



USGS Web Applications Kansas River, KS

Video Conference

March 5, 2021



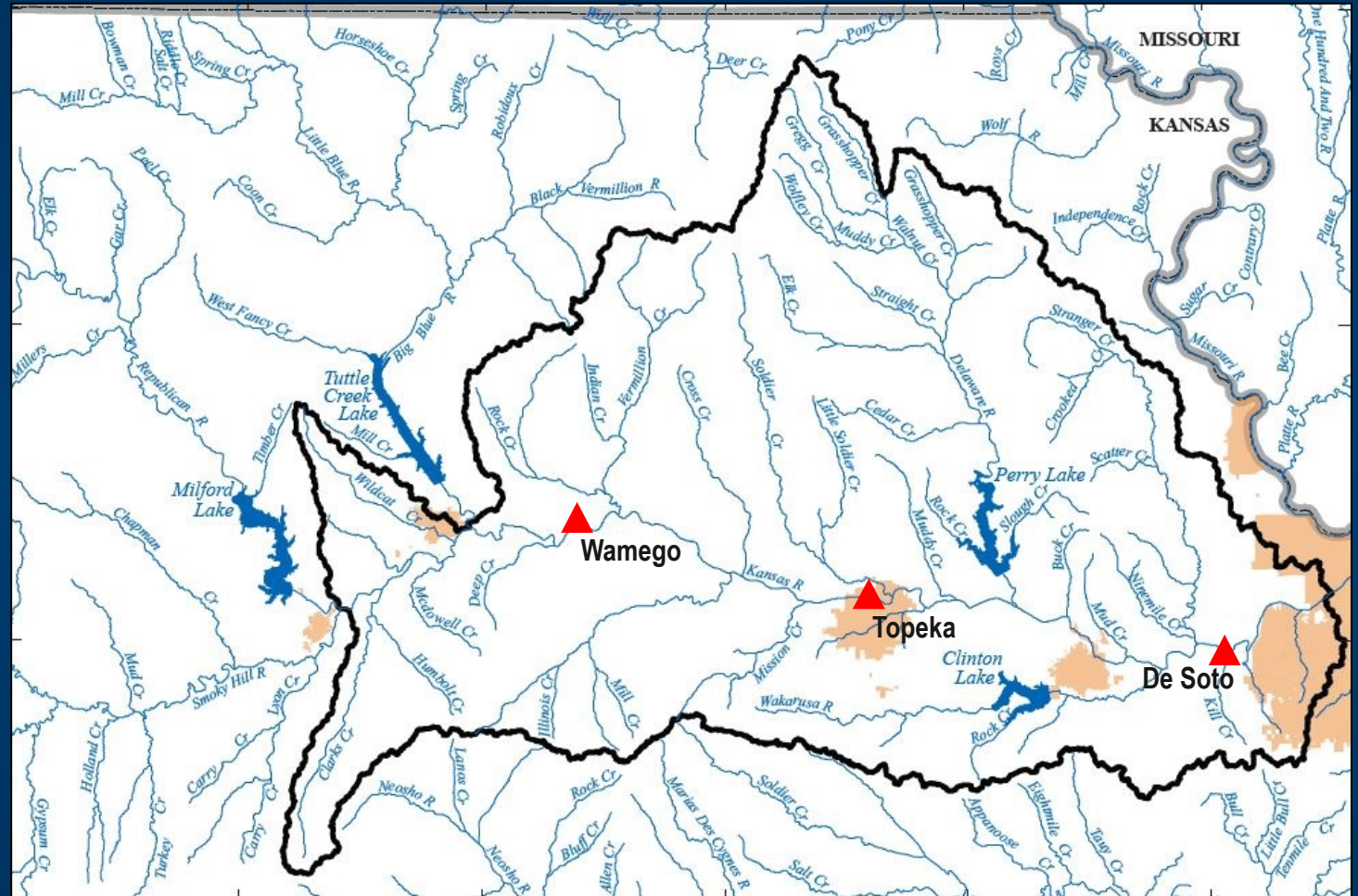
U.S. Department of the Interior
U.S. Geological Survey

Thomas Williams
Kansas Water Science Center

This information is preliminary and is subject to revision. It is being provided to meet the need for timely best science. The information is provided on the condition that neither the U.S. Geological Survey nor the U.S. Government shall be held liable for any damages resulting from the authorized or unauthorized use of the information. This information is not for distribution.

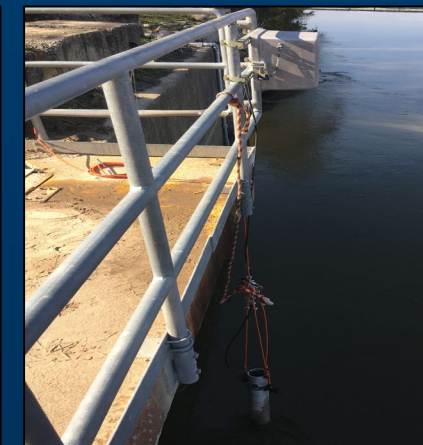
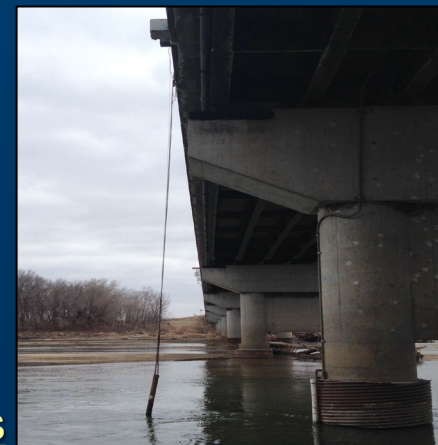
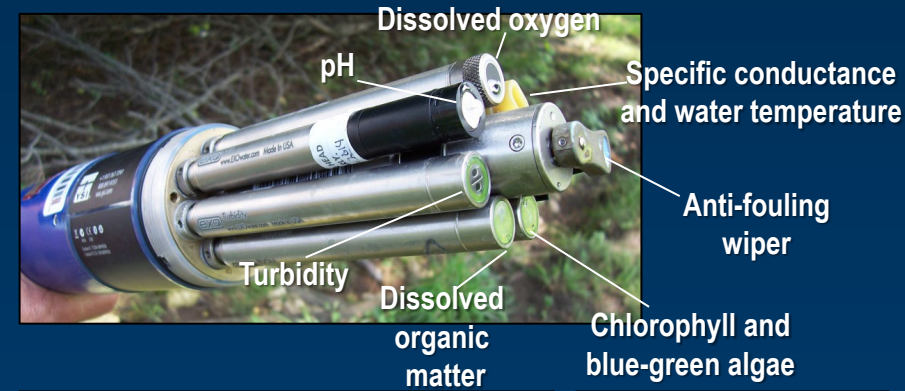
Agenda

1. Background
2. NWIS real-time water-quality webpages
3. WaterAlerts
4. NRTWQ real-time webpages
5. Water Dashboard
6. WaterQualityWatch
7. NWQN



