



# Real-Time Monitoring to Estimate Bacteria Concentrations in Midwest Urban Streams - Providing the Public with Continuous Water Quality Information

[KCWATERS.org](http://KCWATERS.org) and Real-Time Bacteria Estimation



## Urban Waters Network (Greater Kansas City Area)

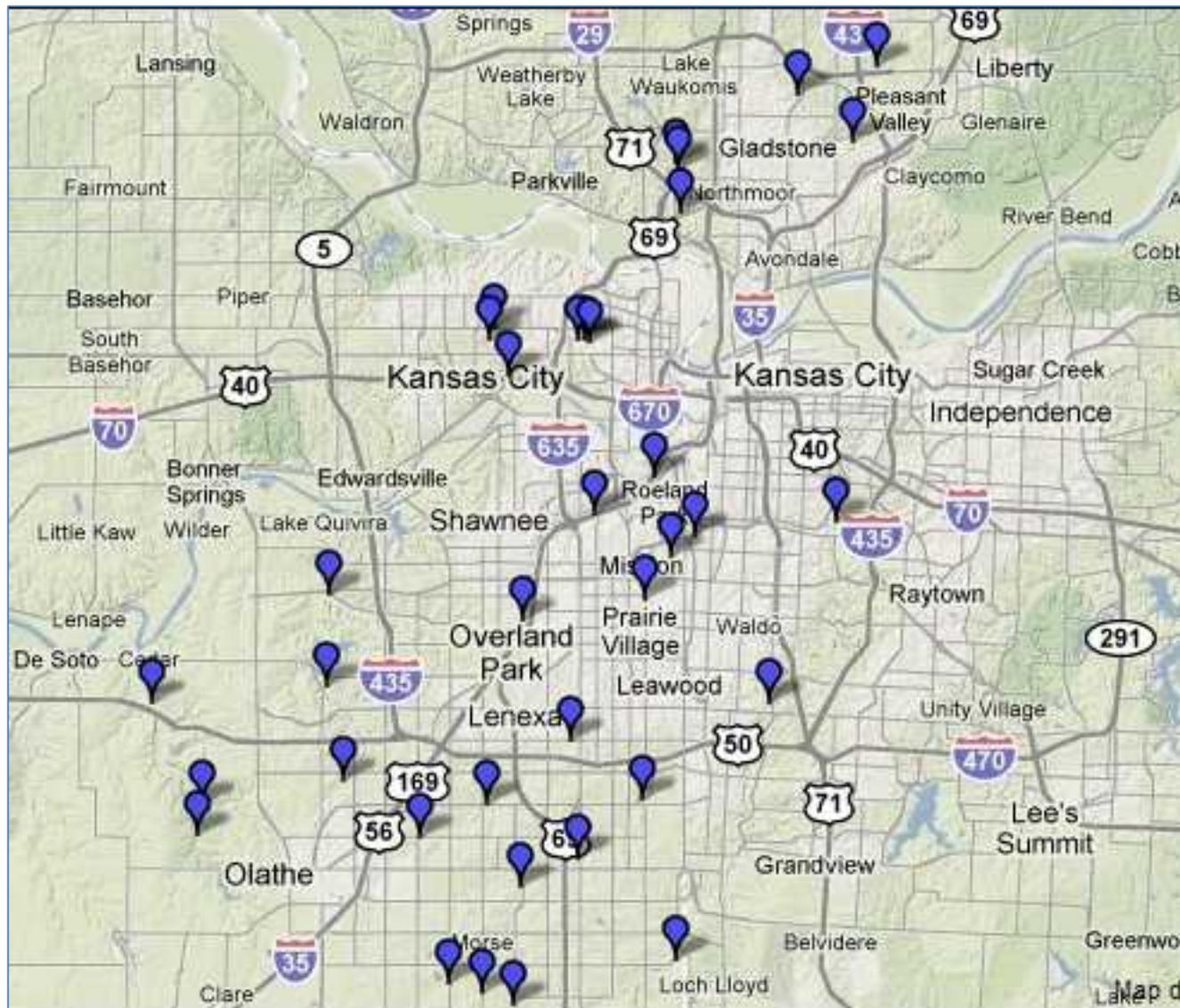
- Stream Monitoring Network
- Lake Monitoring Network
- Real-time Bacteria Network
- Website and mobile applications





