provide water quality and precipitation information for citizens to see, in an understandable real-time format the connection between stormwater runoff and water quality due to both urban & rural land uses.

Project Background

- Use in-stream sensor measurements to estimate real time concentrations.

In-stream measurements:

- Dissolved Oxygen
- Water Temperature
- Specific Conductance
- Turbidity
- Flow (Discharge)
- Stage

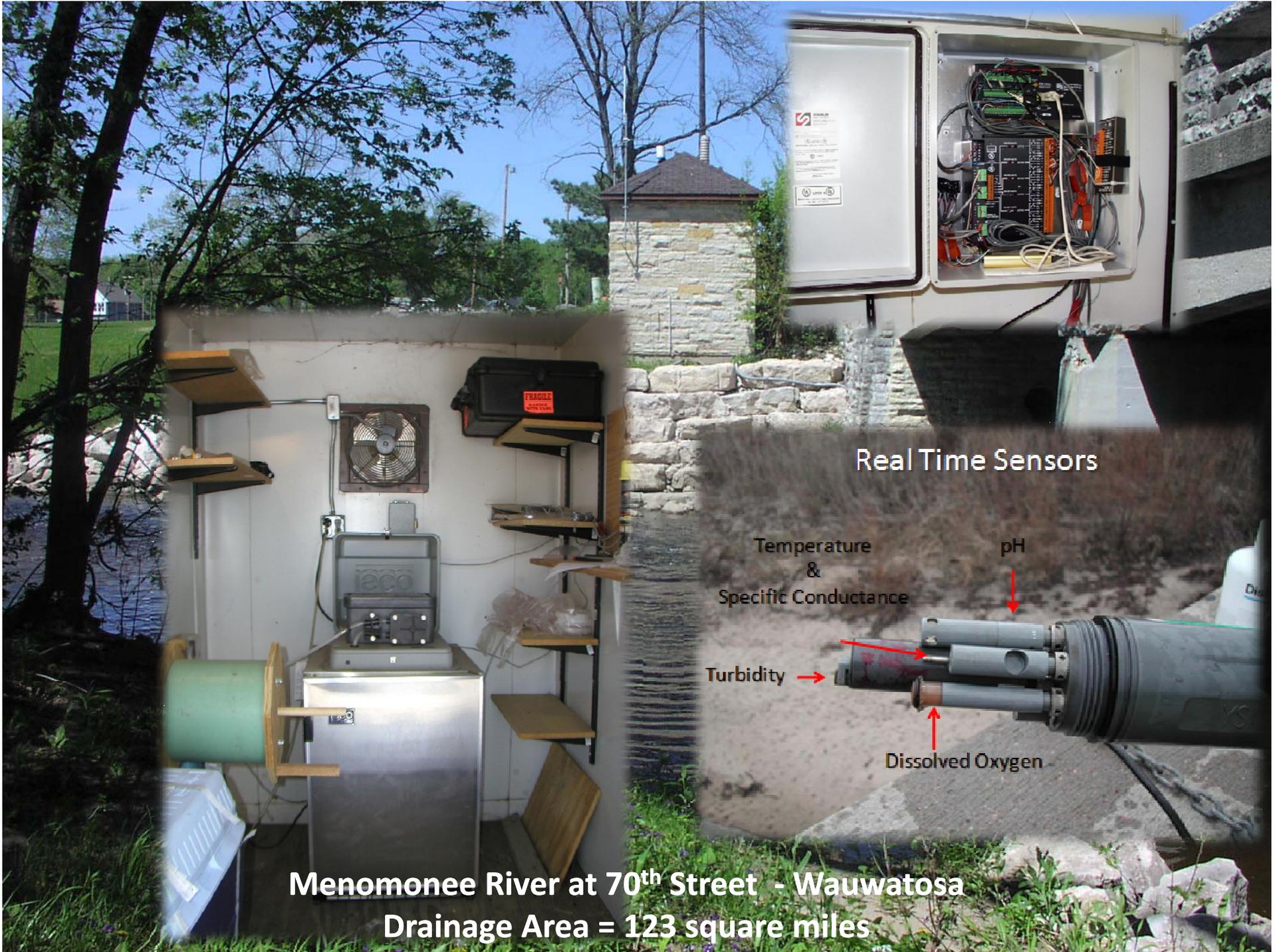


Project Background

- Link laboratory-analyzed samples with in-stream continuous-sensor measurements.
- Develop statistical relations to estimate concentrations under different seasonal, temporal, and flow conditions.
 - Chloride
 - Total Phosphorus
 - Suspended Solids
 - Fecal Coliform
 - *E. coli*

Real Time Data Collection

- Ten Real Time WQ Monitoring Stations
 - Six sites in the Menomonee River Watershed
 - Menomonee River at 16th Street
 - Menomonee River at 70th Street
 - Menomonee River at Menomonee Falls
 - Honey Creek at 74th Street
 - Underwood Creek at Mayfair Road
 - Little Menomonee River at Donges Bay Road



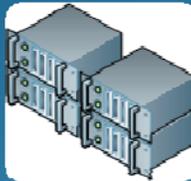
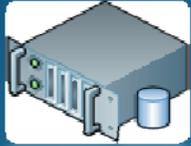
Real Time Sensors



**Menomonee River at 70th Street - Wauwatosa
Drainage Area = 123 square miles**

Real-Time Data Transmission

MMSD SCADA System



MMSD Hach-WIMS



GIS Data Warehouse



MMSD Web Server



National Water Information System (NWIS)



USGS Server



USGS National Real-Time Water Quality (NRTWQ)
<http://waterwatch.usgs.gov/wqwatch/>

USGS WEB Page
<http://wi.water.usgs.gov>

USGS 04087120 MENOMONEE RIVER AT WAUWATOSA, WISCONSIN

PROVISIONAL DATA SUBJECT TO REVISION



LOCATION --Lat 43°02'44", Long 87°59'59", in NE 1/4 NW 1/4 sec 27, T.7 N., R.21 E., Milwaukee County, Hydrologic Unit 04040003, on left bank near upstream side of 70th Street bridge in Wauwatosa, 800 ft downstream from Hurley Creek, and at mile 6.2.
DRAINAGE AREA --123 square miles.
PERIOD OF RECORD --October 1961 to present.
GAGE --Water-stage recorder and crest-stage gage. Datum of gage is 628.86 ft above sea level. Prior to Nov. 1, 1974, gage recording gage at present site and datum then in use. Prior to June 21, 1967, at 0320, datum was 2.00 ft higher.
REMARKS --Gage-height telemeter at station.
OPERATED IN COOPERATION WITH:



Milwaukee Metropolitan Sewerage District

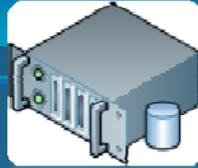
Southeastern Wisconsin Regional Planning Commission



SWRBC



National Weather Service Flood Forecast Page



Database Server

Windows Scheduler :
Executes Batch File every day



Batch File to get USGS data from NWIS:

1. Runs Python script
2. Runs SQL Loader
3. Executes SQL Procedure



DWGIS Database
1. Fifteen process Hach WIMS data
2. Fifteen minute process creates XML files



MMSD web server



H2OInfo Adobe Flex application uses XML files to display Water Quality data



XML files reside in shared folder mapped by network drive on MMSD Web Server



Milwaukee Metropolitan Sewerage District

Preserving the Environment & Improving Water Quality

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- » Rain Barrels
- » Downspout Disconnect
- » Household Hazardous Waste
- » Rain Gardens



Top News Stories

7/30/2009

Medicine Collections Now at Select Police Departments All Year

NEVER flush or pour unused prescription or over-the-counter medicine down the drain. Get rid of it properly at a medicine collection.

[Read More »](#)

7/15/2009

Kevin Shafer to Lead National Association and MMSD

Establishing a trust fund for U.S. water infrastructure is a high priority as MMSD Executive Director Kevin Shafer becomes president of the National Association of Clean Water Agencies (NACWA).

[Read More »](#)

7/14/2009

Food Scraps = Fuel

Did you know that the average family of four produces 2,000 pounds of food scraps a year? You can put those scraps to work for you and your wallet if you're an MMSD customer.

[Read More »](#)

6/24/2009

Features

 **Featured Multimedia**
see new interactive material.



[» Multimedia Menu](#)

 **MMSD Storm Update**
find weather updates here.

 **H₂O Info**
measuring the health of our rivers

 **Milorganite**
for better results. naturally

H₂O Info Button



Minimize ◀

Welcome to H₂O Info!

H₂O Info can show you information about factors that can affect the health and water quality of the rivers, streams and creeks in Southeastern Wisconsin. Much of the information is available in real-time; which means you can see the information shortly after it has been collected.