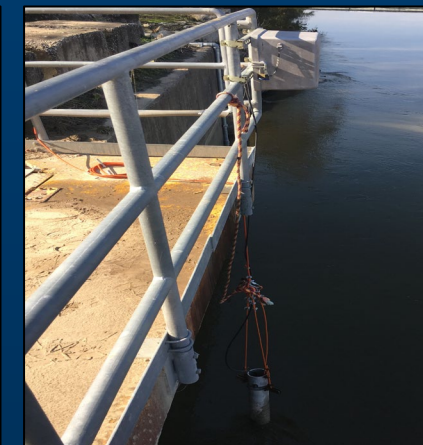
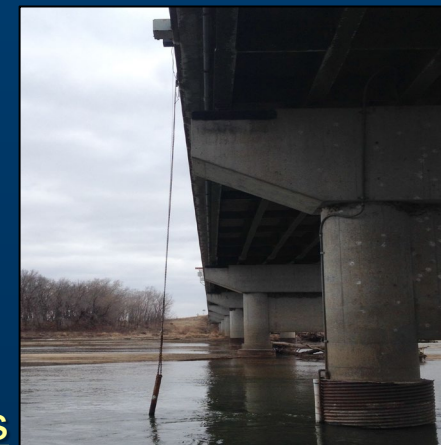
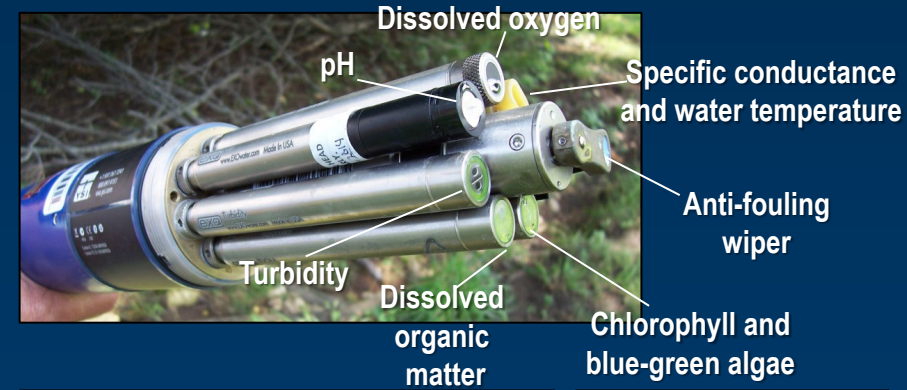
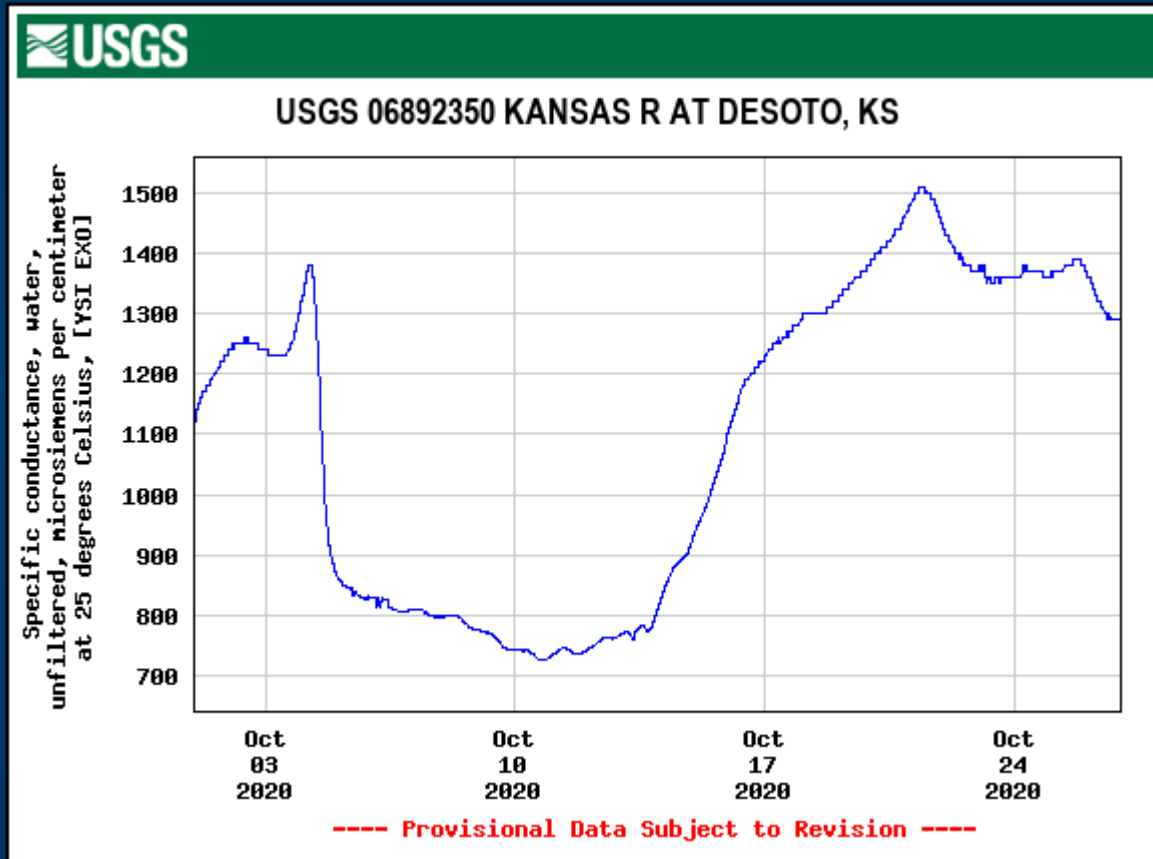
Methods

- Continuous data – since 2012
 - 15-minute streamflow and water-quality data
 - Available in near-real time (hourly)
 - Quality-assured and approved quarterly
 - Require periodic maintenance visits
 - Cleaning
 - Calibration
 - General troubleshooting