## Urban Stream Network

- 36 Monitoring locations
- 12 Streams
- Monitor:
  - Fish
  - Macroinvertebrates
  - Algae (phyto & peri)
  - Bacteria
  - Water chemistry
  - Sediment chemistry
  - Habitat
  - Watershed characteristics
- Riffle, run, pool
- Accessible

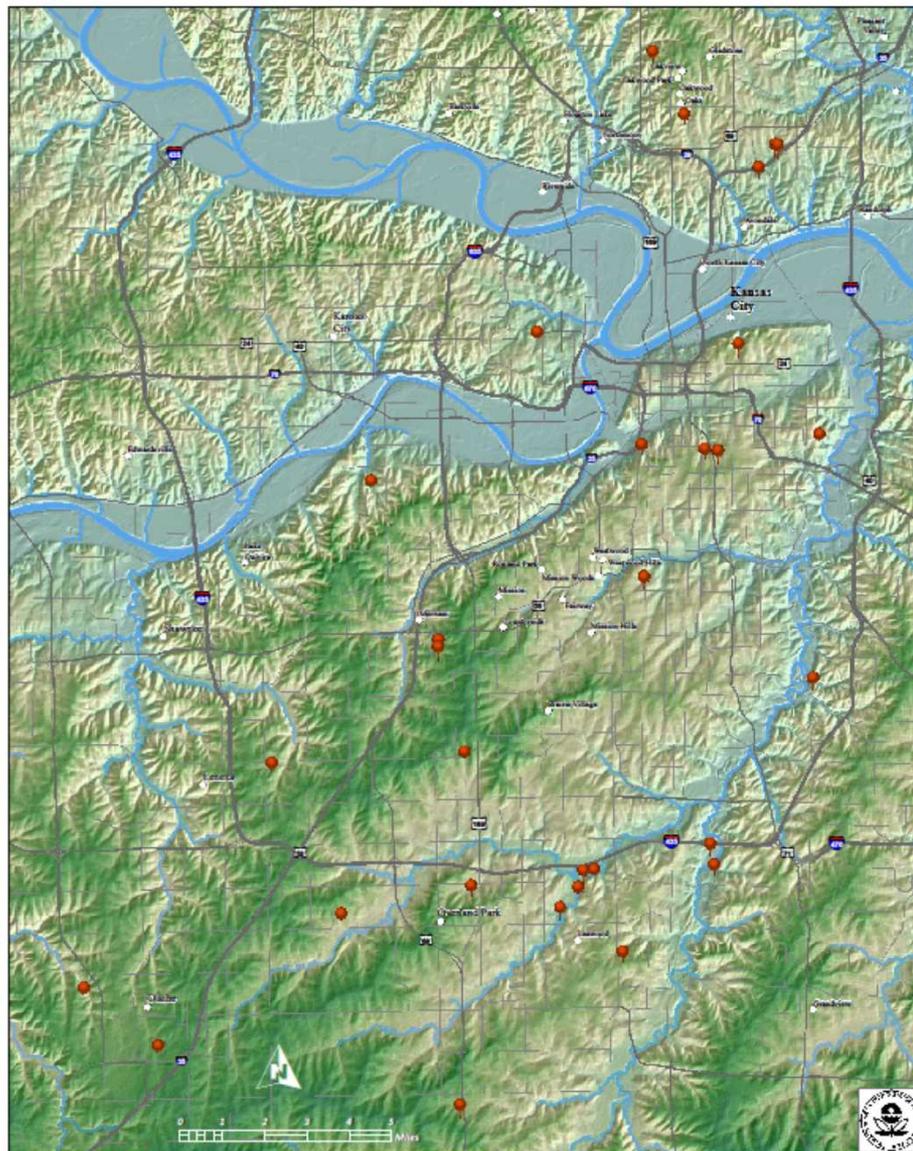




## Urban Lake Network

- Over 30 public lakes
- Monitor 3 x's per year
- Nutrients
- Bacteria
- Microcystins
- Fish Tissue