Disclaimer

Information contained herein is provided for informational purposes only. The Milwaukee Metropolitan Sewerage District (MMSD) provides data, maps, and metadata with no claim as to the completeness, usefulness, or accuracy of its content. The user hereby acknowledges that the data contained on this site are subject to constant change and that its accuracy cannot be guaranteed.

Accept

Decline

**Disclaimer must be
accepted to use information.**

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What would you like to learn about?

Water Quality

Precipitation

What would you like to learn about?

Options: Precipitation
Water Quality

H₂O Info provides a real-time glimpse into the Milwaukee region's water quality stream-gauging network. Timely water-quality information is necessary to assess the effects of land use and stormwater runoff on our streams and rivers, and in effect, our drinking water and public health.

H₂O Info publishes immediate and continuous water-quality information using innovative real-time remote sensor technology. Data is collected and transmitted by the Milwaukee Metropolitan Sewerage District (MMSD), in cooperation with the United States Geological Survey (USGS) to this web site. The data collected provides a way to measure the actual health of streams and rivers.



Welcome Page

What is H₂O Info?

Active Slide Show of Water Resources in the Region

Minimize ◀

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Welcome Page - Top Bar

Data Source

How Can You Help

Glossary of Terms

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Data Sources

Real-Time WQ Monitoring Stations

Data Sources

Real-Time Continuous Water Quality Monitoring Stations

The Milwaukee Metropolitan Sewerage District (MMSD) with the United States Geological Survey (USGS) have established 10 real-time continuous water quality monitoring stations within the Greater Milwaukee watersheds. The Greater Milwaukee watersheds include the Kinnickinnic River, Menomonee River, Milwaukee River, Root River and Oak Creek.

Using remote sensor technology these stations collect data on water temperature, specific conductance, dissolved oxygen, turbidity, flow and river level on a "real-time" basis, meaning you can see information in a graphic representation just minutes after it is collected. Data is collected at 5 minute intervals 24 hours per day and information is transmitted in parallel to MMSD and USGS offices on a real-time basis.

This real-time water quality information has also been linked to both MMSD and USGS websites to allow citizens the ability to observe real-time water quality data from the Greater Milwaukee watersheds 24 – hours a day, everyday, in all weather conditions.

The real-time water quality monitoring stations are maintained and calibrated weekly by MMSD and are checked periodically by USGS specialists. All the stations are checked each week by comparing the readings from the real-time sensors or sonde to readings gathered from portable meters. Five of the ten real-time monitoring stations have been in existence since the late 1970's while the remaining five have been only recently added to the monitoring network.

The real-time water quality monitoring stations are being used to provide a more complete water quality picture over time, as opposed to single grab samples collected at specific sites at specific times. The data from the monitoring stations have been used in many District studies to document water quality trends, and to calibrate and verify results of water quality models used by the District to improve their



Real-time sensor or sonde that is placed in the water.

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How You Can Help

Rainwater and melting snow, also called runoff, carry pollution into our river from many sources, including our streets and agricultural fields. Pollution from stormwater runoff contributes more bacteria to our river than sewage overflows!

Because nonpoint source pollution is affected by the actions of many people going about their daily lives, small changes in behavior can make a difference. Here are some simple actions that will help you be part of the solution to controlling polluted runoff.

- Pick up after your pet.
- Limit your use of lawn and garden fertilizers, or use natural organic fertilizers instead.
- Compost or mulch your lawn and your leaves. Don't leave clippings in the street or sweep them into storm drains.
- Use weed killers sparingly, if at all.
- Take your car to the car wash, where they treat the wash water, or wash your car on your lawn where the water flows into the grass.

• Direct your downspouts if they flow right into the sewer; let the water run on your lawn where some of it can be absorbed.

• Don't use salt on driveways and sidewalks.

• Don't do laundry until after a storm. Using less water during and after it rains helps reduce the number of sewer overflows.

- Don't feed gulls, ducks or geese. Their waste often washes into the river.



Rain gardens reduce and clean stormwater runoff.



Collecting rainwater in barrels for use in watering gardens and trees can help save money on water bills and improve your landscape.

How can you help?

Suggestions on ways to help on a personal level to help water quality.

How to become involved with the Southeastern Wisconsin Watershed Trust (SWWT).

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Water Quality

Precipitation

Glossary

Glossary of Terms:

Simple explanation of terminology used in H₂O info

Algae

Algae are simple single-celled, multi-celled or colonial, aquatic plants that contain the green pigment chlorophyll. They grow by absorbing nutrients (nitrogen and phosphorus) from the water or sediments, add oxygen to the water during the process of photosynthesis and represent the basic component of the aquatic food chain.

Algae Blooms

Algae blooms refer to obnoxious and excessive growths of algae generally caused by excessive nutrient in the water. Algae blooms often results in scum forming on the waters surface and having associated foul odors. Blooms can be potentially harmful to fish and wildlife (and people) in extreme situations.

Aquatic respiration

Refers to the use of oxygen in an aquatic system including the decomposition of organic matter and the use of oxygen by fish, aquatic invertebrates, algae and microorganisms for metabolism.

Chloride

Chlorides are a form of salt that can be harmful to freshwater life at high levels. Large concentrations of chlorides in freshwater systems come from manmade sources such as roadway salting, irrigational practices and through discharge of domestic and industrial wastes.

Chlorophyll

Green pigment in plants and algae that transforms light energy into chemical energy during the process of photosynthesis.

Combine sewer overflows

During heavy rains, there may be combined sewer overflows (CSO's). When this happens, stormwater pollutants along with some untreated sewage overflow into area waterways. It's estimated that combined sewer overflows consist of about 85% stormwater and 15% sewage.

Combine sewers

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Precipitation

What would you like to know about?

**Select option: Water Quality
or
Precipitation**

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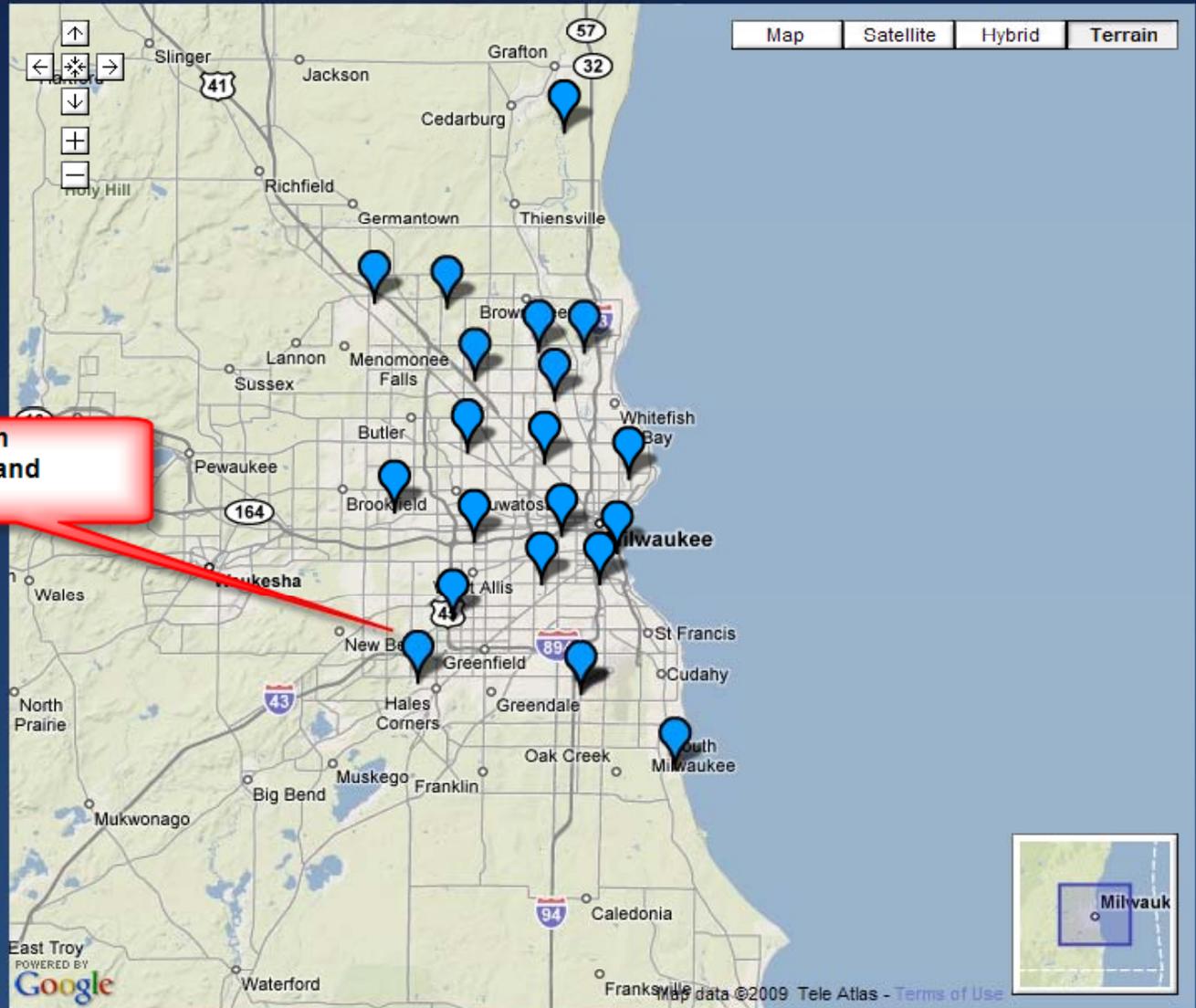
Minimize



Precipitation

To begin, select a precipitation monitoring station on the map.