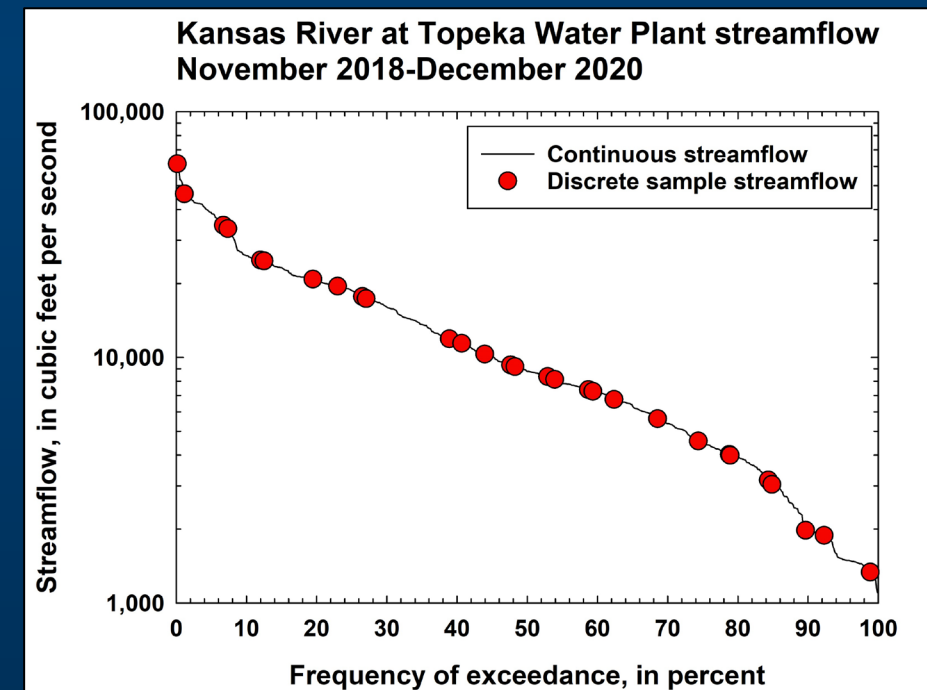
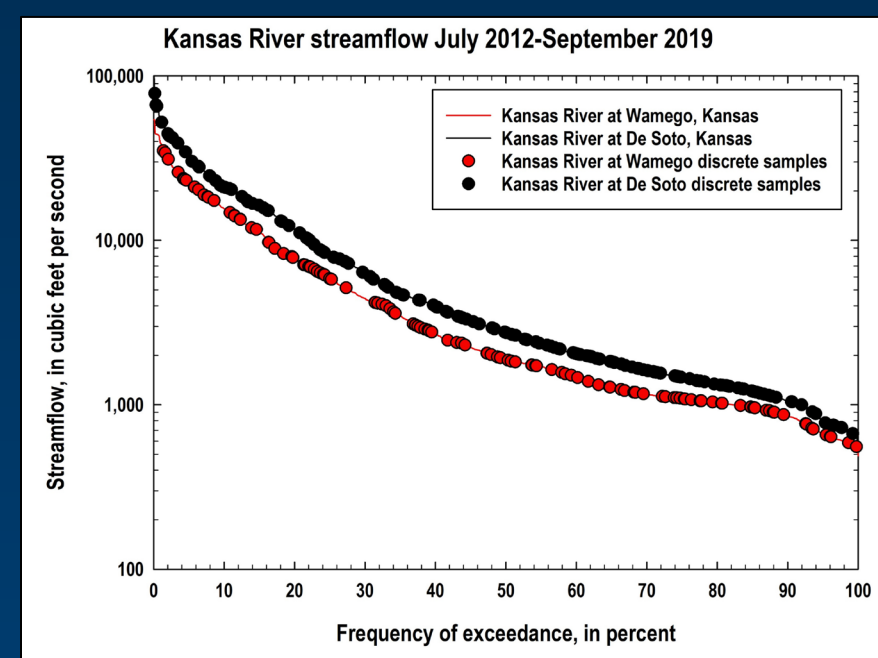
Methods

- Continuous data – since 2012



Methods

- Discrete data – since 2012
 - Major ions
 - Dissolved solids
 - Nutrients
 - Suspended sediment
 - Indicator bacteria
 - Cyanobacteria
 - Microcystin
 - Taste-and-odor compounds
- Minimum of 36 samples required for model development
 - Representative range of flow conditions
- Minimum of 8 samples per year required for model validation



National Water Information System (NWIS)

<https://waterdata.usgs.gov/nwis>

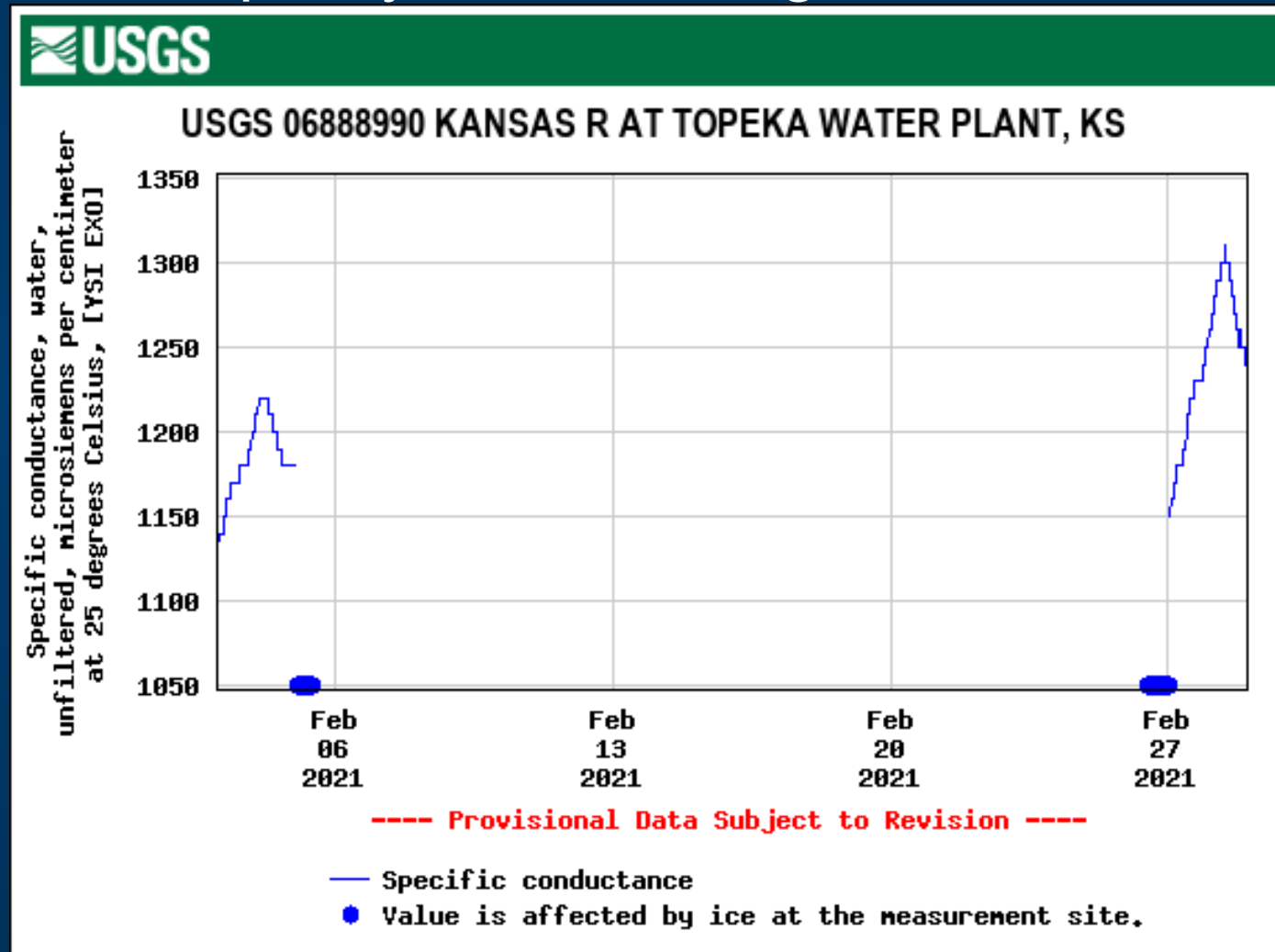
- Discrete water-quality data
 - [USGS Water Quality Samples for USA: Sample Data](https://nwis.waterdata.usgs.gov/usa/nwis/qwdata)
 - (<https://nwis.waterdata.usgs.gov/usa/nwis/qwdata>)
- Real-time continuous water-quality data
 - [USGS Current Conditions for the Nation -- Water Quality](https://waterdata.usgs.gov/nwis/current/?type=quality)
 - (<https://waterdata.usgs.gov/nwis/current/?type=quality>)
 - [Kansas River at Wamego](#) (06887500)
 - [Kansas River at Topeka Water Plant](#) (06888990)
 - [Kansas River at De Soto](#) (06892350)
 - [Kansas River nr Lake Quivira \(WaterOne\)](#) (06892518)



