

## CATTfish & FlaminGO

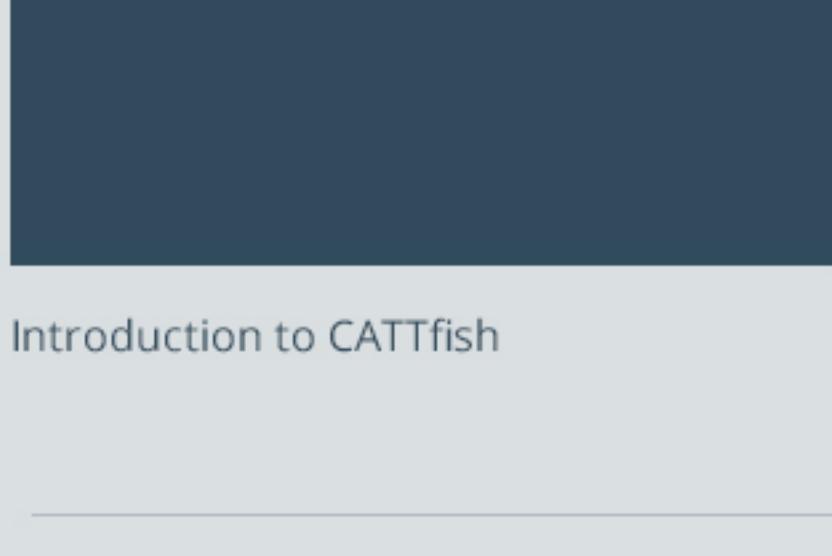
The new way to track your water quality at home.

## Home Water Sensors

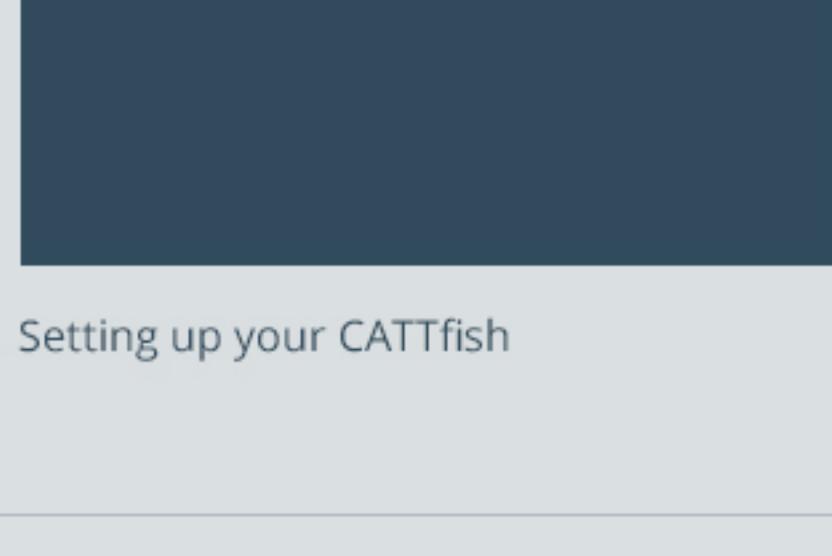
CATTfish & FlaminGO provide a simple and easy way to track the water quality at home or in your local river. Try one now for peace of mind and long term tracking of your family's water.

### How does it work?

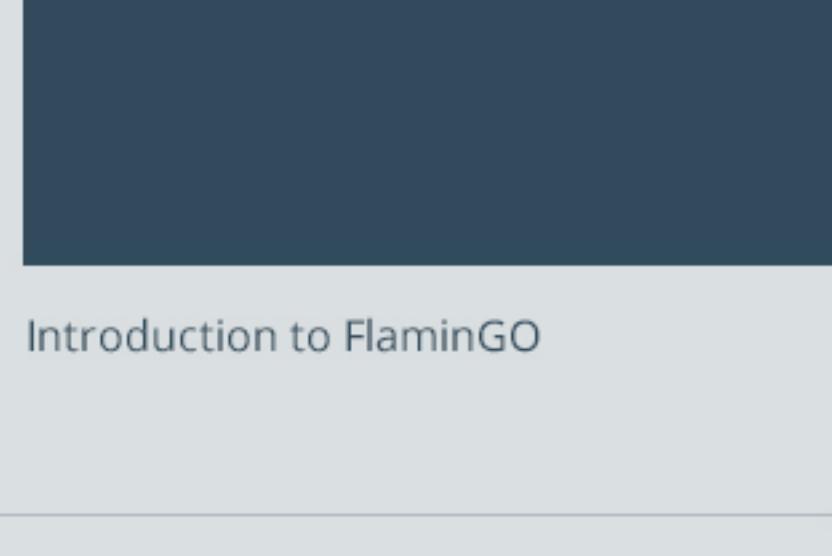
[About the systems »](#)