Urban Lakes

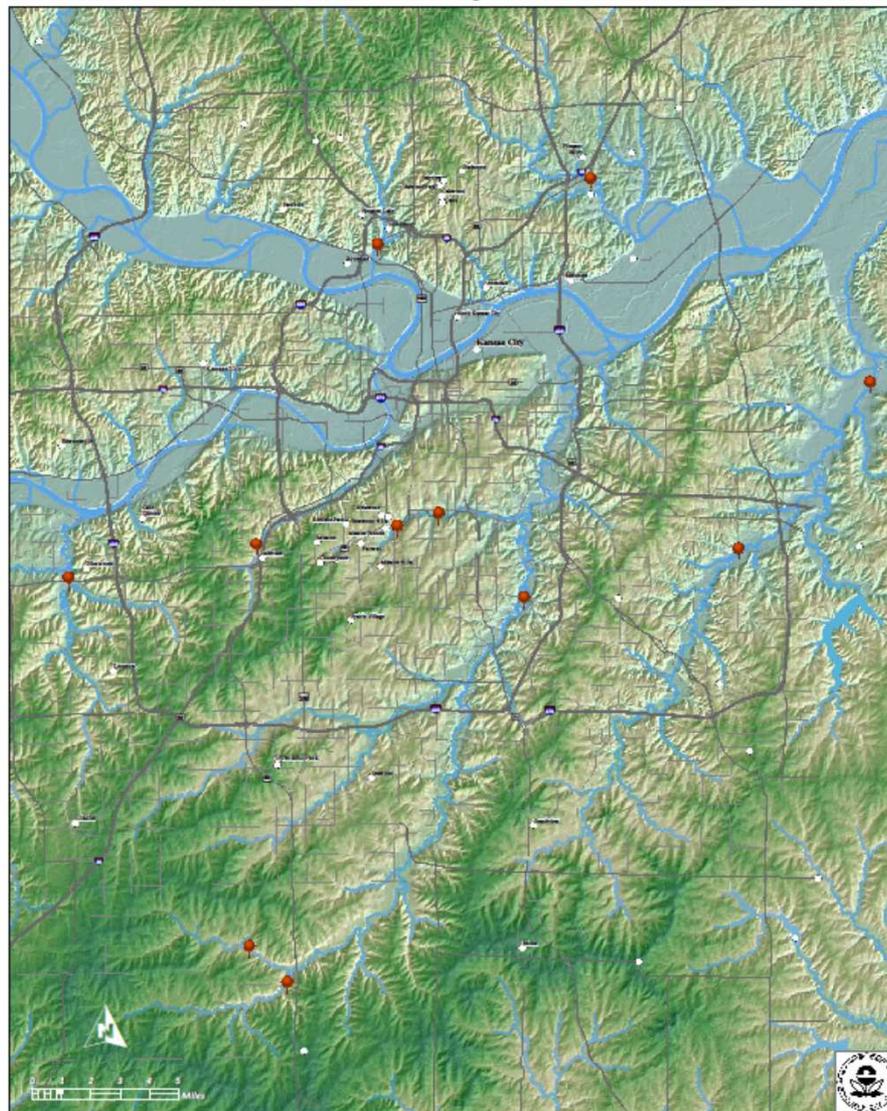




## Real-time Bacteria Monitoring Network

- 9 Monitoring locations on nine urban streams (EPA)
- 2 locations on Little Blue River (EPA/USGS)

Telemetry Sites





- **KCWATERS.org**
  - Water Quality in Kansas City
  - Data from multiple sources



The screenshot shows the KCwaters.org website in a Windows Internet Explorer browser window. The address bar displays <http://www.kcwaters.org/>. The website header features the KCwaters.org logo and navigation links: Urban Monitoring Network, Metro Area Map, Partners, Events & News, and Contact. A search bar is also present. The main content area includes a paragraph about the history of water in Kansas City, a section for 'Newest Additions' listing data contributions from Oak Ridge National Laboratories, Legacy Storet, Army Corps of Engineers, and Lakes of MO Volunteer Program, and a 'News & Events' section for 'Project Blue River Rescue'. A 'Contact KCwaters' section provides links to submit water quality data and upcoming events.