Kansas River at Wamego, KS (USGS station # 06887500)

National Water Information System (NWIS)

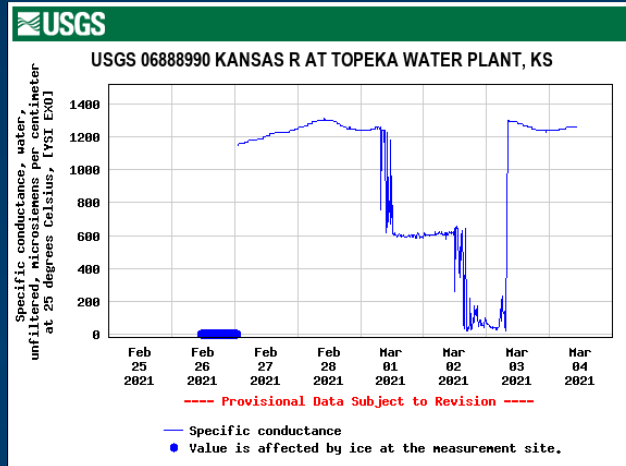
- Continuous water-quality data missing data due to removal



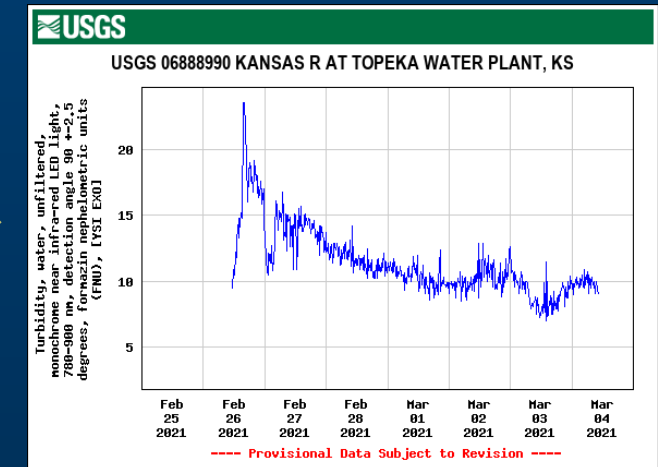
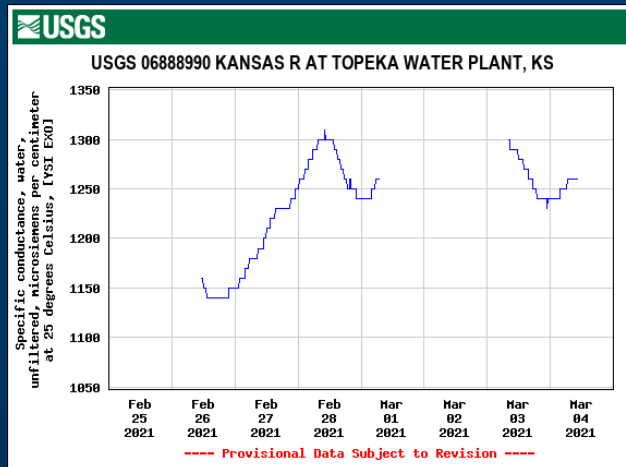
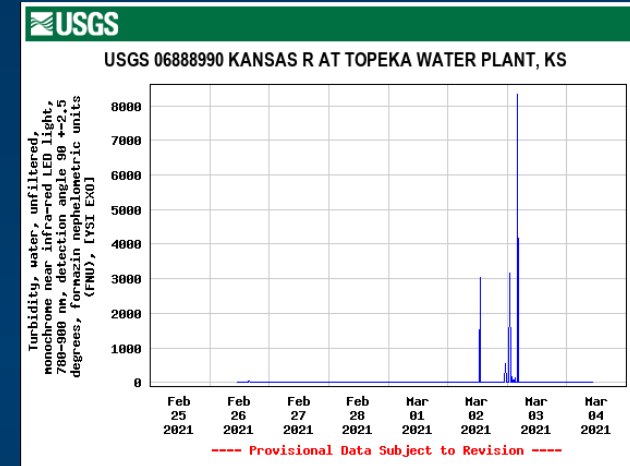
National Water Information System (NWIS)

- Continuous water-quality data missing data due to fouling

Specific conductance



Turbidity



This information is preliminary and is subject to revision. It is being provided to meet the need for timely best science. The information is provided on the condition that neither the U.S. Geological Survey nor the U.S. Government shall be held liable for any damages resulting from the authorized or unauthorized use of the information. This information is not for distribution.

USGS WaterAlerts

<https://maps.waterdata.usgs.gov/mapper/wateralert/>

- Receive text or email alerts when certain parameters, measured by real-time USGS data collection stations, exceed user-definable thresholds.

Links

- [Kansas River at Wamego](#)
- [Kansas River at Topeka Water Plant](#)
- [Kansas River at De Soto](#)
- [Kansas River nr Lake Quivira \(WaterOne\)](#)