MMSD Precipitation collection network and locations



Minimize

Maximize



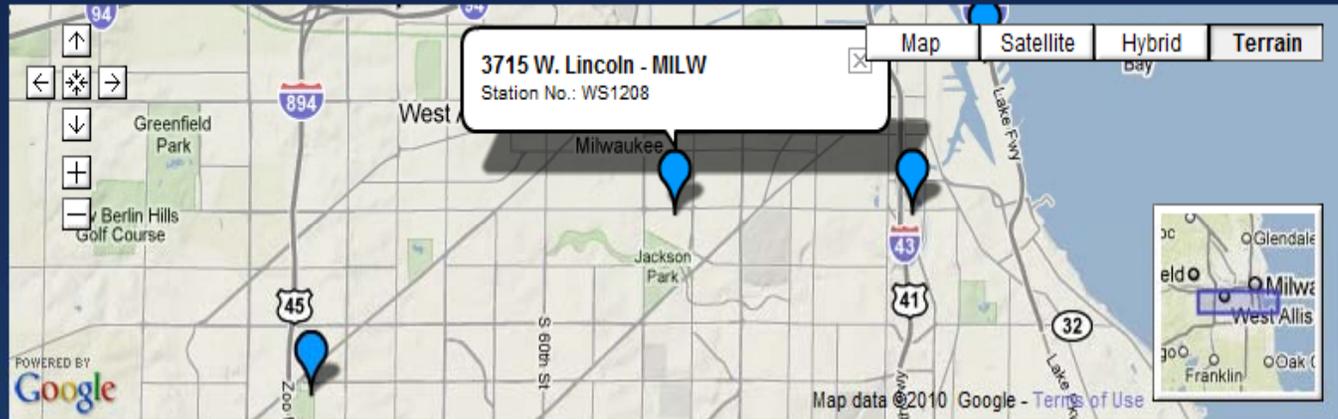
Precipitation

Current Station:

3715 W. Lincoln - MILW

Precipitation is any form of water that falls to earth, including rain, snow, sleet and hail. Precipitation is measured in inches of water. To measure snow, sleet and hail, an equivalent rainfall amount is determined when these types of precipitation melt.

[Learn More](#)



Legend



Getting Started

Graph

Data

Station Info

Time Period:

Last 30 Days



Maximize

Minimize

Maximize



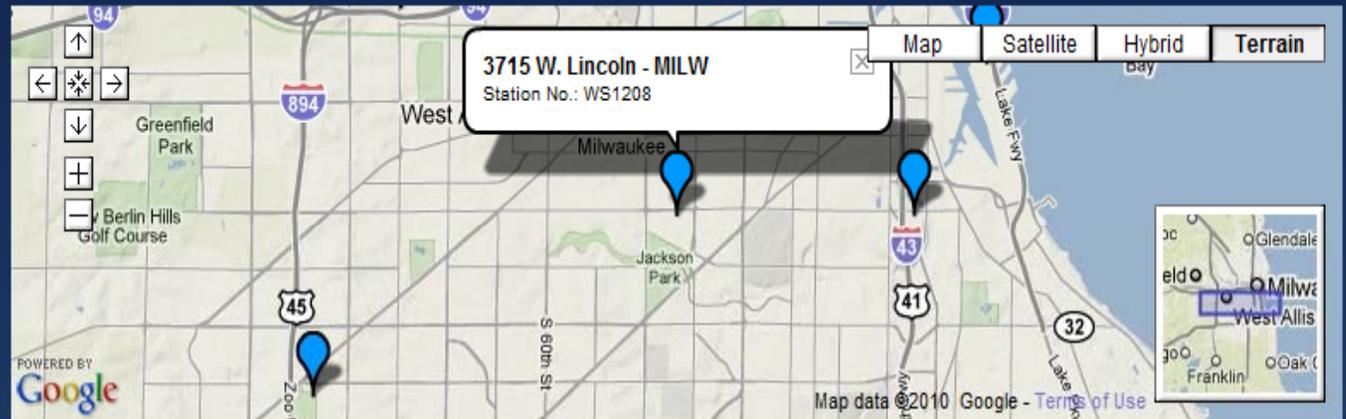
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[Learn More](#)



Legend

See rain events as bars
(Daily Precipitation
inches)

Percipitation over
last 30 days



Getting Started

Graph

Data

Station Info

Time Period:

Last 30 Days





Minimize

Maximize

Precipitation

Current Station:

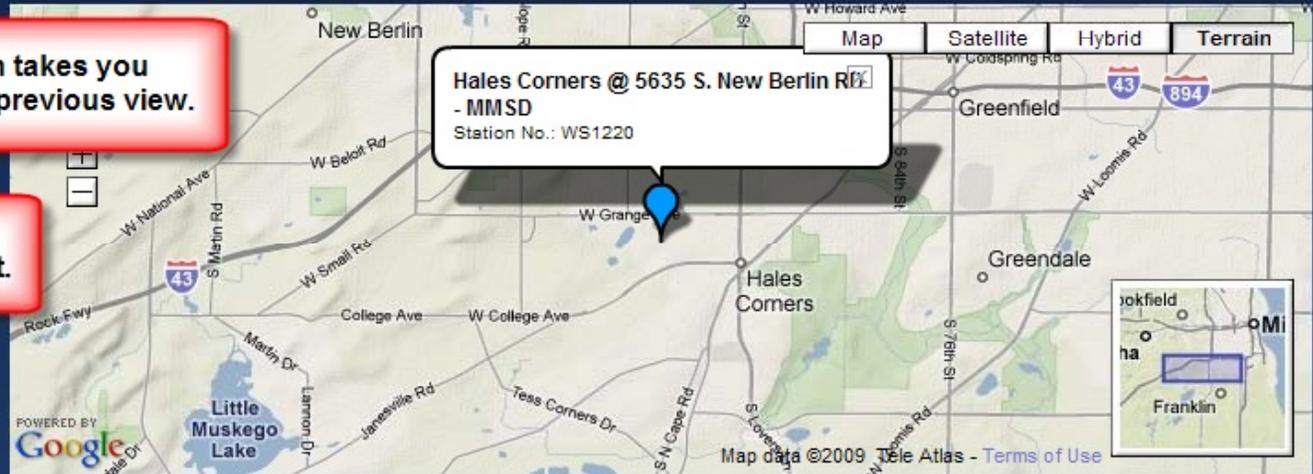
Hales Corners @ 5635 S. New Berlin Rd
- MM3D

Precipitation is any form of water that falls from the sky to earth, including rain, snow, sleet and hail. Precipitation is measured in inches of water. To measure snow, sleet and hail, an equivalent rainfall amount is determined when these types of precipitation melt.

[Learn More](#)

Back Button takes you back to the previous view.

Home Button takes you back to the start.



Legend



Maximize

Getting Started | Graph | Data | Station Info | Time Period: Last 30 Days

Minimize ◀

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What would you like to learn about?