Introduction to CATTfish



Setting up your CATTfish



Introduction to FlaminGO

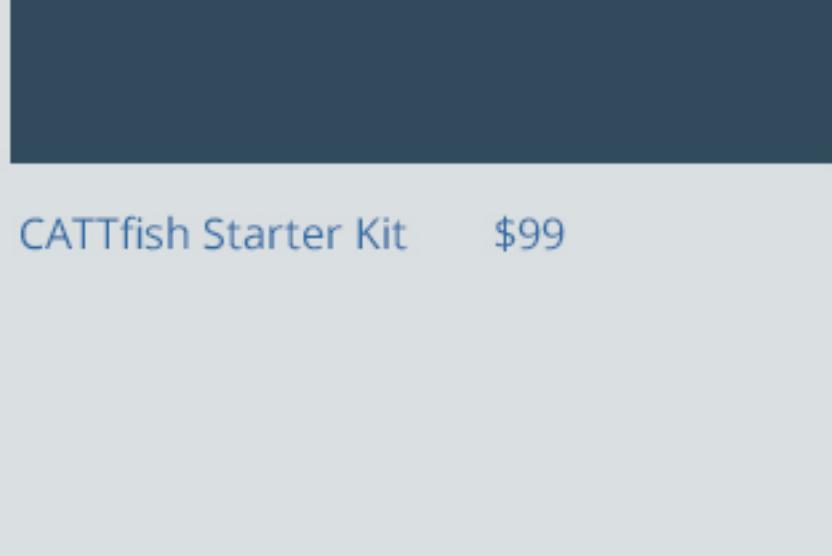
### Why CATTfish & FlaminGO?

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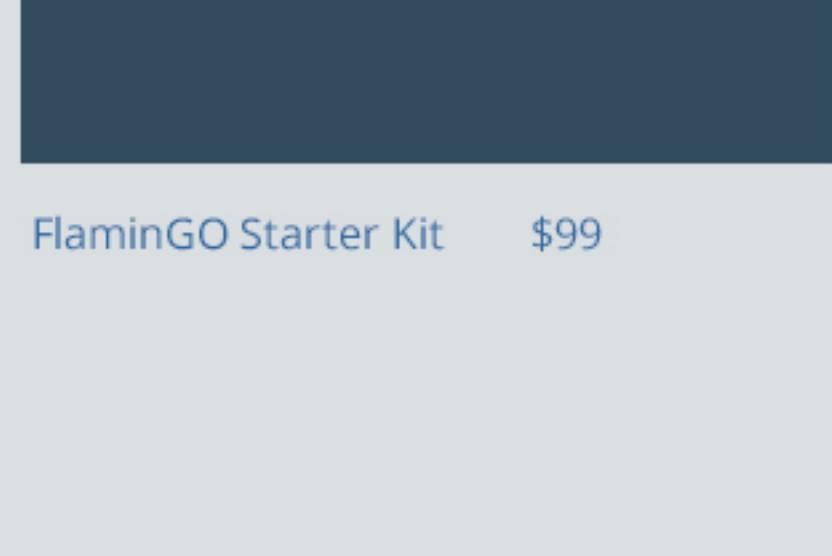
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### Buy Now

[Shop »](#)



CATTfish Starter Kit   \$99



FlaminGO Starter Kit   \$99



CATTfish Carrying case   \$14

Email address

Password

[Forgot Password?](#)[SIGN IN »](#)