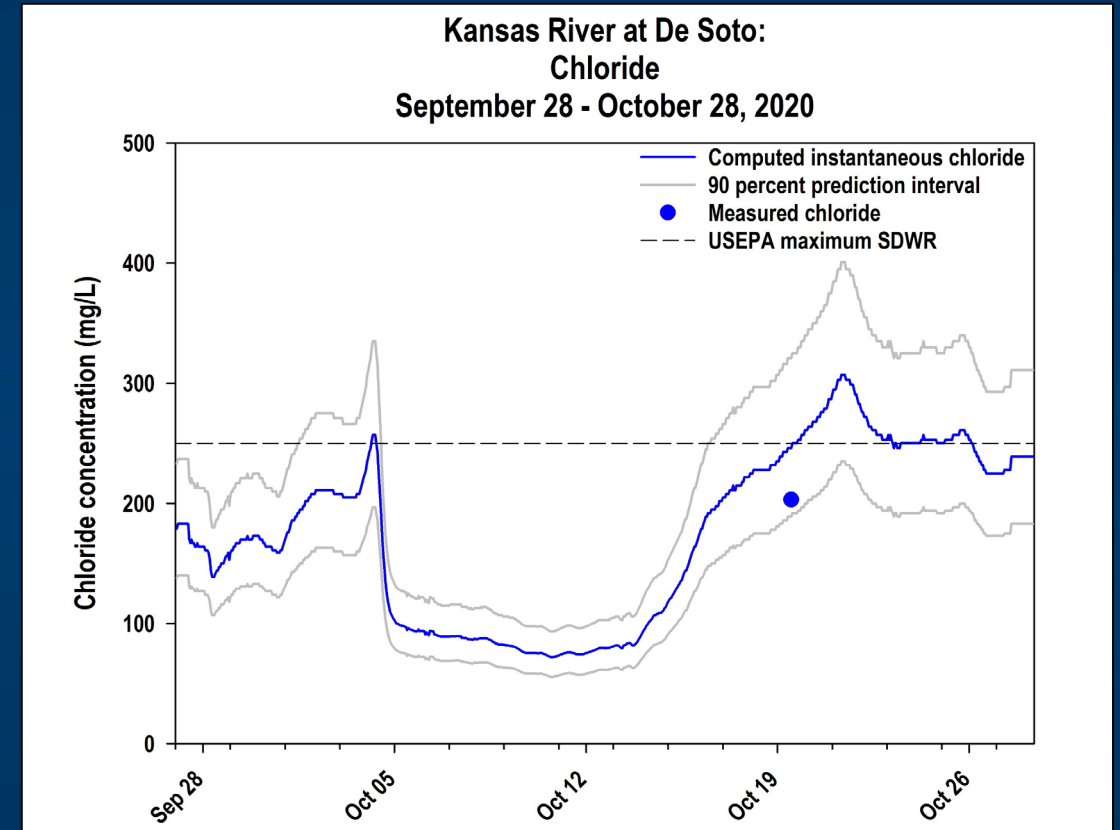
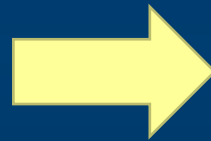
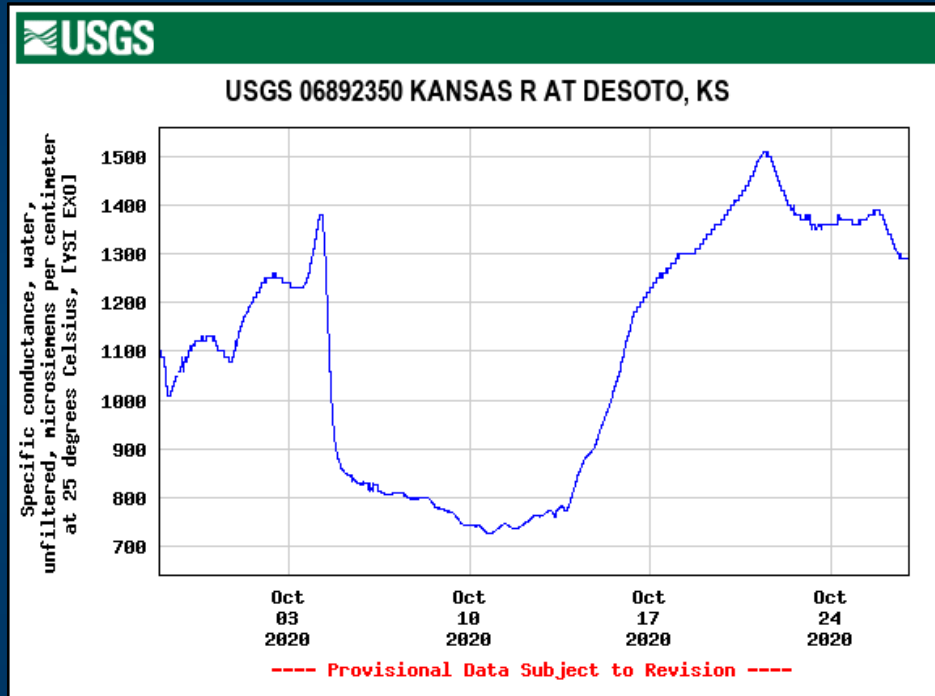
* select water-quality parameters with “[YSI EXO]” in name

The screenshot shows the USGS WaterAlert web application. The top header features the USGS logo and navigation links for Home, Contact, and Search. The main interface is divided into a left sidebar and a central map area. The sidebar includes a 'Select Location' section and a 'Select Data Type' section with various data categories like Surface-Water Sites, Groundwater Sites, Springs Sites, and Atmospheric Sites. The central map area displays a map of the Topeka, Kansas region. A 'Site Information' popup window is open, showing details for site 06888990, including site name, agency, and various water quality parameters. A 'Subscribe to WaterAlert' button is highlighted with a red circle in the popup window.



Linear Regression Models

- Chloride example (<https://nrtwq.usgs.gov/ks/>)

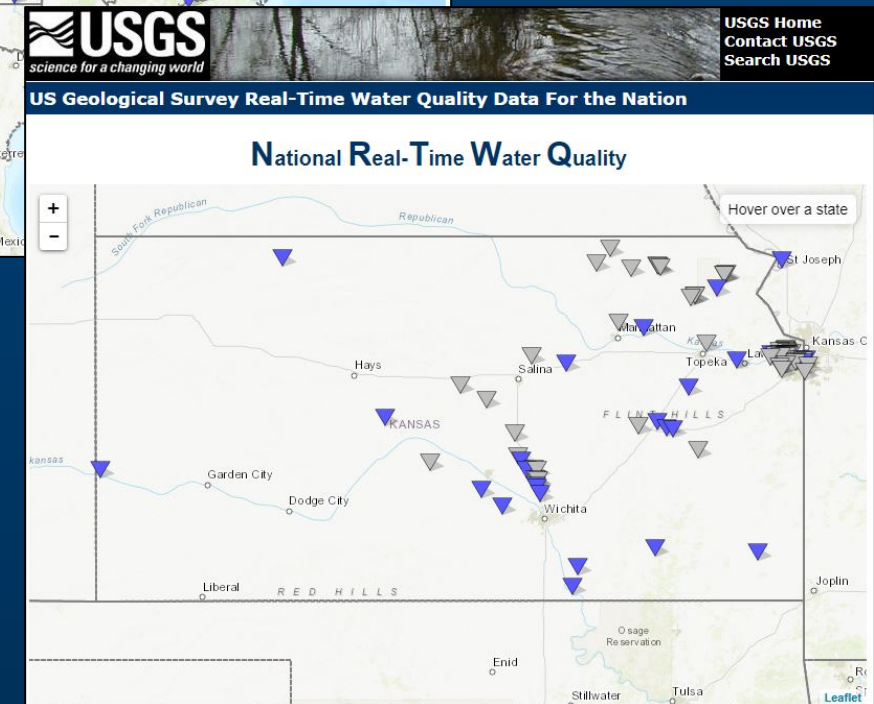


Specific conductance as a surrogate for computation of Chloride concentration

National Real-Time Water Quality (NRTWQ)