# REAL TIME BACTERIA ESTIMATION



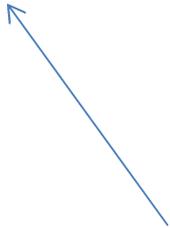
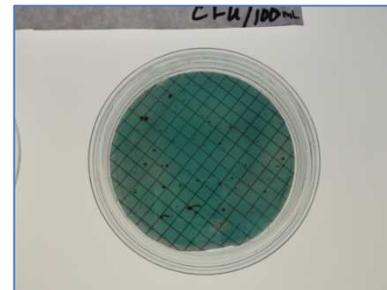
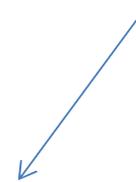




# Problem...



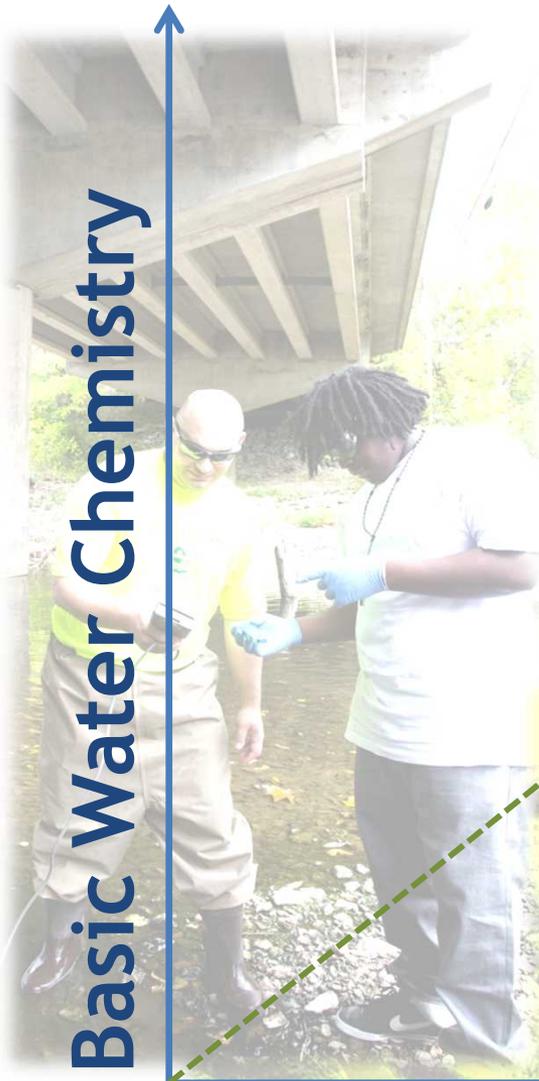
**30 - 48 hours**





# Solution...

Basic Water Chemistry



Prepared in cooperation with the  
JOHNSON COUNTY STORMWATER MANAGEMENT PROGRAM

**Estimation of Constituent Concentrations, Loads, and Yields in Streams of Johnson County, Northeast Kansas, Using Continuous Water-Quality Monitoring and Regression Models, October 2002 through December 2006**