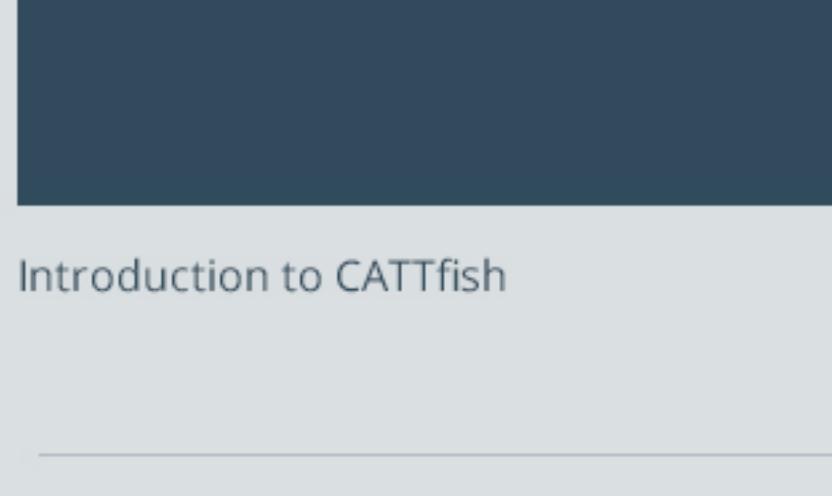
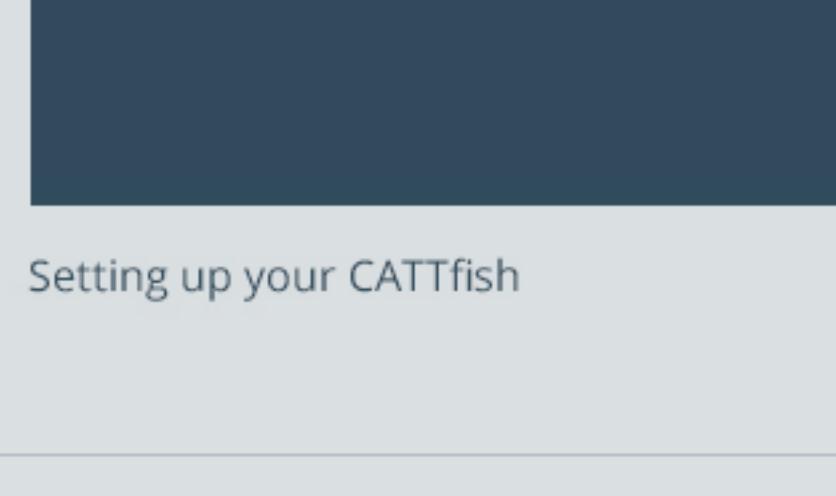
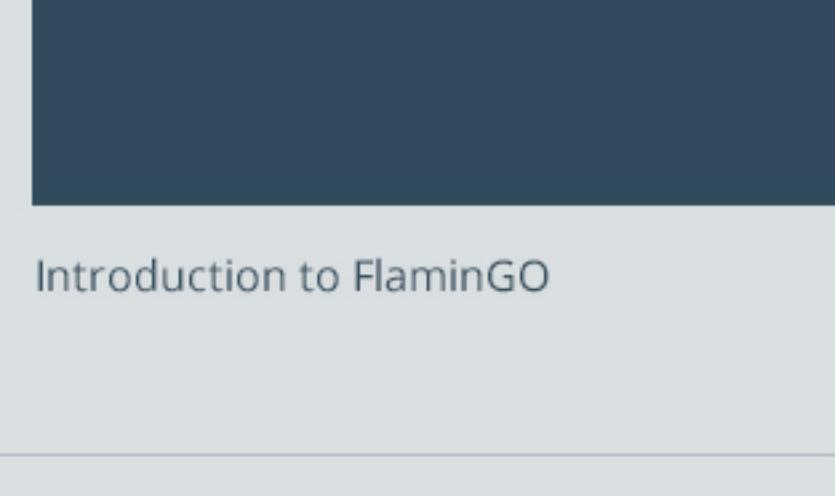
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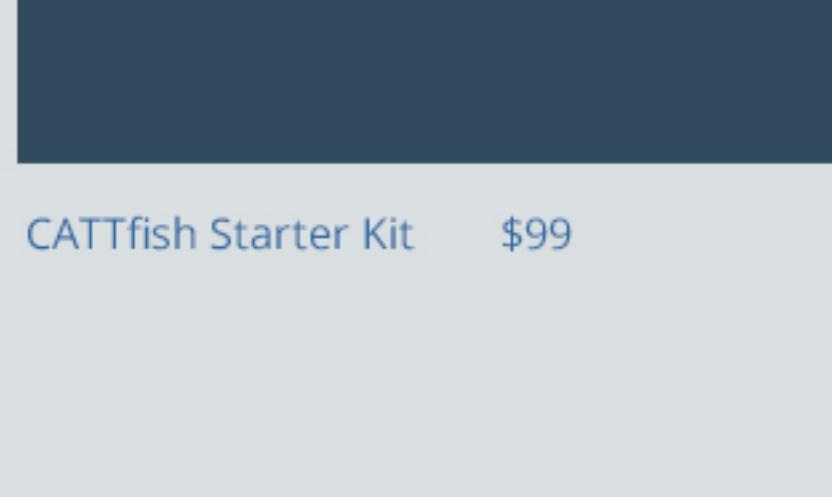
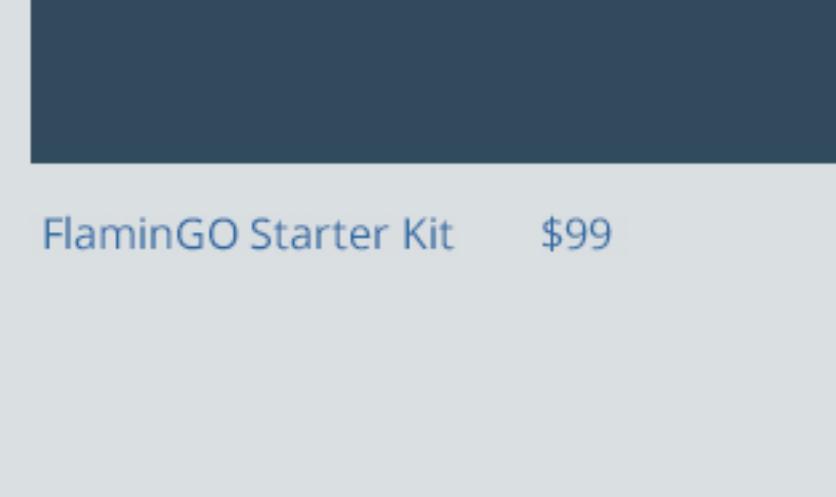
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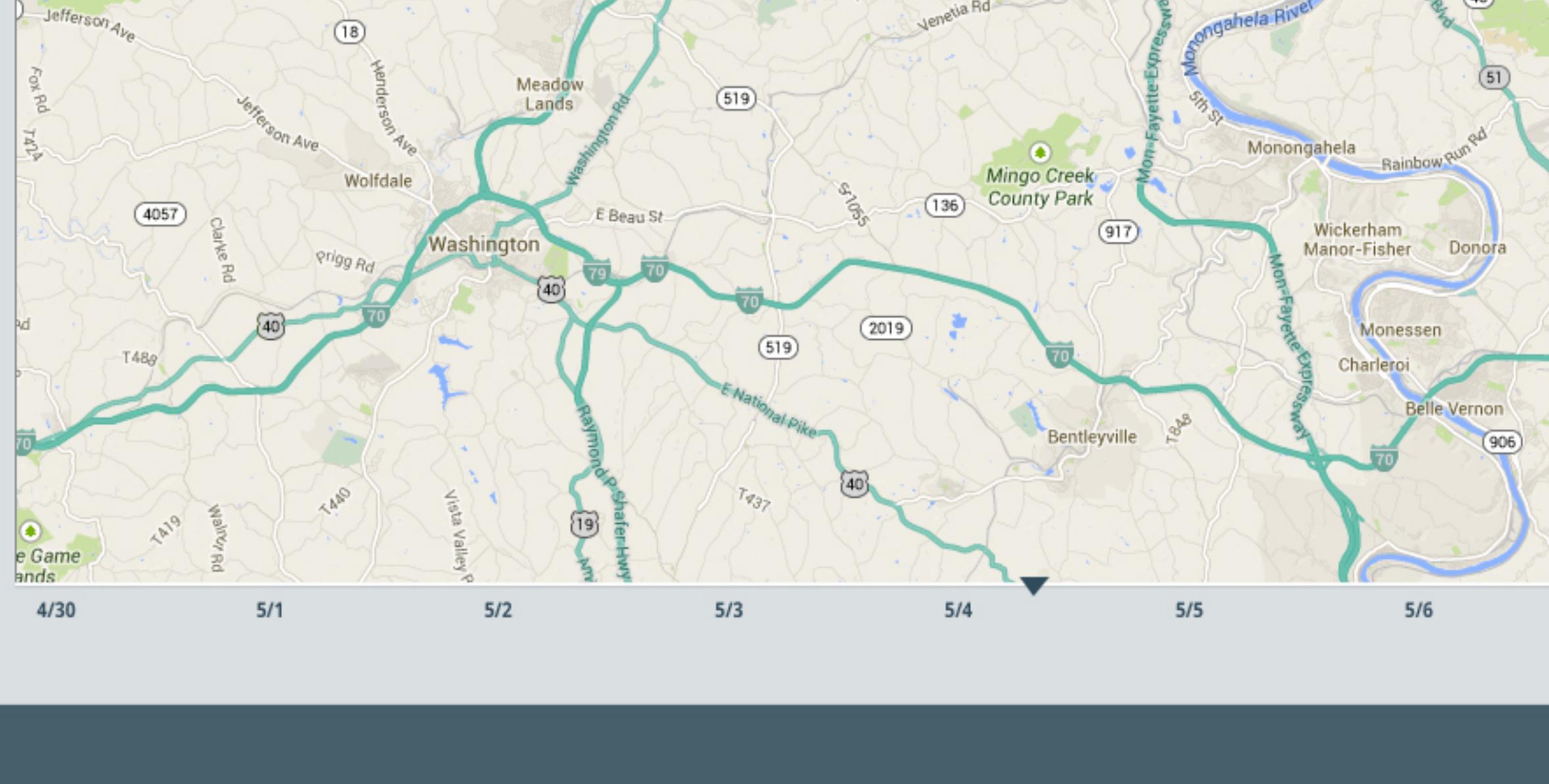
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### Buy Now