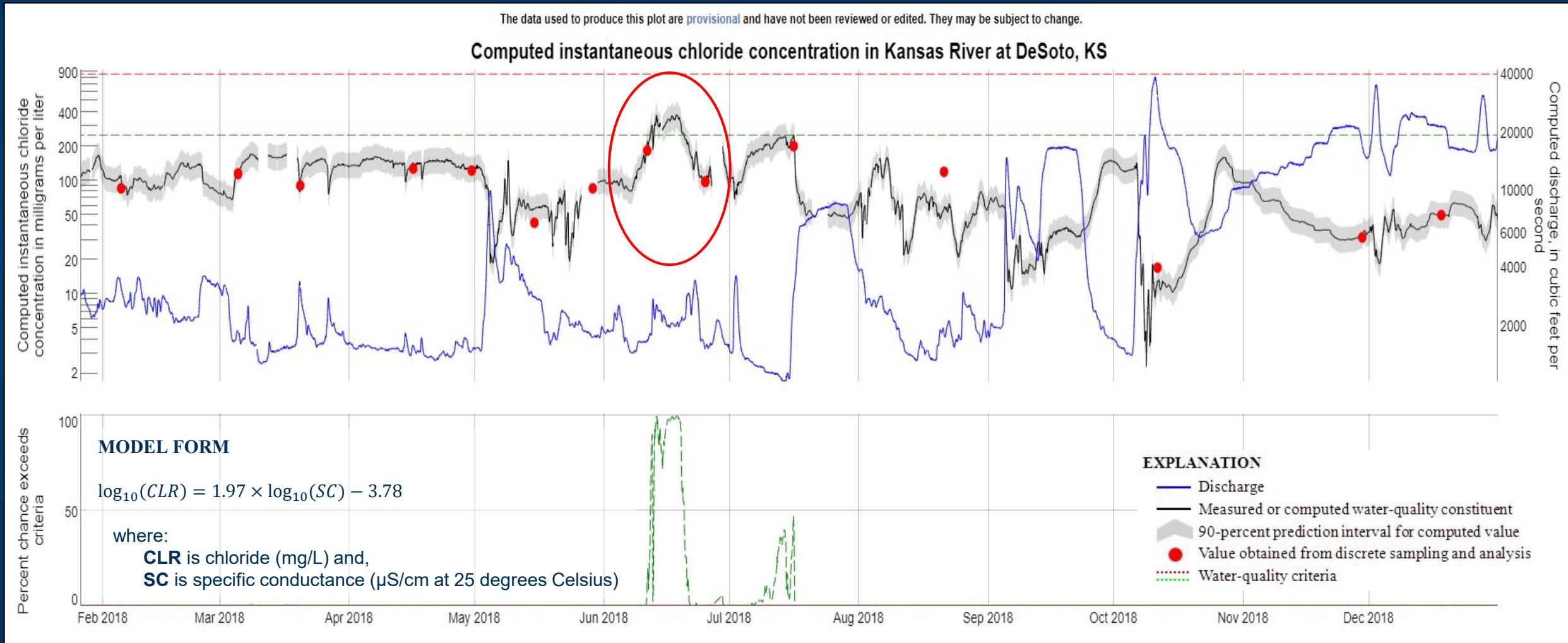
<https://nrtwq.usgs.gov/>

- Surrogate models in Kansas
 - <https://nrtwq.usgs.gov/ks/>
 - [Kansas River at Wamego](#)
 - [Kansas River at De Soto](#)
- * Surrogate models at Topeka (06888990) will be published by June 2022.



Linear Regression Models

- Chloride example (<https://nrtwq.usgs.gov/ks/>)

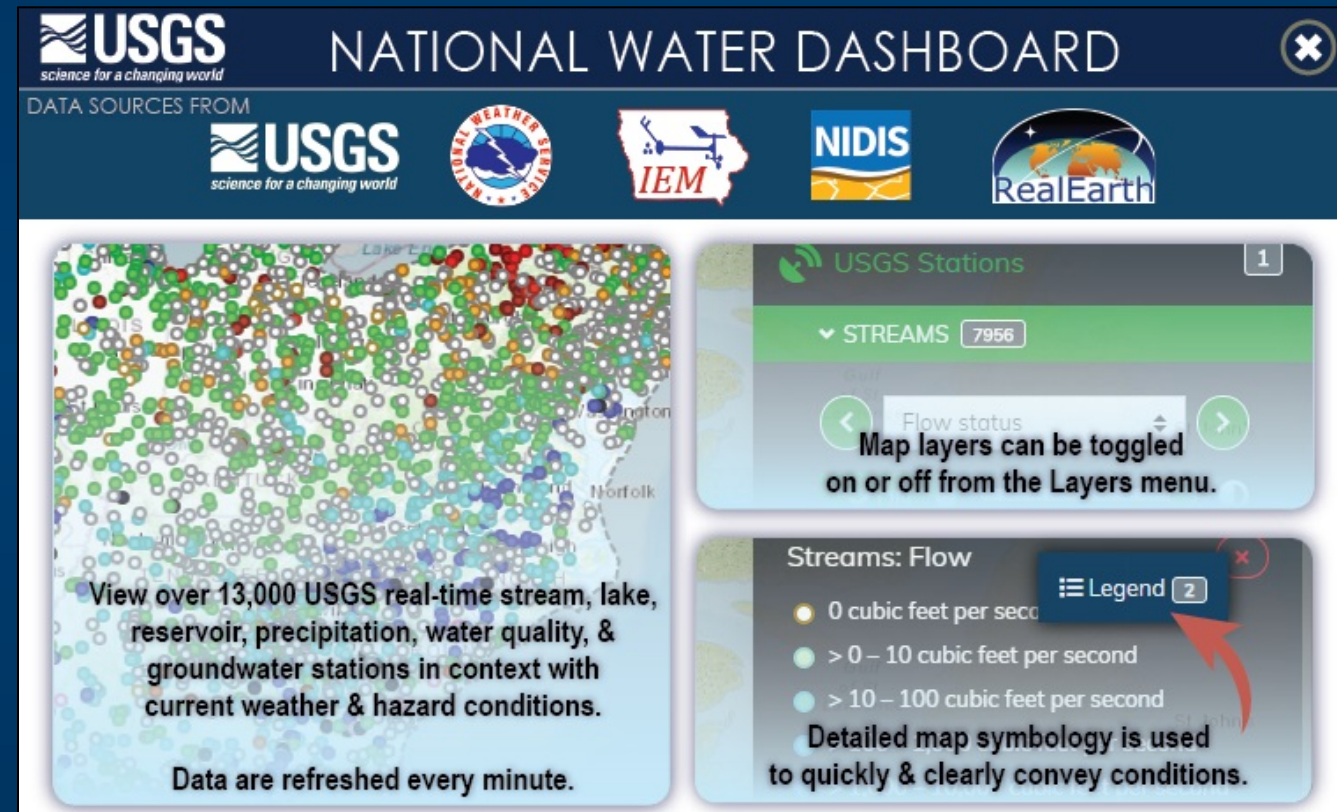


This information is preliminary and is subject to revision. It is being provided to meet the need for timely best science. The information is provided on the condition that neither the U.S. Geological Survey nor the U.S. Government shall be held liable for any damages resulting from the authorized or unauthorized use of the information. This information is not for distribution.