Scientific Investigations Report 2008-5014

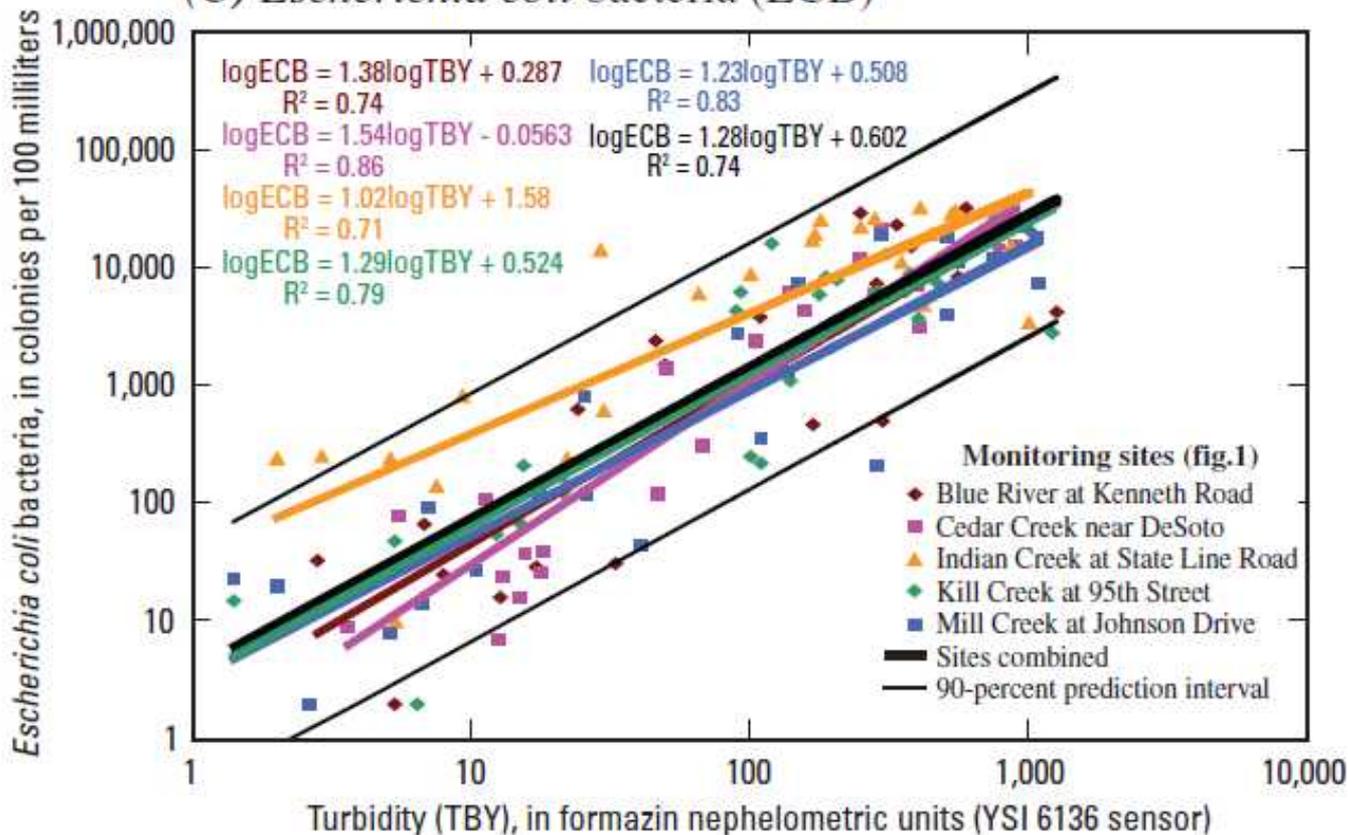
U.S. Department of the Interior  
U.S. Geological Survey

Bacteria Concentrations





(C) *Escherichia coli* bacteria (ECB)



Prepared in cooperation with the JOHNSON COUNTY STORMWATER MANAGEMENT PROGRAM

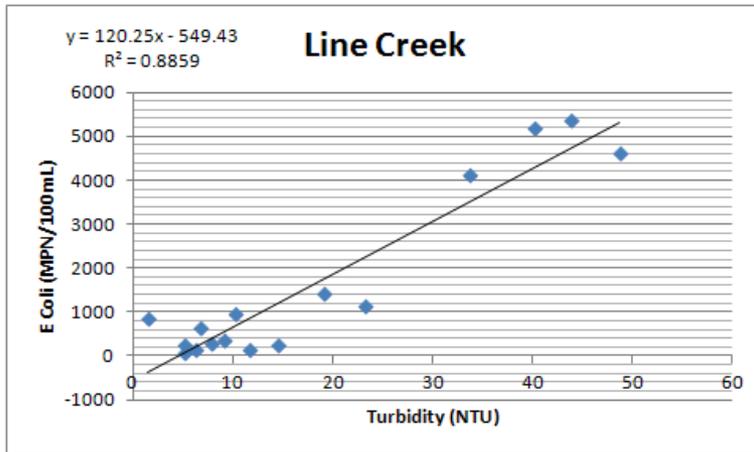
Estimation of Constituent Concentrations, Loads, and Yields in Streams of Johnson County, Northeast Kansas, Using Continuous Water-Quality Monitoring and Regression Models, October 2002 through December 2006