Water Quality

Precipitation

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Minimize



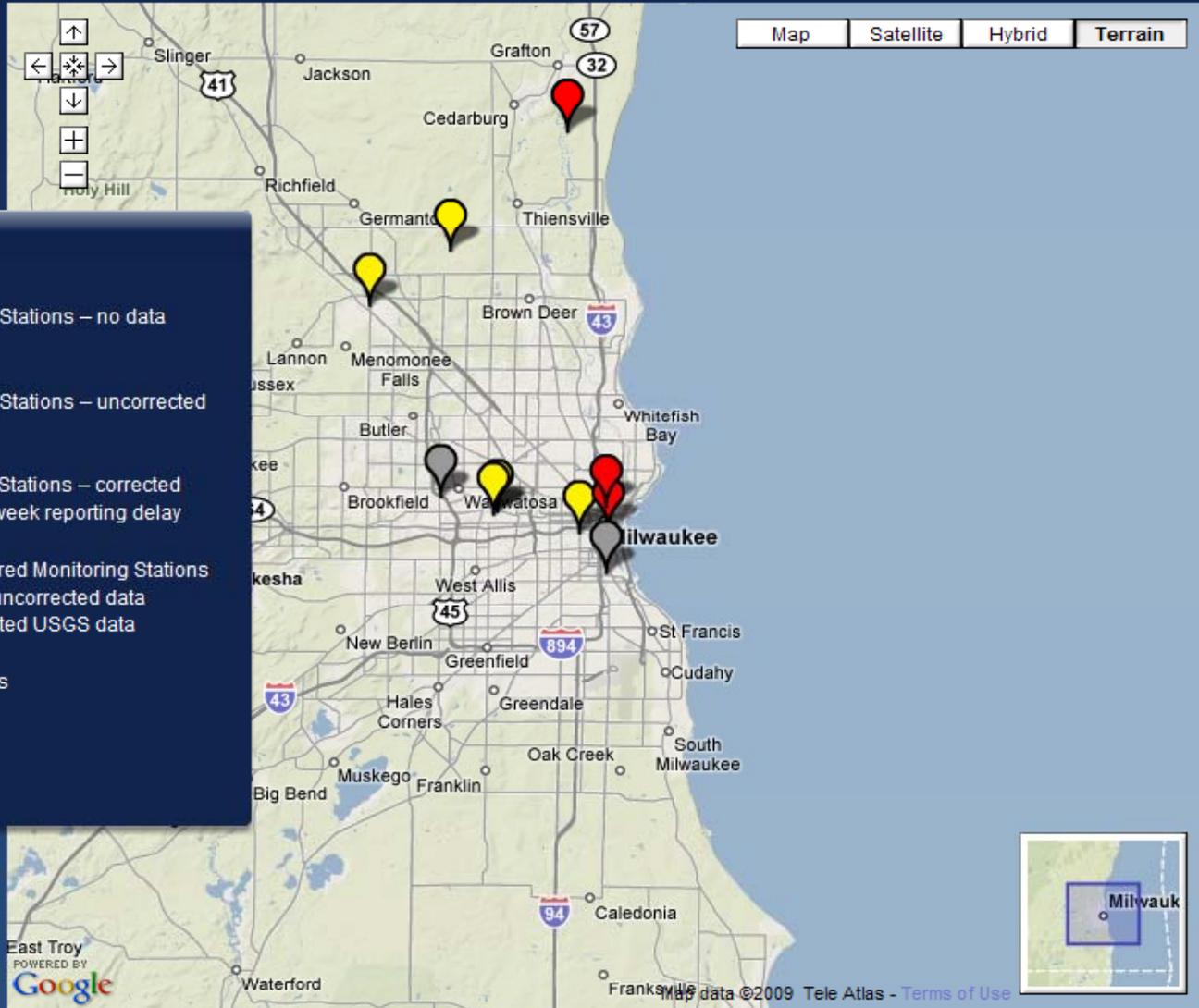
Water Quality

To begin, select a water quality monitoring station on the map.

Legend

- MMSD Monitoring Stations – no data available
- MMSD Monitoring Stations – uncorrected data
- USGS Monitoring Stations – corrected data with a three week reporting delay
- MMSD/USGS Shared Monitoring Stations – three weeks of uncorrected data followed by corrected USGS data
- MMSD Rain Gages

Select "legend" button to see what each symbol color means.

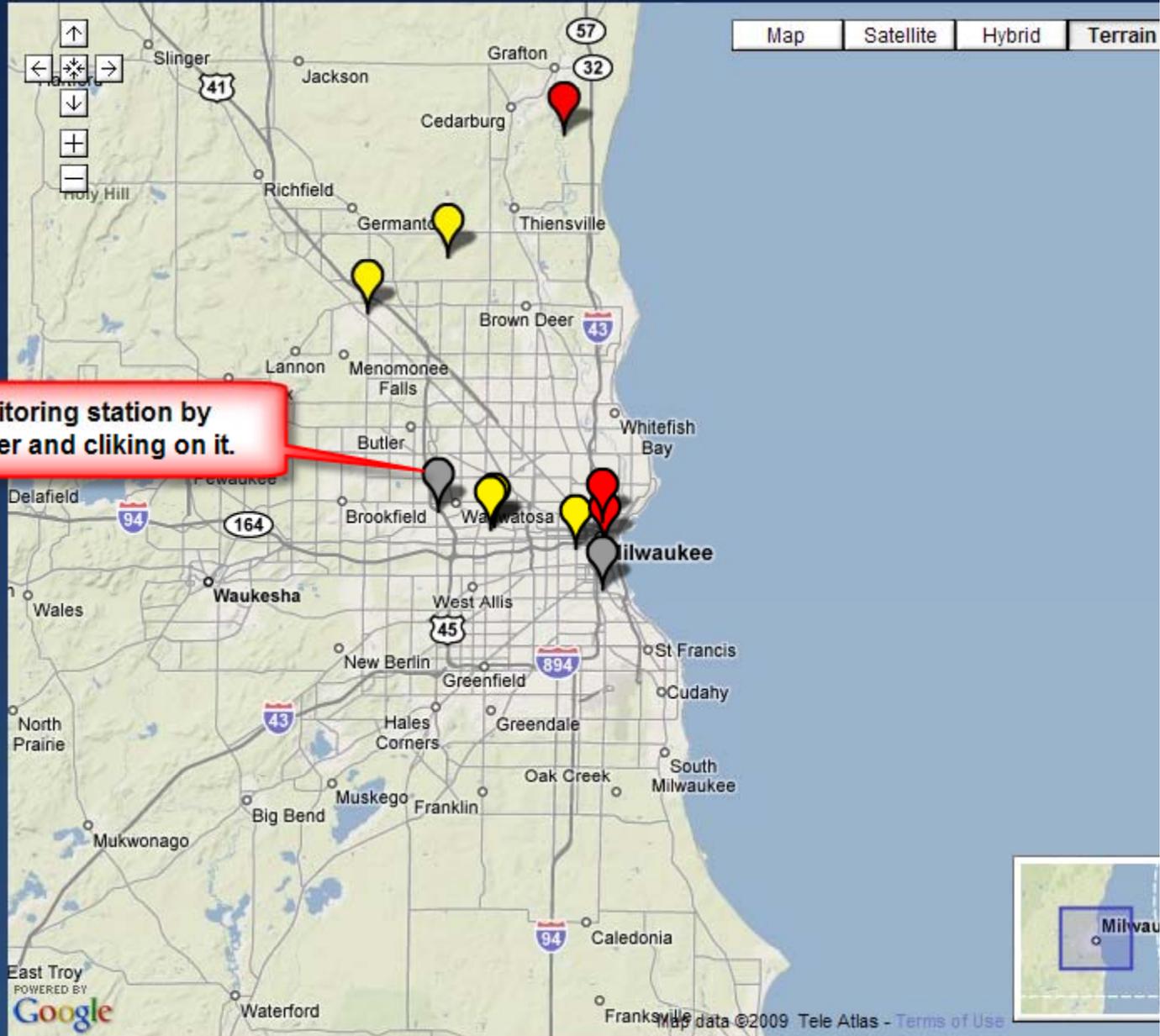


Minimize

Water Quality

To begin, select a water quality monitoring station on the map.

Select a water quality monitoring station by hovering mouse over maker and clicking on it.



Minimize



Water Quality

Current Station:

Menomonee River at 70th & State in Wauwatosa, WI

What would you like to know about?

Select a water quality variable from the list below.