USGS National Water Dashboard

<https://dashboard.waterdata.usgs.gov/app/nwd/>

- New USGS web application
- Provides critical flood info, compatible with desktop or smartphone
- Real-time stream, lake, precip, and groundwater data for all USGS monitoring stations.
- Overlays weather data
- Links to NWIS, WaterAlert



USGS WaterWatch

<https://waterwatch.usgs.gov/>

- Can get snapshots of current streamflow, drought, and flood conditions.
- Also can review historical streamflow conditions

The screenshot shows the USGS WaterWatch website. At the top left is the USGS logo with the tagline "science for a changing world". At the top right are links for "USGS Home", "Contact USGS", and "Search USGS". A yellow notice banner states: "NOTICE: In January 2020, USGS WaterWatch began operating in maintenance-only mode. Existing tools, features, and web data services are being fully maintained as before, but new tools and enhancements will no longer be developed. Please click here for more information or contact USGS WaterWatch if you have any questions." Below the notice is the "WaterWatch" title and a search bar. A left sidebar lists navigation options: Home, Special Features, Current Streamflow, Flood, Drought, Past Flow/Runoff, Animation, Toolkit, Toolkit (internal), Annual Summaries, Data Services, Additional Information, and About WaterWatch. The main content area features four maps: "Current Streamflow" (Thursday, March 04, 2021 13:30ET), "Drought" (Wednesday, March 03, 2021), "Flood" (Thursday, March 04, 2021 13:30ET), and "Past Flow/Runoff" (Wednesday, March 03, 2021). Each map includes the USGS logo and a search bar for "Search USGS streamgage". At the bottom of the page are links for "Accessibility", "FOIA", "Privacy", and "Policies and Notices".

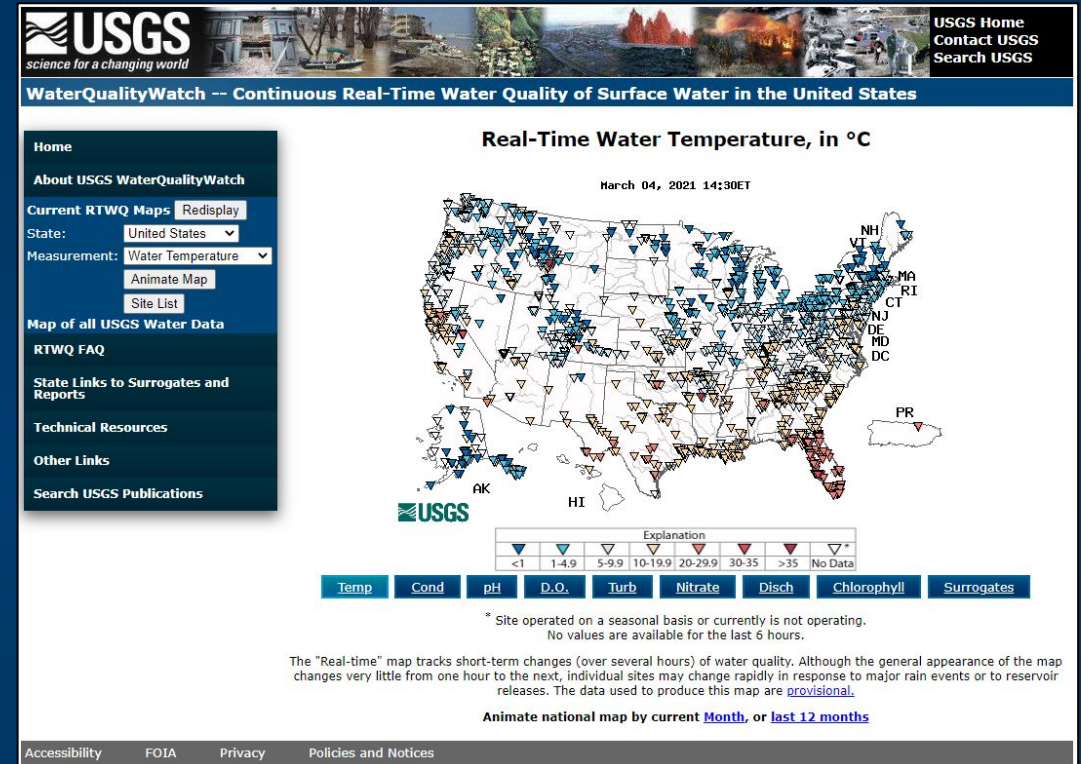


This information is preliminary and is subject to revision. It is being provided to meet the need for timely best science. The information is provided on the condition that neither the U.S. Geological Survey nor the U.S. Government shall be held liable for any damages resulting from the authorized or unauthorized use of the information. This information is not for distribution.

USGS WaterQualityWatch

<https://waterwatch.usgs.gov/wqwatch/>

- Measurements include
 - Streamflow
 - Water temperature
 - Specific conductance
 - pH
 - Dissolved oxygen
 - Turbidity
 - Chlorophyll
 - Nitrate
- Links to NRTWQ via “Surrogates” button



USGS National Water-Quality Network (NWQN)

<https://nrtwq.usgs.gov/nwqn/#/>

- National network of sites used to assess current and long-term trends in water quality across the nation.
- Kansas River at De Soto is part of this network.
- Links to NRTWQ via “Surrogates” button

USGS
science for a changing world

USGS Home
Contact USGS
Search USGS

Tracking Water Quality in U.S. Streams and Rivers

USGS National Water Quality Network Data, Water-Quality Loads, and Trends

The USGS National Water Quality Network (NWQN) consists of 110 stream and river sites with long-term, consistent information on streamflow and water-quality conditions. Data are collected to assess the status and trends of water-quality conditions at large inland and coastal river sites, as well as in small streams indicative of urban, agricultural, and reference conditions. These data can be useful to local, regional, or national-scale studies related to multiple topics, including drinking water-quality, chemical fate and transport, and harmful algal blooms. In addition to site-specific information provided through the map below or the NWQN site list, additional pages are provided that quantify water-quality loading to the Gulf of Mexico in support of goals of the Mississippi River/Gulf of Mexico Hypoxia Task Force. This website provides details on NWQN operations, access to data collected at NWQN sites, and graphs that display how water-quality conditions are changing through time. More information on network objectives, data collection and reporting methods, and sites can be accessed via links below. Input on NWQN site, data, and on how data are presented on this Web site helps us improve NWQN operations and data presentation. Please take a few minutes to provide information on how you are using NWQN data and suggestions for improving the network and Web site.