[Shop »](#)[CATTfish Starter Kit \\$99](#)[FlaminGO Starter Kit \\$99](#)[CATTfish Carrying case \\$14](#)

## Public Water Quality

Average of public CATTfish data in the Western PA Area



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## About Us

CATTfish® and FlaminGo® were created at Carnegie Mellon University. In 2014 a new venture, MellonHead Labs, was formed to bring these two innovative environmental sensing products to market. The sensors were soon adopted by citizens and industry to track water quality changes over long periods of time and large geographic areas. Cloud based visualization of large data sets allows easy interpretation of results.

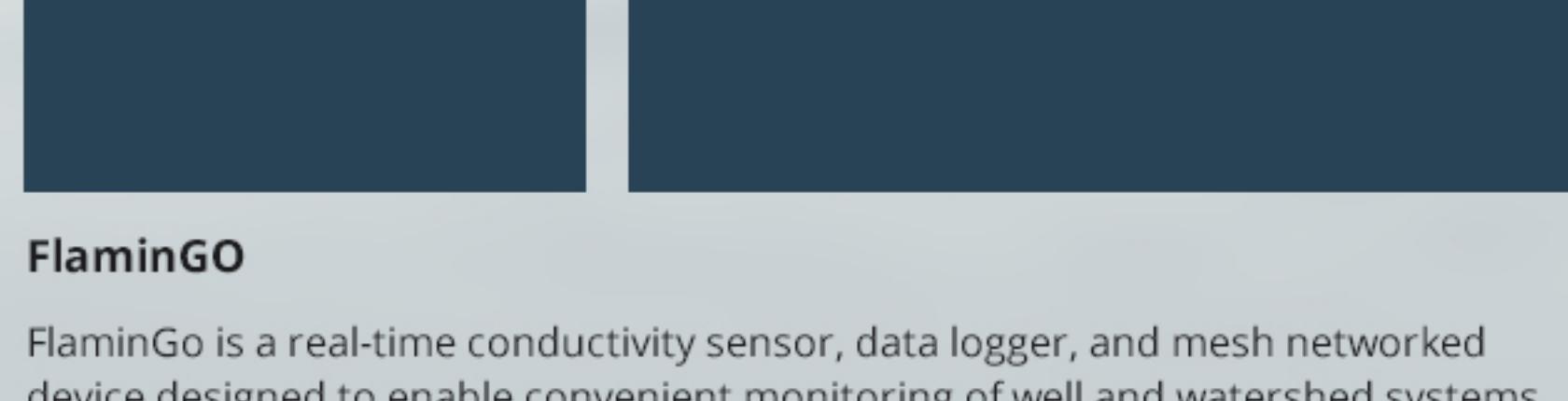
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## Technology



### CATTfish

FlaminGo is a real-time conductivity sensor, data logger, and mesh networked device designed to enable convenient monitoring of well and watershed systems with high temporal frequency and high spatial density. Conductivity of water is an indirect measure of Total Dissolved Solids (TDS), which is a frontline indicator of water quality. FlaminGo can collect and store baseline data for long periods with no external power source, autonomously in rugged conditions.