Conductivity

Dissolved Oxygen

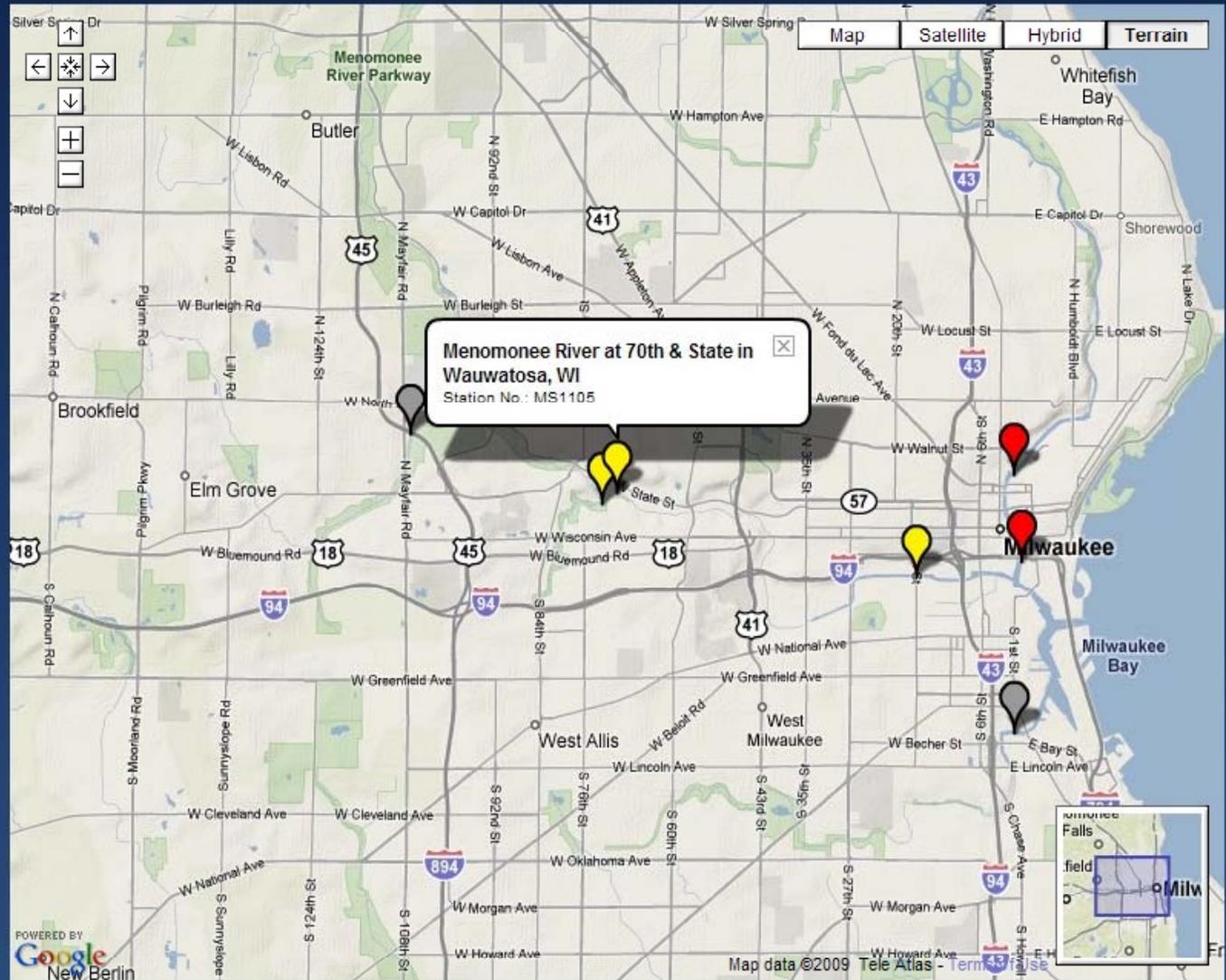
Flow

Turbidity

Stage

Water Temperature

What would you like to know about?
Select a WQ variable



Legend

Minimize

Minimize



Water Quality

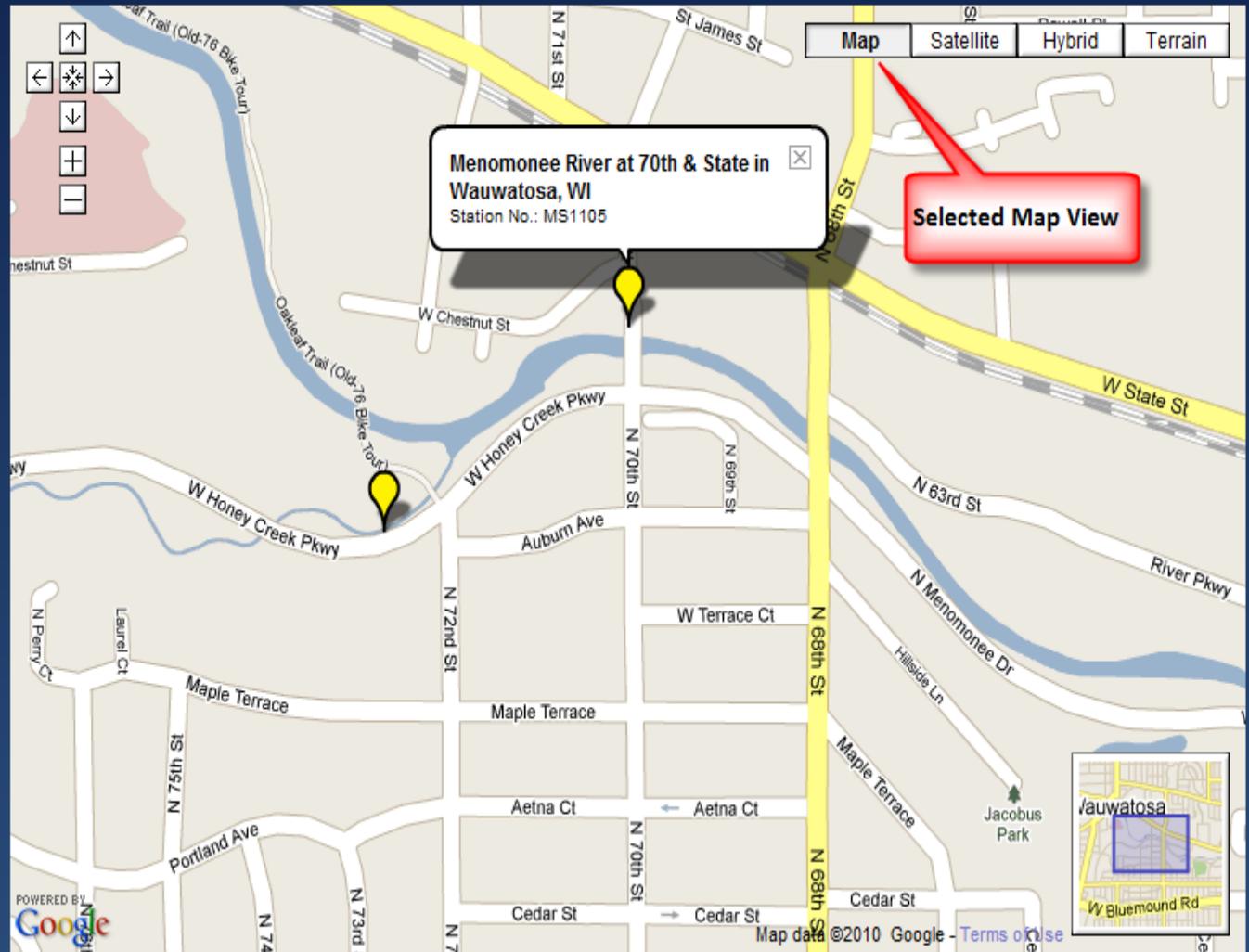
Current Station:

Menomonee River at 70th & State in Wauwatosa, WI

Water Temperature

Water temperature greatly affects fish, amphibians and other "cold-blooded" aquatic life that cannot internally-regulate their core body temperatures. If water gets too warm or too cold, the numbers and kinds of species can decrease due to stress, susceptibility to disease or reproductive failure. In general, higher water temperatures are more harmful to aquatic life.

[Learn More](#)



Legend

Minimize

Minimize



Water Quality

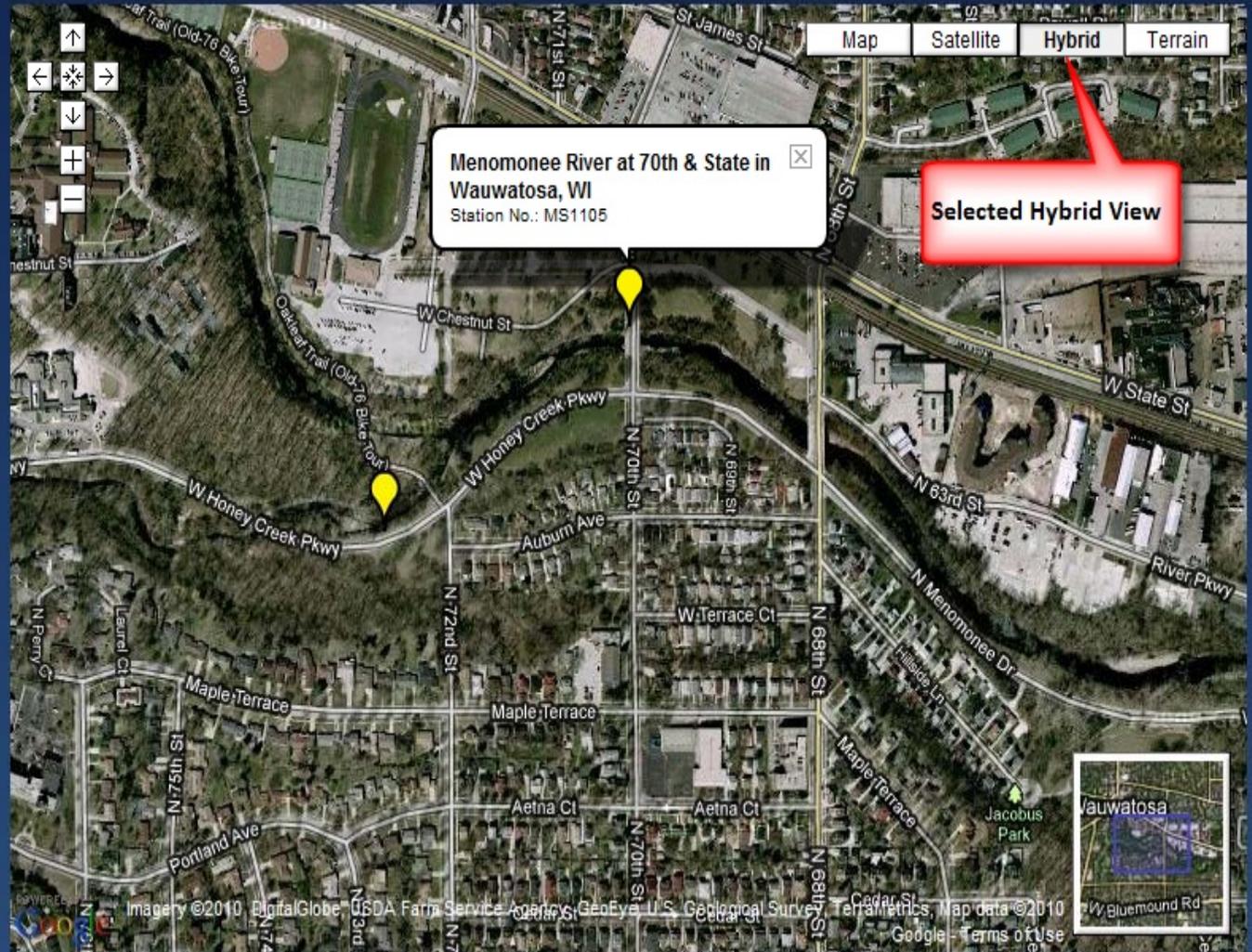
Current Station:

Menomonee River at 70th & State in Wauwatosa, WI

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[Learn More](#)



Legend

Minimize

Maximize



Water Quality

Current Station:

Menomonee River at 70th & State in
Wauwatosa, WI

What would you like to know about?

Select a water quality variable from the list
below.

Conductivity

Dissolved Oxygen

Flow

Turbidity

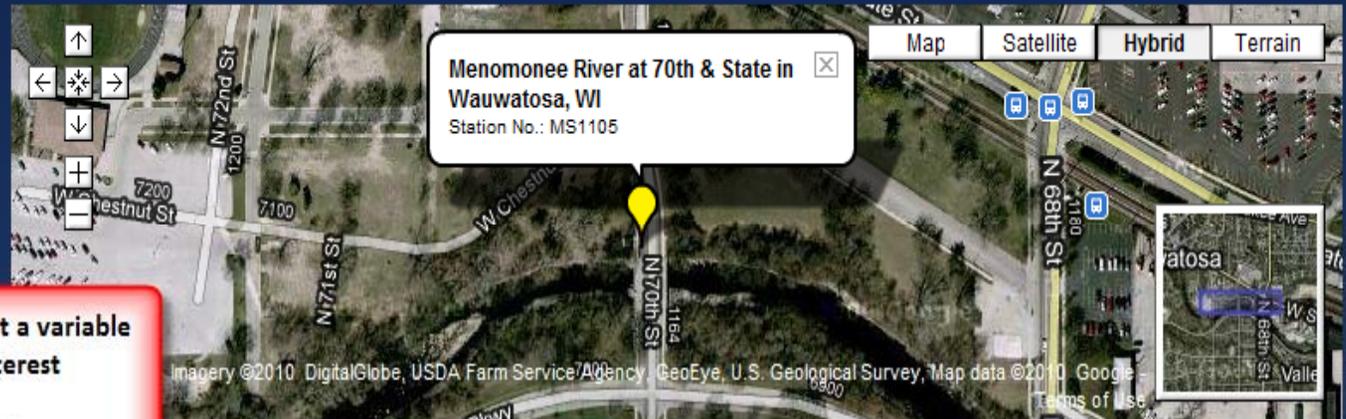
Stage

Water Temperature

Select a variable
of interest

Turbidity

Turbidity measures the murkiness or cloudiness of water. Soil particles, which contribute to high water turbidity, can enter rivers and streams as rainwater and melting snow runs off from construction sites, farm fields, city streets, or from industrial and wastewater discharges. These particles often carry pollutants such as nutrients, pesticides and heavy metals. Turbidity can also be caused by streambank erosion and the churning up of particles that were settled on the stream bottom.



Graph Data Station Info Time Period: Last 30 Days

Minimize

Maximize



Water Quality

Current Station:

Menomonee River at 70th & State in
Wauwatosa, WI

What would you like to know about?

Select a water quality variable from the list
below.

Conductivity

Dissolved Oxygen

Flow

Turbidity

Stage

Water Temperature

Getting Started

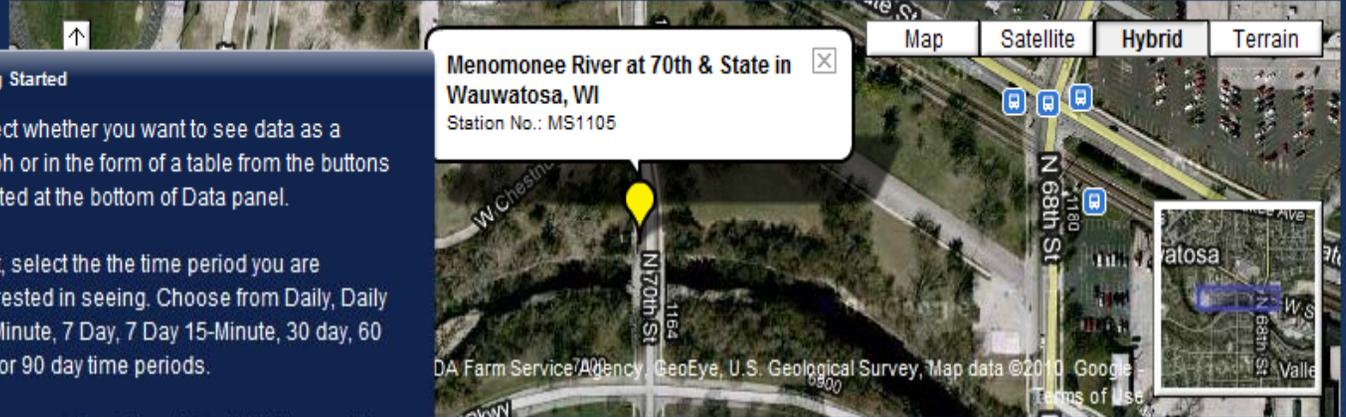
Select whether you want to see data as a
graph or in the form of a table from the buttons
located at the bottom of Data panel.

Next, select the the time period you are
interested in seeing. Choose from Daily, Daily
15-Minute, 7 Day, 7 Day 15-Minute, 30 day, 60
day or 90 day time periods.

Mouse over the data points within the graph to
view more information.

While in the Daily, or Daily 15-minute time
period, click a data point within the graph to
view the last 24-hours of data. The chart
background will be yellow while in 24-hour
mode.

Close



Getting Started

Graph

Data

Station Info

Time Period:

Last 30 Days

Minimize



Water Quality

Current Station:

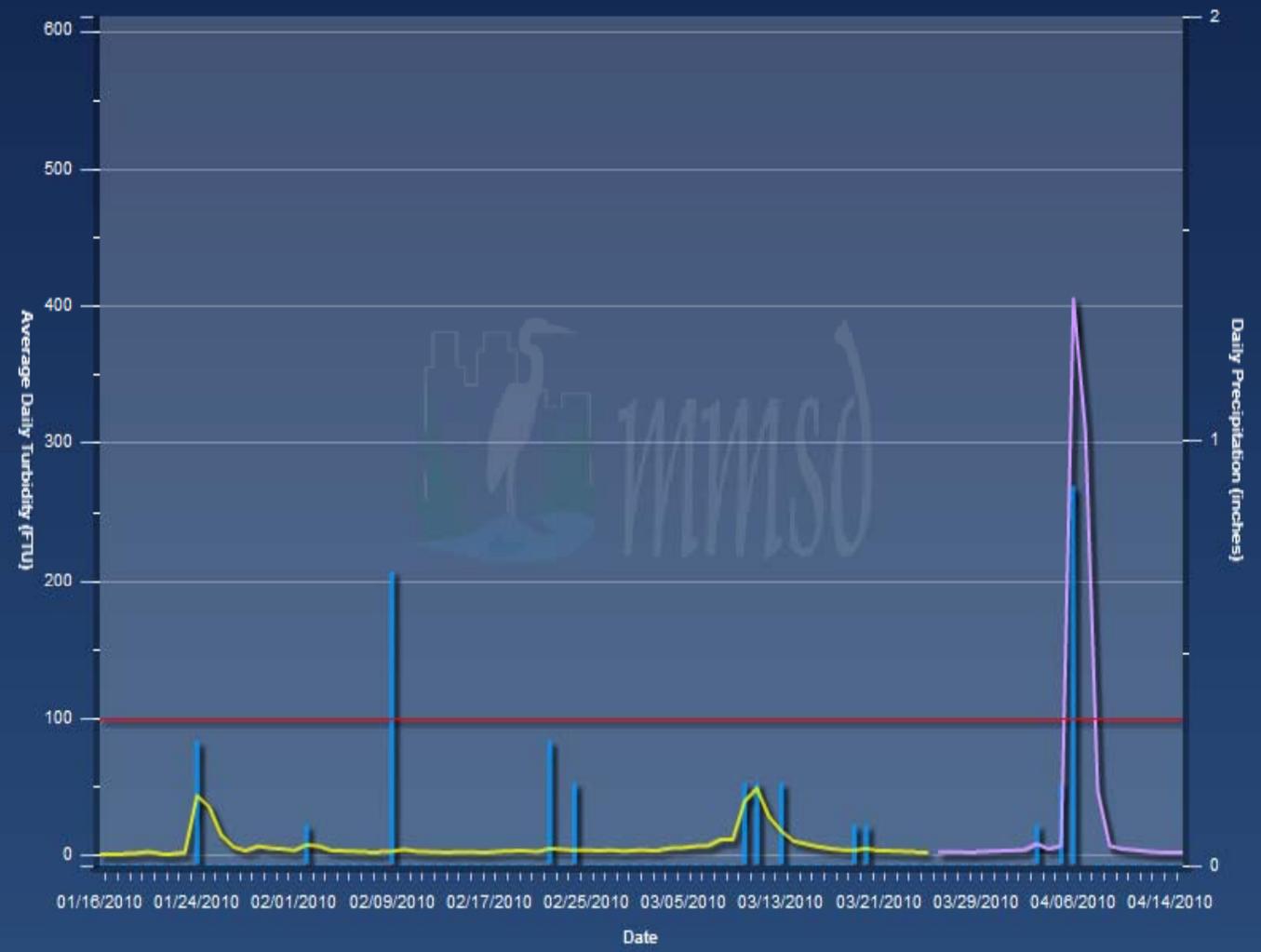
Menomonee River at 70th & State in Wauwatosa, WI

What would you like to know about?

Select a water quality variable from the list below.

- Conductivity
- Dissolved Oxygen
- Flow
- Turbidity
- Stage
- Water Temperature

Minimize



[Getting Started](#) [Graph](#) [Data](#) [Station Info](#)

Time Period: **Last 90 Days**



Minimize



Water Quality

Current Station:

Menomonee River at 70th & State in
Wauwatosa, WI

Turbidity

Turbidity measures the murkiness or cloudiness of water. Soil particles, which contribute to high water turbidity, can enter rivers and streams as rainwater and melting snow runs off from construction sites, farm fields, city streets, or from industrial and wastewater discharges. These particles often carry pollutants such as nutrients, pesticides and heavy metals. Turbidity can also be caused by streambank erosion and the churning up of particles that were settled on the stream bottom.

Learn More

Learn more button

Minimize



Getting Started

Graph

Data

Station Info

Time Period:

Last 7 Days



Minimize



Water Quality

Current Station:

Menomonee River at 70th & State in Wauwatosa, WI

Turbidity

Turbidity measures the murkiness or cloudiness of water. Soil particles, which contribute to high water turbidity, can enter rivers and streams as rainwater and melting snow runs off from construction sites, farm fields, city streets, or from industrial and wastewater discharges. These particles often carry other pollutants such as nutrients, pesticides and heavy metals. Turbidity can also be caused by streambank erosion and the churning up of particles that were settled on the stream bottom.

[Learn More](#)

Turbidity

Turbidity is an estimate of the murkiness or cloudiness of the water due to clay, silt, soils, and other materials that either wash into a stream during rain or snow melts or that are re-suspend from deposits in the stream's bed during high flows. Turbidity also includes algae and other microscopic organisms living in the water at high concentrations.

Turbidity measures the ability of particles suspended in the water to scatter sunlight. The size, shape and refractive index of a particle are important as to its light scattering ability. Turbidity is reported in FTU's which refers to the method (nephelometric) used to estimate the light scattering capability.

Turbidity measurements are often used to estimate total suspended solids concentrations and provides good correlation with measurements of water clarity. Soil particles, such as clay and silts that add to water turbidity comes from a variety of sources during rain or snow melts; construction sites, crop land, city streets, industrial and wastewater discharges. These particles often carry other pollutants with them like nutrients, pesticides and heavy metals. Highest turbidities occur during heavy rains and fast moving water is the most erosive.

Restrictions on turbidity for public drinking water supplies are based largely on aesthetic acceptability although higher turbidities may interfere with disinfection and interfere with chemical and microbiological determinations. High solids concentrations can reduce spawning habitat when settling in a stream or to lake bottom and can clog gills of fish and invertebrates or make drinking water supplies undesirable, reduce light penetration and photosynthesis, and may cause adverse effects for irrigation and industrial processes.

There is no Wisconsin water quality standard for turbidity but concentrations are evaluated against increase over background conditions.



Figure 2.13: Raindrop impact. One of many types of erosion.

How precipitation (rain drop impact)...



and land use (construction site -erosion)...



What is turbidity and how is it measured?

Examples with pictures

Minimize

Minimize



Water Quality

Current Station:

Menomonee River at 70th & State in Wauwatosa, WI

What would you like to know about?

Select a water quality variable from the list below.

Conductivity

Dissolved Oxygen

Flow

Turbidity

Stage

Water Temperature

Time/Date	Source	Precipitation (inches)	Overflow	Average Turbidity (FTU)
07/18/2009	USGS	0		2.4
07/19/2009	USGS	0		2.4
07/20/2009	USGS	0		2.3
07/21/2009	USGS	.07		2.4
07/22/2009	USGS	.02		8.4
07/23/2009	USGS	0		6.5
07/24/2009	USGS	0		3.7
07/25/2009	USGS	0		3.8
07/26/2009	USGS	0		3.3
07/27/2009	MMSD	.01		2.62
07/28/2009	MMSD	0		2.74
07/29/2009	MMSD	0		2.92
07/30/2009	MMSD	.01		3.07
07/31/2009	MMSD	0		3.28
08/01/2009	MMSD	.01		3.3
08/02/2009	MMSD	0		3.32
08/03/2009	MMSD	0		4.03
08/04/2009	MMSD	0		3.22
08/05/2009	MMSD	0		3.78
08/06/2009	MMSD	0		4.63
08/07/2009				18.04
08/08/2009				65.85
08/09/2009				24.99
08/10/2009				45.5

By selecting the "data" button information will be presented in tabular form.

Export

Getting Started

Graph

Data

Station Info

Time Period:

Last 30 Days



Minimize

Minimize



Water Quality

Current Station:

Menomonee River at 70th & State in
Wauwatosa, WI

What would you like to know about?

Select a water quality variable from the list
below.

Conductivity

Dissolved Oxygen

Flow

Turbidity

Stage

Water Temperature

Time/Date	Source	Precipitation (inches)	Overflow	Average Turbidity (FTU)
07/18/2009	USGS	0		2.4
07/19/2009	USGS	0		2.4
07/20/2009	USGS	0		2.3
07/21/2009	USGS	.07		2.4
07/22/2009	USGS	.02		8.4
07/23/2009	USGS	0		6.5
07/24/2009	USGS	0		3.7
07/25/2009	USGS	0		3.8
07/26/2009	USGS	0		3.3
07/27/2009	USGS			2.62
07/28/2009	USGS			2.74
07/29/2009	USGS			2.92
07/30/2009	USGS			3.07
07/31/2009	USGS			3.28
08/01/2009	USGS			3.3
08/02/2009	USGS	.07		3.32
08/03/2009	USGS	.02		4.03
08/04/2009	USGS	0		3.22
08/05/2009	USGS			3.78
08/06/2009	USGS			4.63
08/07/2009	USGS			18.04
08/08/2009	USGS			65.85
08/09/2009	MMSD	0		24.99
08/10/2009	MMSD	.1		45.5

Export Data

```
"Time/Date" "Source" "Precipitation (inches)" "Overflow" "Average  
Turbidity (FTU)"
```

```
"07/18/2009""USGS" "0" "" "2.4"  
"07/19/2009""USGS" "0" "" "2.4"  
"07/20/2009""USGS" "0" "" "2.3"  
"07/21/2009""USGS" ".07" "" "2.4"  
"07/22/2009""USGS" ".02" "" "8.4"  
"07/23/2009""USGS" "0" "" "6.5"
```

To use the data into another software application, press the **Copy to Clipboard** button and then paste the data into Excel or application of choice.