Scientific Investigations Report 2008-5014

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



~20-25 times in 2011 @ 11 sites



~11  
regression  
equations









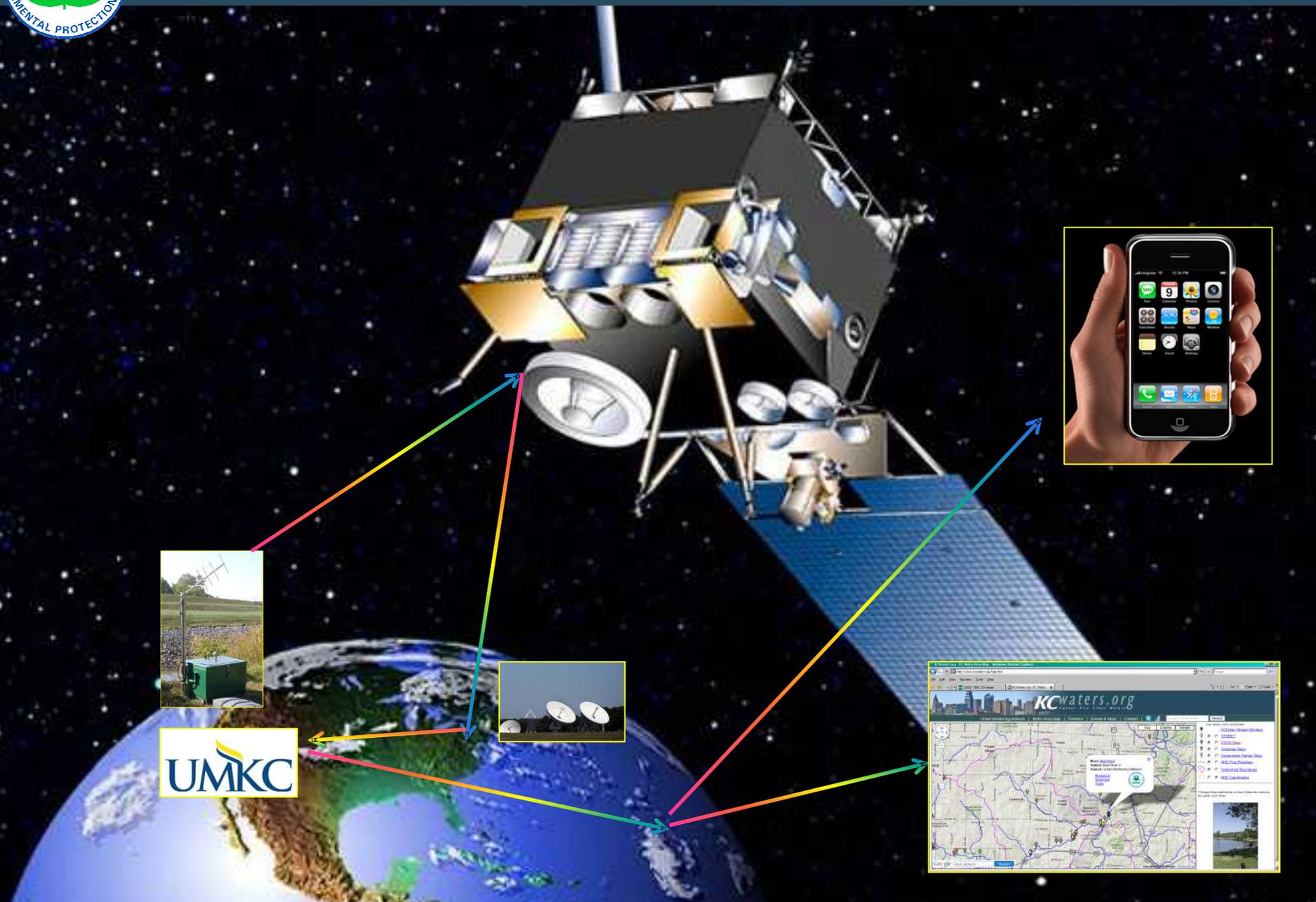
# United States Environmental Protection Agency - Kansas City, Kansas