### FlaminGO

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A FlaminGo water sensor collects conductivity and temperature readings from rivers, streams, holding ponds, and other water sources. Data is collected at a high frequency, allowing the detection of events that are invisible to other types of sensors. The FlaminGo Sensor is designed for field deployment and can be powered for up to a 12-months period on a single set of alkaline batteries.

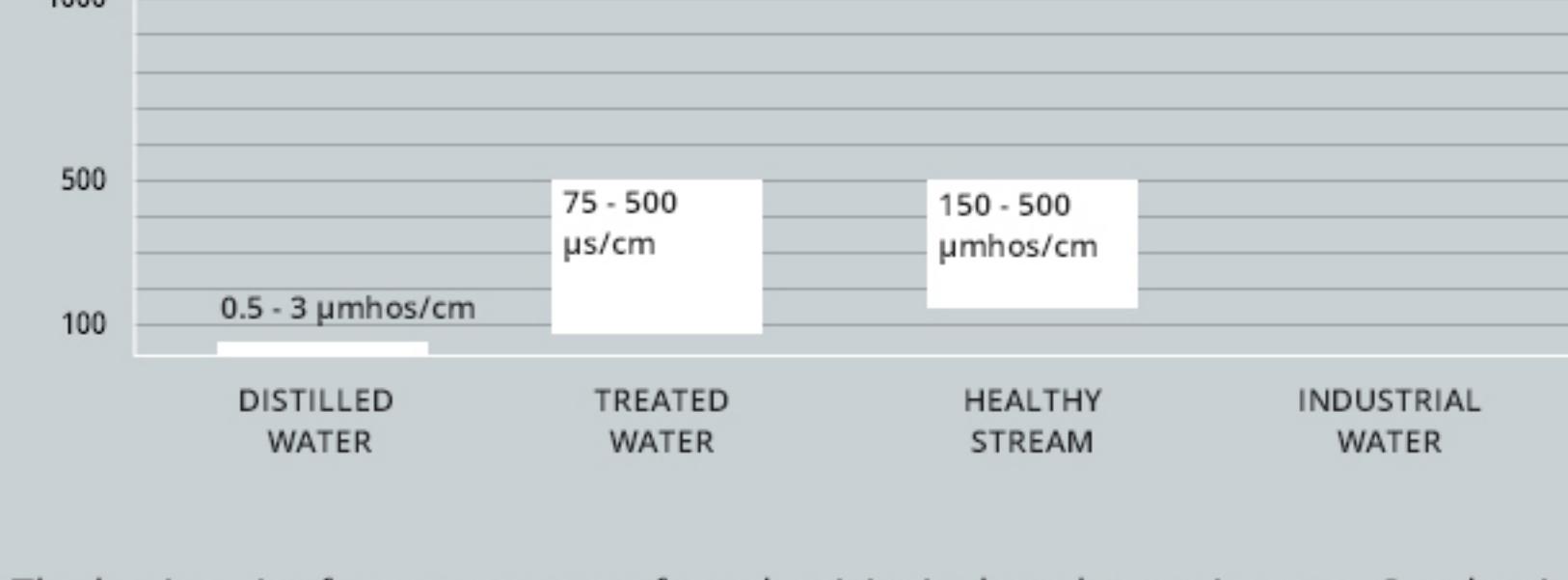
Using Low-Power Wireless communication, a FlaminGo Gateway collects the water quality data when it is in range of the Sensors. A FlaminGo Gateway can take the form of a few different devices, including hand-held laptops, automotive wireless receivers, or the compact paired receiver. Once a dataset has been collected it is uploaded to the central server over 3G/4G mobile connection.

A water quality dataset that has been stored by the central server can immediately be visualized in the cloud. The FlaminGo Viewer provides a table for finding Sensors by name, and a map for to locate by geographic location. The complex graphing at the top of the Viewer displays fluctuations of conductivity, temperature, and TDS over time. The graph can be formatted enabling visualization at the minute, day, or month-scale.

### Conductance/Total Dissolved Solids:

#### What is conductivity and why is it important?

Conductivity is a measure of the ability of water to pass an electrical current. Conductivity in water is affected by the presence of inorganic dissolved solids such as chloride, nitrate, sulfate, and phosphate anions (ions that carry a negative charge) or sodium, magnesium, calcium, iron, and aluminum cations (ions that carry a positive charge). Organic compounds like oil, phenol, alcohol, and sugar do not conduct electrical current very well and therefore have a low conductivity when in water. Conductivity is also affected by temperature: the warmer the water, the higher the conductivity. For this reason, conductivity is reported as conductivity at 25 degrees Celsius (25 C). CATTfish has been calibrated at this same industry standard.



The basic unit of measurement of conductivity is the mho or siemens. Conductivity is measured in micromhos per centimeter ( $\mu\text{mhos}/\text{cm}$ ) or microsiemens per centimeter ( $\mu\text{s}/\text{cm}$ ). Distilled water has a conductivity in the range of 0.5 to 3  $\mu\text{mhos}/\text{cm}$ . Water treated centrally ranges from 75 to 500  $\mu\text{s}/\text{cm}$  – this is the scale used by CATTfish and FlaminGo. The conductivity of rivers in the United States generally ranges from 50 to 1500  $\mu\text{mhos}/\text{cm}$ . Studies of inland fresh waters indicate that streams supporting good mixed fisheries have a range between 150 and 500  $\mu\text{mhos}/\text{cm}$ . Conductivity outside this range could indicate that the water is not suitable for certain species of fish or macroinvertebrates. Industrial waters can range as high as 10,000  $\mu\text{mhos}/\text{cm}$ .