Close

Copy to Clipboard

You can select the "export" button and have data exported to an excel or application of choice.

Export

Getting Started

Graph

Data

Station Info

Time Period:

Last 30 Days

Maximize ▾



[Legend](#)

Maximize ▲

Menomonee River at 70th Street and State Street

Station No: MS1105

This monitoring station is located along the left bank of the Menomonee River in the City of Wauwatosa along 70th Street. Data is collected from one depth.



You can learn more about the monitoring station by selecting "Station Info" button.

[Getting Started](#) [Graph](#) [Data](#) [Station Info](#) Time Period: [Last 30 Days](#)   

Minimize



Water Quality

Current Station:

Menomonee River at 70th & State in Wauwatosa, WI

Turbidity

Turbidity measures the murkiness or cloudiness of water. Soil particles, which contribute to high water turbidity, can enter rivers and streams as rainwater and melting snow runs off from construction sites, farm fields, city streets, or from industrial and wastewater discharges. These particles often carry pollutants such as nutrients, pesticides and heavy metals. Turbidity can also be caused by streambank erosion and the churning up of particles that were settled on the stream bottom.

[Learn More](#)

Minimize



Time Period Information

You are looking at the weekly turbidity levels. Hourly turbidity concentrations are averaged to provide a 24-hour reading, and daily turbidity measurements are graphed over seven days to show differences during the course of a single week. Daily precipitation (24-hour totals) is displayed in the graph's background (as a horizontal, gray bar) to show the effects of precipitation and runoff on turbidity concentrations.

Data Gaps:
Data not collected or daily average not computed for that day.

About the Data Trend Line:
Blue dotted trend line represents MMSD uncorrected data; yellow dotted trend line represents corrected USGS data.

[Close](#)

Select time period button tells you more about the time period of data collection

Minimize

Minimize



Water Quality

Current Station:

Menomonee River at 70th & State in
Wauwatosa, WI

What would you like to know about?

Select a water quality variable from the list below.

Conductivity

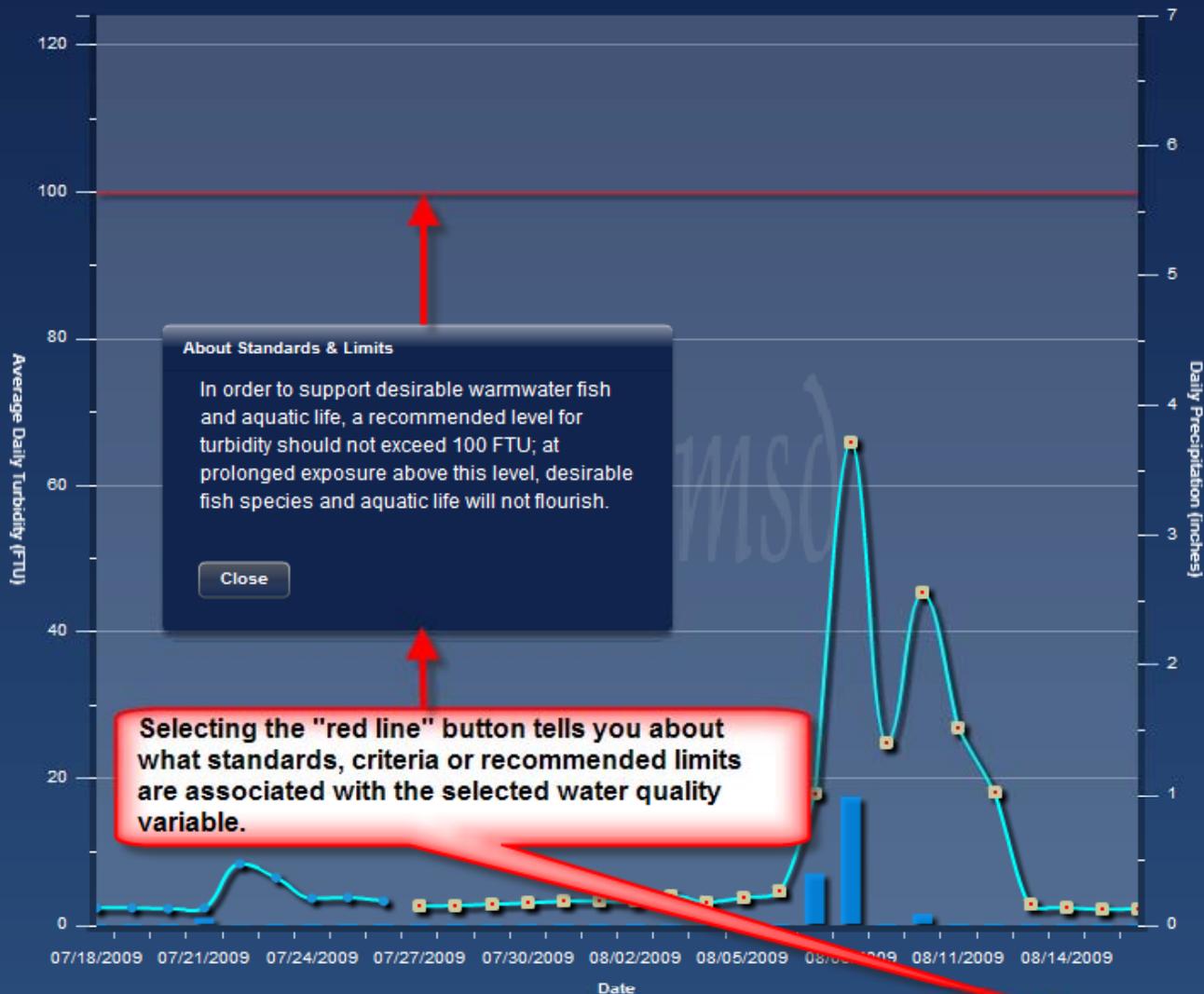
Dissolved Oxygen

Flow

Turbidity

Stage

Water Temperature



Getting Started

Graph

Data

Station Info

Time Period:

Last 30 Days



When a MMSD related overflow occurs that influences the wq data collection at a monitoring station, it will show as an opaque red bar covering the time period of the overflow.



You can select the information on overflow button which tells about overflow.

Minimize

Maximize



Water Quality

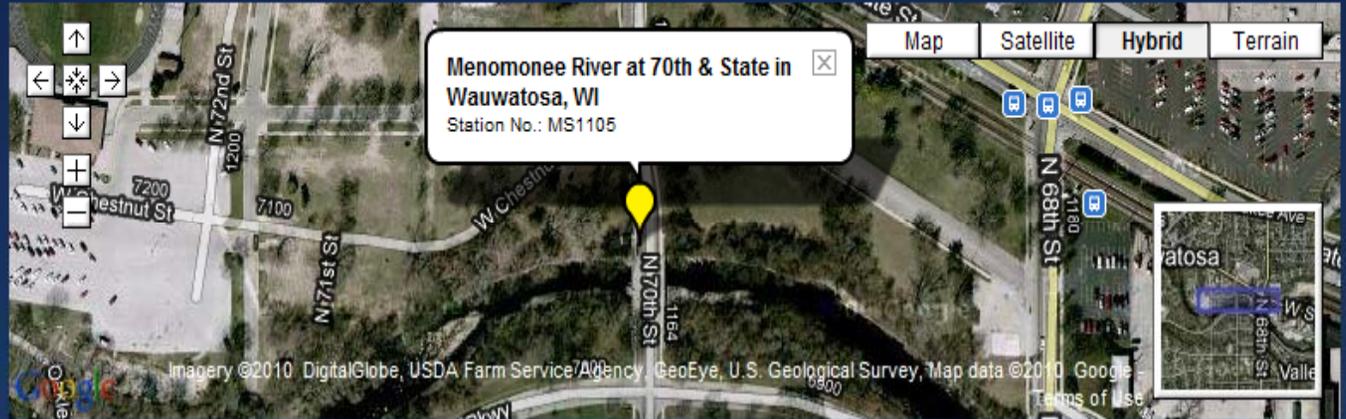
Current Station:

Menomonee River at 70th & State in Wauwatosa, WI

Water Temperature

Water temperature greatly affects fish, amphibians and other "cold-blooded" aquatic life that cannot internally-regulate their core body temperatures. If water gets too warm or too cold, the numbers and kinds of species can decrease due to stress, susceptibility to disease or reproductive failure. In general, higher water temperatures are more harmful to aquatic life.

[Learn More](#)



Legend



Getting Started

Graph

Data

Station Info

Time Period:

Last 90 Days



H₂O Info - What's Next?

- ★ Will have new estimate WQ variables: (Chlorides, Phosphorus, Suspended Solids, Fecal coliform and *E. coli* bacteria).
- ★ Will have content improvements and additional detail.
- ★ Will have overflow time periods represented.

Questions?