# United States Environmental Protection Agency - Kansas City, Kansas





Kansas City may be known as the City of Fountains, but the resource that makes this possible is the area's bountiful waters. From the confluence of the Kansas and Missouri Rivers, over 200 years ago, Lewis and Clark remarked how impressive the areas waters were and how well they supported the bountiful species. Today these rivers and streams are just as important, helping to support both the well-being of people as well as plants and animals. It is important that we understand and support the continued health of these waters so that they may continue to serve as a treasured resource into the future.

Kcwaters.org seeks to promote greater awareness about the quality of water in the Greater Kansas City area, provide a venue to share data, connect partners to help protect and restore waterbodies, and allow all of us to take an active role in protecting this precious resource.

## Newest Additions



**Oak Ridge National Laboratories**  
Added 1999 Biological Data (Fish) from Oak Ridge National Laboratories for Blue River & Indian, Coffee, and Wolf Creeks



**Legacy Storet**  
Added Legacy Storet (EPA Pre-1999) data for Platte County, Missouri



**Army Corps of Engineers**  
Added Army Corps of Engineers Legacy Storet data (Pre-1999) for KC Metro area.



**Lakes of MO Volunteer Program**  
Water Quality data for five lakes in the KC Metro has been added.

## News & Events

**Project Blue River Rescue**  
The Friends of Lakeside Nature Center's Blue River Stream Team #175 invites you to join us in our Blue River Clean-up, the largest one-day stream clean-up in Missouri. PBRR gives anyone and everyone a chance to make a huge difference to the quality of the Blue River. Dress for the weather & mud, join 700 of your closest friends and let's get down and dirty on the Blue! [More Information](#)

## Contact KCwaters

[Submit Water Quality Data Here](#)  
Find out how you can submit data to be included as part of KCwaters.org  
[Submit Upcoming Events Here](#)  
Help keep your neighbors informed of water quality events

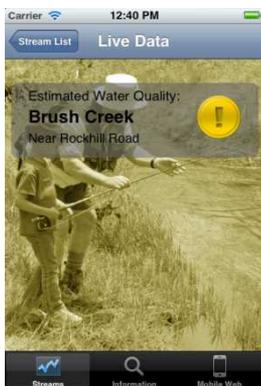


## Mobile App's





# Mobile App's



Carrier 1:24 PM

Icon Legend:

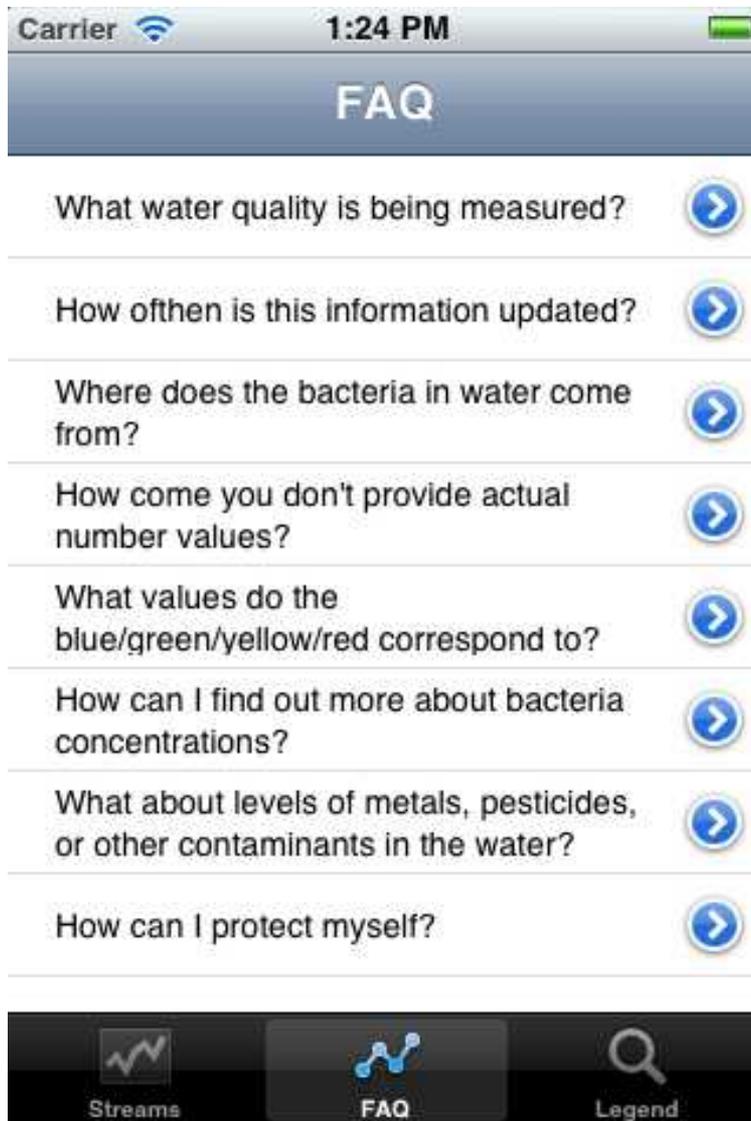
- Acceptable for all forms of recreation including swimming.
- Acceptable for wading/splashing.
- Acceptable for activities with minimal/incidental interaction with water such as fishing, geocaching, fossil hunting etc.
- Contact with water is not advised.
- Unknown: Error in data. Water quality is unknown.

Streams FAQ Legend



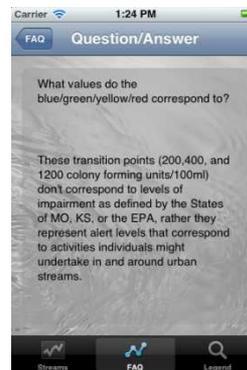
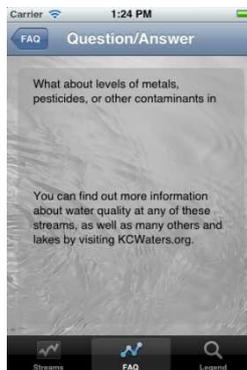
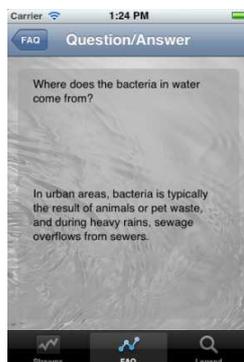
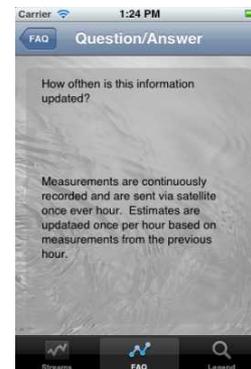
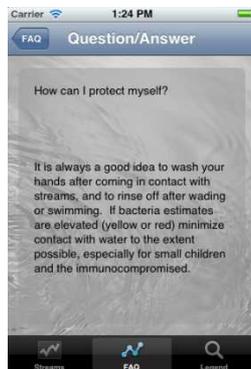
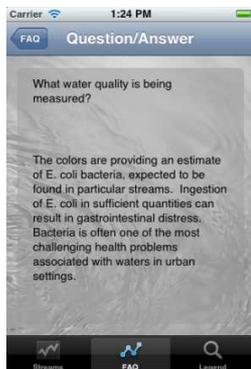


## Mobile App's





## Mobile App's





# NEXT STEPS

- Finalizing the “Apps” for Mobile Devices
- Updating the Website
- Re-Deployed Instruments (April-May)
- Continue Bacteria Grab Samples (Ongoing)
- Update Regressions (Ongoing)
- Identify other sites in Kansas City/Springfield this Summer



# QUESTIONS/COMMENTS

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