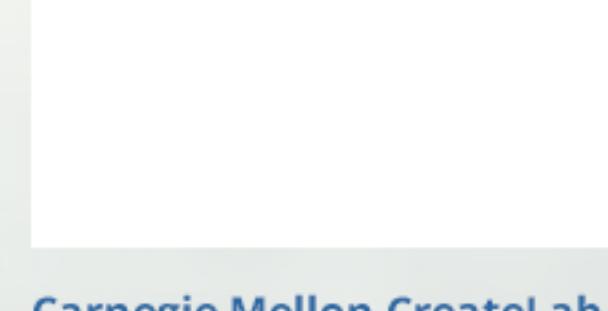
#### Sampling and equipment Considerations

Conductivity is useful as a general measure of water quality. Each water source tends to have a relatively constant range of conductivity that, once established, can be used as a baseline for comparison with regular conductivity measurements. Significant changes in conductivity could then be an indicator that a discharge or some other source of pollution has entered a water source.

Conductivity is measured with a probe and a meter. Voltage is applied between two electrodes in a probe immersed in the sample water. The drop in voltage caused by the resistance of the water is used to calculate the conductivity per centimeter. The meter converts the probe measurement to micromhos per centimeter and displays the result for the user. NOTE: Some conductivity meters can also be used to test for total dissolved solids and salinity. The total dissolved solids concentration in milligrams per liter (mg/L) can also be calculated by multiplying the conductivity result by a factor between 0.55 and 0.9, which is empirically determined (see Standard Methods #2510, APHA 1992).

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## Partners



### Carnegie Mellon CreateLab

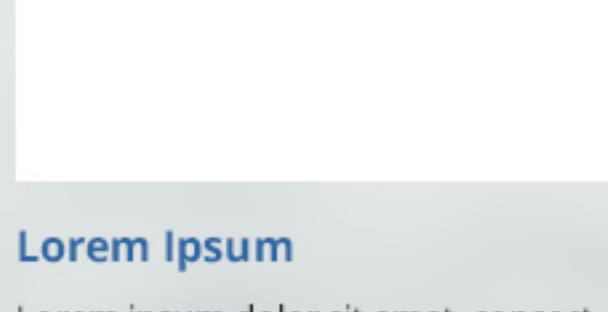
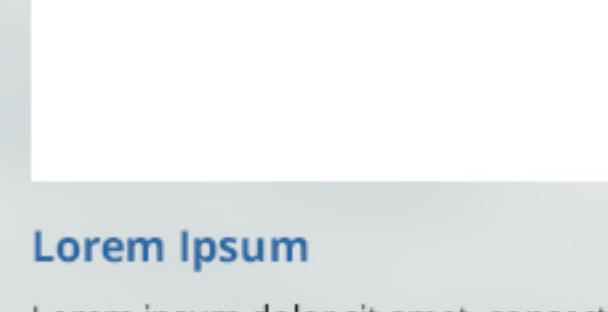
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### EPA

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### Columbia Gas of PA

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## Contact Us

**Send us an email:**

For more information about CATTfish and FlaminGO products, press inquiries, or partnership opportunities send us an email.

**name****email address****message****SEND****Mailing address:**

MellonHead Labs  
3117 Washington Pike, STE 600  
Pittsburgh, PA 15017

**Telephone:**

412-942-9001

# Water Quality Dashboard

## DEVICES

5 MI AVERAGE

UPSTAIRS BATH

**DOWNSTAIRS BATH**

1500

1290  $\mu\text{S/cm}$   
5/4/2014, 9:42pm  
water temp: 7.2°

UNSAFE



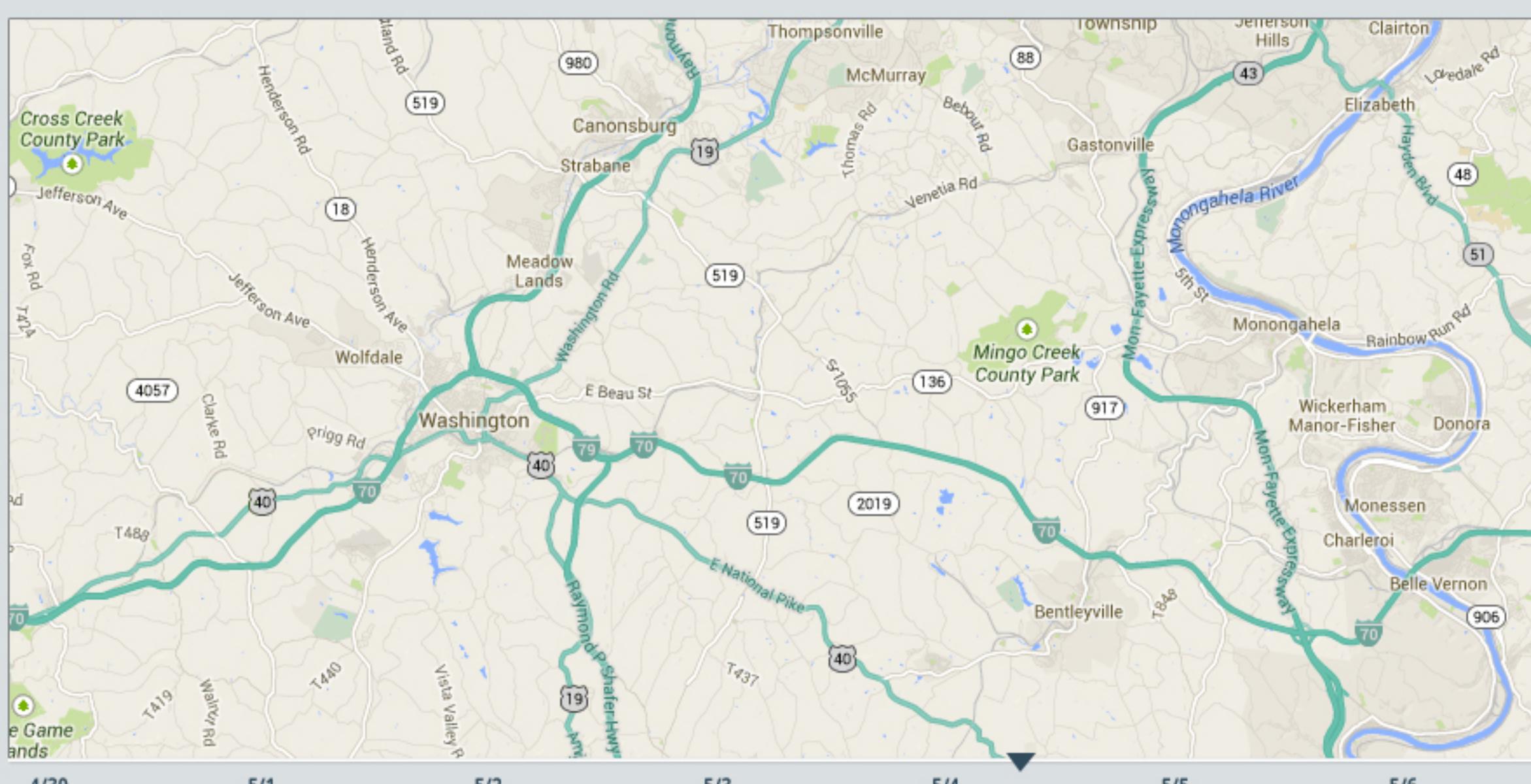
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5/1