Network information

- NWQN site list
- Network objectives and scope
- Methods and glossary
- Previous network information
- Stakeholder feedback form

Water-quality loading to the Gulf of Mexico

- Trends in annual water-quality loads to the Gulf of Mexico through 2019
- Monthly nutrient loads used to estimate the size of the Gulf Hypoxic Zone (Preliminary Estimates)

Water-quality trends in the Delaware River Basin

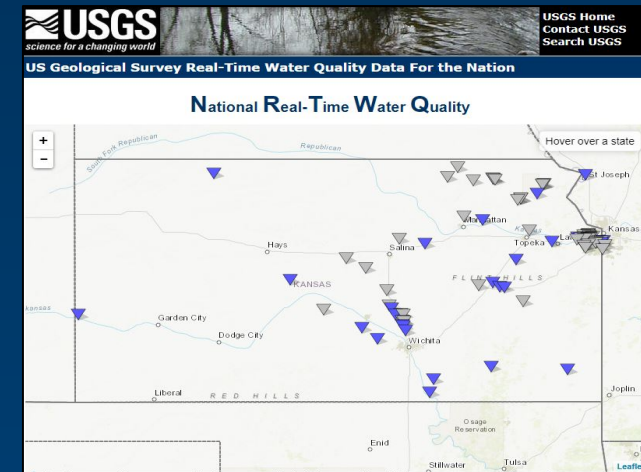
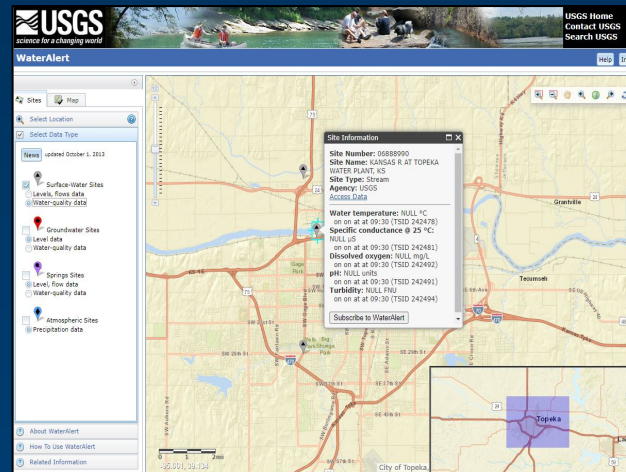
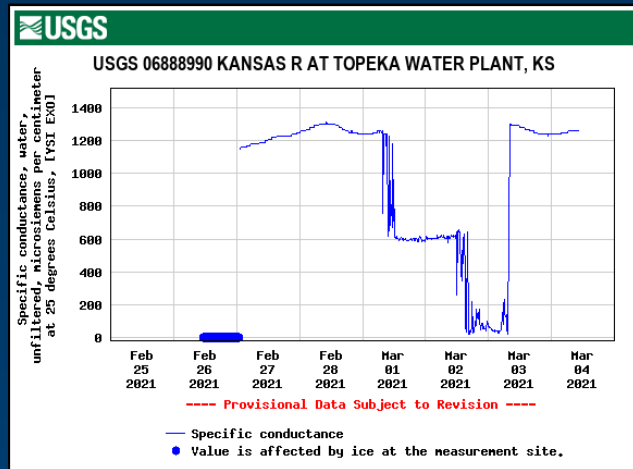
Download data

- All published NWQN data
- Data from sites in the Mississippi/Atchafalaya River Basin

Related USGS Links

Hover on a circle and click on the site name to get site-specific information

Which web application?



USGS WaterWatch

NOTICE: In January 2020, USGS WaterWatch began operating in maintenance-only mode. Existing tools, features, and web data services are being fully maintained as before, but new tools and enhancements will no longer be developed. Please click here for more information or contact USGS WaterWatch if you have any questions.

Home

Special Features

Current Streamflow

Flood

Drought

Past Flow/Runoff

Animation

Toolkit

Toolkit (Internal)

Annual Summaries

Data Services

Additional Information

About WaterWatch

USGS WaterQualityWatch

WaterQualityWatch -- Continuous Real-Time Water Quality of Surface Water in the United States

Home

About USGS WaterQualityWatch

Current RTWQ Maps

Measurement: Water Temperature

Map of all USGS Water Data

RTWQ FAQ

State Links to Surrogates and Reports

Technical Resources

Other Links

Search USGS Publications

Real-Time Water Temperature, in °C

March 04, 2021 14:30ET

Temp Cond pH D.O. Turb Nitrate Diss Chlorophyll Surrogates

View over 13,000 USGS real-time stream, lake, reservoir, precipitation, water quality, and groundwater stations in context with current weather & hazard conditions.

Data are refreshed every minute.

USGS National Water Dashboard

DATA SOURCES FROM USGS, IEM, NIDIS, RealEarth

USGS Stations

STREAMS 7956

Map layers can be toggled on or off from the Layers menu.

Streams: Flow

0 cubic feet per second

> 0 - 10 cubic feet per second

> 10 - 100 cubic feet per second

Detailed map symbology is used to quickly & clearly convey conditions.

View over 13,000 USGS real-time stream, lake, reservoir, precipitation, water quality, and groundwater stations in context with current weather & hazard conditions.

Data are refreshed every minute.

USGS Tracking Water Quality in U.S. Streams and Rivers

USGS National Water Quality Network Data, Water-Quality Loads, and Trends

The USGS National Water Quality Network (NWQN) consists of 110 stream and river sites with long-term, consistent information on streamflow and water-quality conditions. Data are collected to assess the status and trends of water-quality conditions at large inland and coastal river sites, as well as in small streams indicative of urban, agricultural, and reference conditions. These data can be useful to local, regional, or national-scale studies related to multiple topics, including drinking water-quality, chemical fate and transport, and harmful algal blooms. In addition to site-specific information provided through the map below or the NWQN site list, additional pages are provided that quantify water-quality loading to the Gulf of Mexico in support of goals of the Mississippi River/Gulf of Mexico Hypoxic Task Force. This website provides details on NWQN operations, access to data collected at NWQN sites, and graphs that display how water-quality conditions are changing through time. More information on network objectives, data collection and reporting methods, and sites can be accessed via links below. Input on NWQN site, data, and on how data are presented on this Web site helps us improve NWQN operations and data presentation. Please take a few minutes to provide information on how you are using NWQN data and suggestions for improving the network and Web site.

Network Information

- NWQN site list
- Network objectives and scope
- Methods and glossary
- Previous network information
- Stakeholder feedback form

Water-quality loading to the Gulf of Mexico

- Trends in annual water-quality loads to the Gulf of Mexico through 2019
- Loadings nutrient loads used to estimate the size of the Gulf Hypoxic Zone (Preliminary Estimates)

Water-quality trends in the Delaware River Basin

Download data

- All published NWQN data
- Data from sites in the Mississippi/Atchafalaya River Basin

Related USGS Links



This information is preliminary and is subject to revision. It is being provided to meet the need for timely best science. The information is provided on the condition that neither the U.S. Geological Survey nor the U.S. Government shall be held liable for any damages resulting from the authorized or unauthorized use of the information. This information is not for distribution.

Contact Information

Thomas Williams
tjwilliams@usgs.gov
(785) 832-3570

Additional Information Available on the Web

Kansas River Study –
<https://ks.water.usgs.gov/kansas-river-algal>

USGS WaterAlerts–
<https://maps.waterdata.usgs.gov/mapper/wateralert/>

USGS Continuous Real-Time Water-Quality Data –
<https://waterdata.usgs.gov/ks/nwis>

USGS Real-Time Water Quality –
<https://nrtwq.usgs.gov>

USGS National Water Dashboard –
<https://dashboard.waterdata.usgs.gov/app/nwd/?region=lower48>