5/2

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**MellonHead Labs**  
3117 Washington Pike, STE 600  
Pittsburgh, PA 15017  
Tele 412-942-9001  
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Recognizing device...

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## DEVICES

5 MI AVERAGE

## UPSTAIRS BATH

**DOWNSTAIRS BATH**



1500

**UNSAFE**



4/30

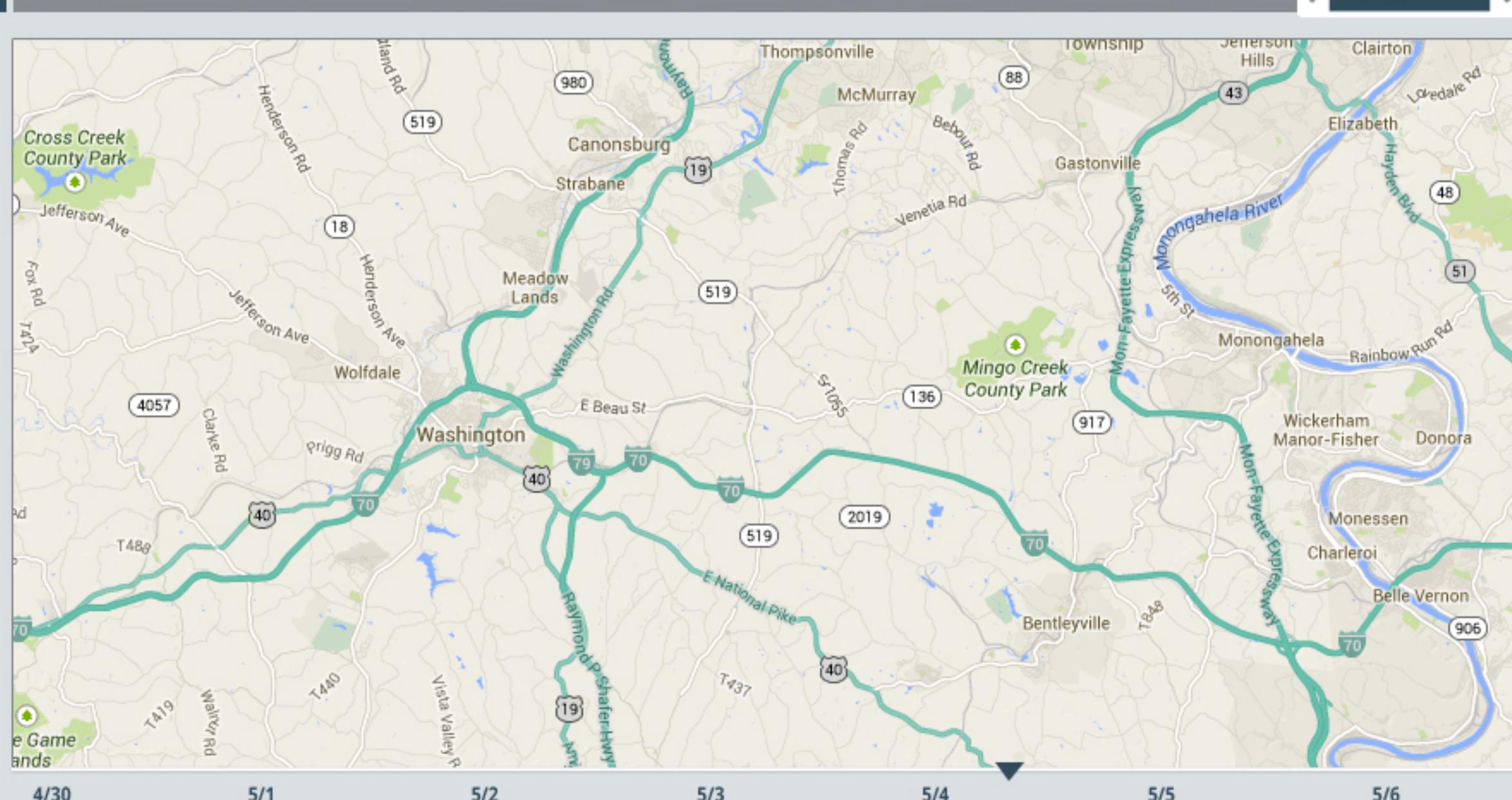
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This device isn't registered to an account yet.

## Create new account

[Already have an account?](#)

Name

Email

Address line 1

Address line 2

City

State

Pennsylvania

Zip Code

I Agree to the [Terms and Conditions](#)

[SIGN UP](#)

Email

Password

[SIGN IN](#)

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[info@CATTfish.com](mailto:info@CATTfish.com)

## Devices

[ADD DEVICE](#)

## New Device

[✓ DONE](#)

CATTfish

## LOCATION:

## Address line 1

3423 Main Street

## Address line 2

## City

Washington

## State

Pennsylvania

## Zip code

14352

## PRIVACY:

 Keep my data private Publicly share my data anonymously

(data shared anonymously will be shown as a five mile radius around the device's location, no address information will be shared.)

## COLOR

[Link device with existing data set »](#)[Deactivate device and delete all data »](#)

## Downstairs Bathroom [PUBLIC]

[EDIT](#)

CATTfish

## LOCATION:

3423 Main Street  
Washington PA, 14352

## RECENT SAMPLES:

5/18/2014 3:30 pm	1245 $\mu\text{s}/\text{cm}$	5/17/2014 4:54 pm	323 $\mu\text{s}/\text{cm}$
5/18/2014 2:16 pm	902 $\mu\text{s}/\text{cm}$	5/16/2014 9:46 am	479 $\mu\text{s}/\text{cm}$

## Devices

ADD DEVICE

New Device

✓ DONE

CATTfish

Which data set would you like to link this device to?

Downstairs Bathroom

Cancel

Downstairs Bathroom [PUBLIC]

EDIT

CATTfish

LOCATION:

3423 Main Street  
Washington PA, 14352

RECENT SAMPLES:

5/18/2014 3:30 pm	1245 $\mu\text{s}/\text{cm}$	5/17/2014 4:54 pm	323 $\mu\text{s}/\text{cm}$
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Pittsburgh, PA 15017  
Tele 412-942-9001  
info@CATTfish.com

## Devices

ADD DEVICE

New Device

✓ DONE

CATTfish

Are you sure you want to link this device to Downstairs Bathroom Data? The device currently associated with Downstairs Bathroom will be deactivated.

Yes, link new device

No, go back

## Downstairs Bathroom [PUBLIC]

CATTfish

EDIT

## LOCATION:

3423 Main Street  
Washington PA, 14352

## RECENT SAMPLES:

5/18/2014 3:30 pm	1245 $\mu\text{s}/\text{cm}$	5/17/2014 4:54 pm	323 $\mu\text{s}/\text{cm}$
5/18/2014 2:16 pm	902 $\mu\text{s}/\text{cm}$	5/16/2014 9:46 am	479 $\mu\text{s}/\text{cm}$

## Devices

[ADD DEVICE](#)**Upstairs Bathroom [PRIVATE]**

CATTfish

[EDIT](#)

## LOCATION:

3423 Main Street  
Washington PA, 14352

## RECENT SAMPLES:

5/18/2014  
3:30 pm      **1290**  $\mu\text{s}/\text{cm}$ 5/17/2014  
4:54 pm      **750**  $\mu\text{s}/\text{cm}$ 5/18/2014  
2:16 pm      **876**  $\mu\text{s}/\text{cm}$ 5/16/2014  
9:46 am      **432**  $\mu\text{s}/\text{cm}$ **Downstairs Bathroom [PUBLIC]**

CATTfish

[EDIT](#)

## LOCATION:

3423 Main Street  
Washington PA, 14352

## RECENT SAMPLES:

5/18/2014  
3:30 pm      **1245**  $\mu\text{s}/\text{cm}$ 5/17/2014  
4:54 pm      **323**  $\mu\text{s}/\text{cm}$ 5/18/2014  
2:16 pm      **902**  $\mu\text{s}/\text{cm}$ 5/16/2014  
9:46 am      **479**  $\mu\text{s}/\text{cm}$ [Home](#)[About](#)[Contact](#)[Terms & Conditions](#)[Shop](#)[Public Data](#)

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## Devices

ADD DEVICE

## Upstairs Bathroom [PRIVATE]

CATTfish

EDIT

## LOCATION:

3423 Main Street  
Washington PA, 14352

## RECENT SAMPLES:

5/18/2014 3:30 pm 1290  $\mu\text{s}/\text{cm}$ 5/17/2014 4:54 pm 750  $\mu\text{s}/\text{cm}$ 5/18/2014 2:16 pm 876  $\mu\text{s}/\text{cm}$ 5/16/2014 9:46 am 432  $\mu\text{s}/\text{cm}$ 

## Downstairs Bathroom

✓ DONE

CATTfish

## LOCATION:

Address line 1

3423 Main Street

Address line 2

City

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## PRIVACY:

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State

Pennsylvania

Zip code

14352

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[info@CATTfish.com](mailto:info@CATTfish.com)

## Account Info

**NAME**

John Smith

**ADDRESS**3423 Main Street  
Washington PA, 14352[EDIT](#)[Change Password »](#)**DEVICES**