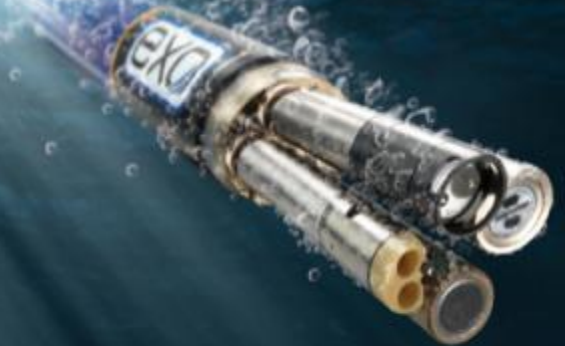




breaking the SONDE barrier

An Introduction to Water Quality Sondes as an Early Warning Indicator

Kyle Kaminski
YSI Incorporated, a Xylem Brand



What is a water quality sonde?

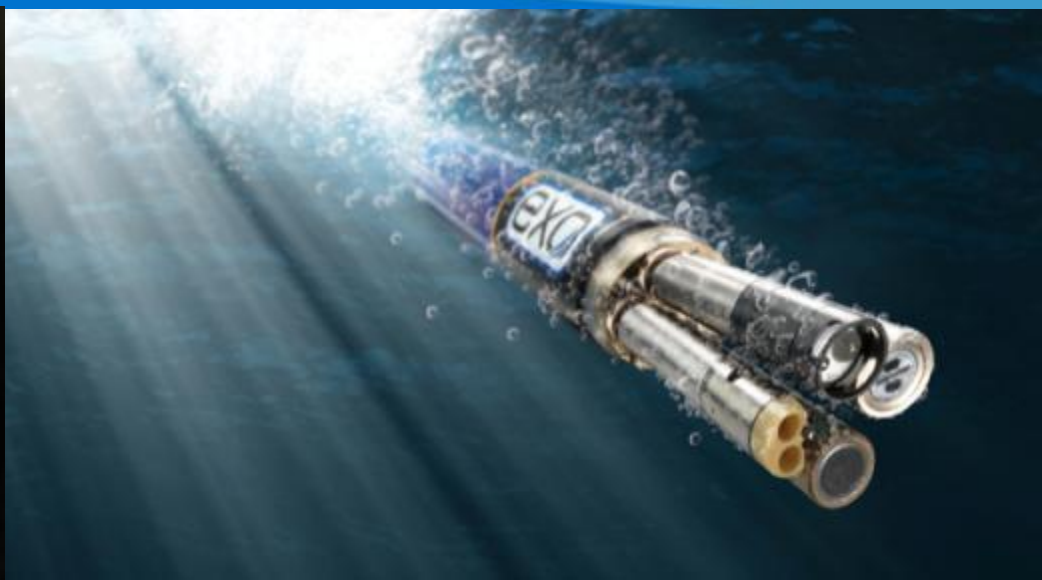




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EXO Overview

The Stronger, Faster, Smarter Monitoring Platform

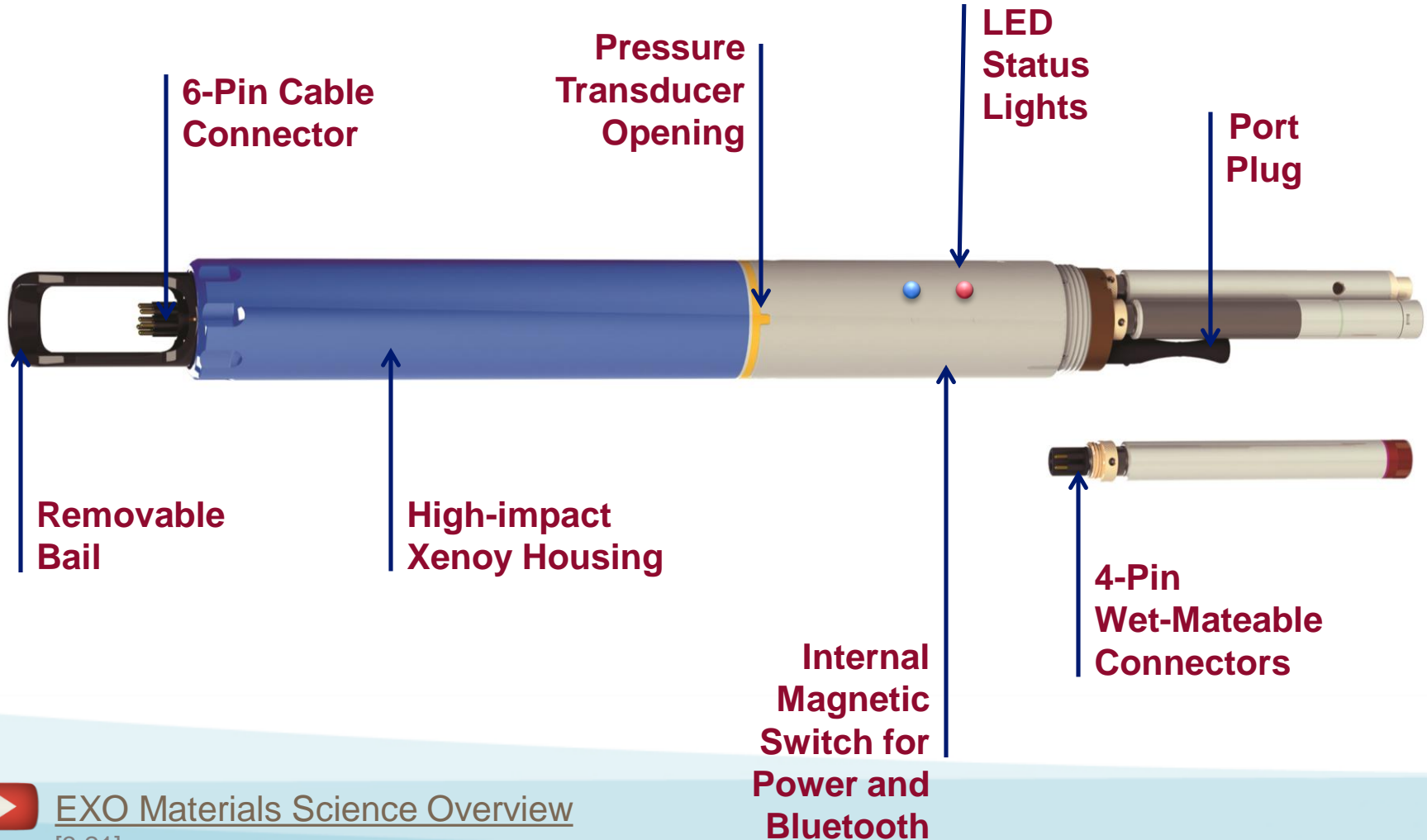




breaking the SONDE barrier

EXO1 Anatomy

EXOwater.com





breaking the SONDE barrier

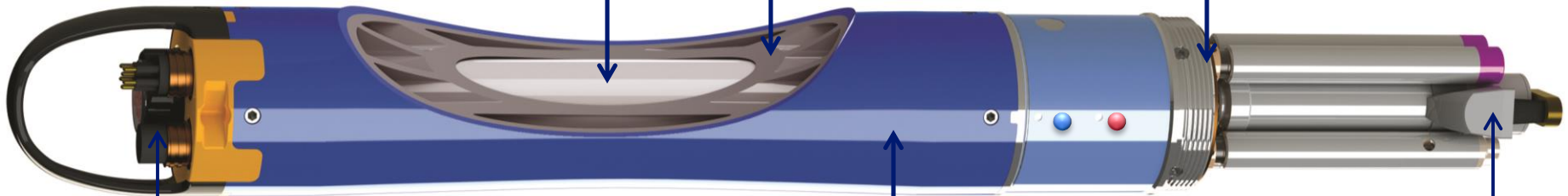
EXO2 Anatomy

EXOwater.com

Battery
Compartment

Reinforced
internal
structure

Welded
Titanium
Bulkhead and
connectors



Cable connector,
battery valve, and
expansion port for an
additional sensor

High-impact
Xenoy Housing



Anti-fouling wiper keeps
sensors clear of biofouling
and lengthens deployment
times by 25%



breaking the SONDE barrier

Side By Side

EXOwater.com



Sonde Applications





breaking the SONDE barrier

EXO's Capabilities

EXOWater.com



Smart Ports

- Any Sensor – Any Port
- Sensor Auto-detection
- Customize the payload for *your* application
- AC Capacitive Coupling (protects electrical circuitry from shorting out)



[EXO Smart Ports – Smart Sensors](#)

[1:46]



SmartQC



Features You'll Find Only with EXO



Assisted Calibration

Graphical KOR software speeds the calibration process while reducing reagent consumption



Auto-recognition

and set-up of all sensors with background data routing



Titanium Sensors

with wet-mateable connectors and welded seals for deeper depths



Cable-free Operation

through the use of wireless communications



Biofouling Protection

with copper-alloy components and anti-fouling wipers



SmartQC

Smart QC

Automatically checks for faults and errors to ensure successful deployments



breaking the SONDE barrier

EXO Smart Sensors

EXOWater.com



Conductivity & Temperature

- Improved Temp. accuracy and response
- Improved Conductivity range
- Required for all monitoring applications



Total Algae

- Two sensors in one
- Chlorophyll + BGA-PC or PE



Turbidity

- Increased range without loss of accuracy



Wiper System

- For use with EXO2 platform
- Superior anti-fouling
- Faster sampling response



[EXO Smart Ports – Smart Sensors](#)

[1:46]



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EXO Smart Sensors

EXOWater.com



Ph + ORP

- Removable probe head
- Guarded and Unguarded versions



Fluorescent Dissolved Organic Matter (fDOM)

- New for YSI



Ion Selective Electrode

- Replaceable module
- Ammonium, Chloride, Nitrate



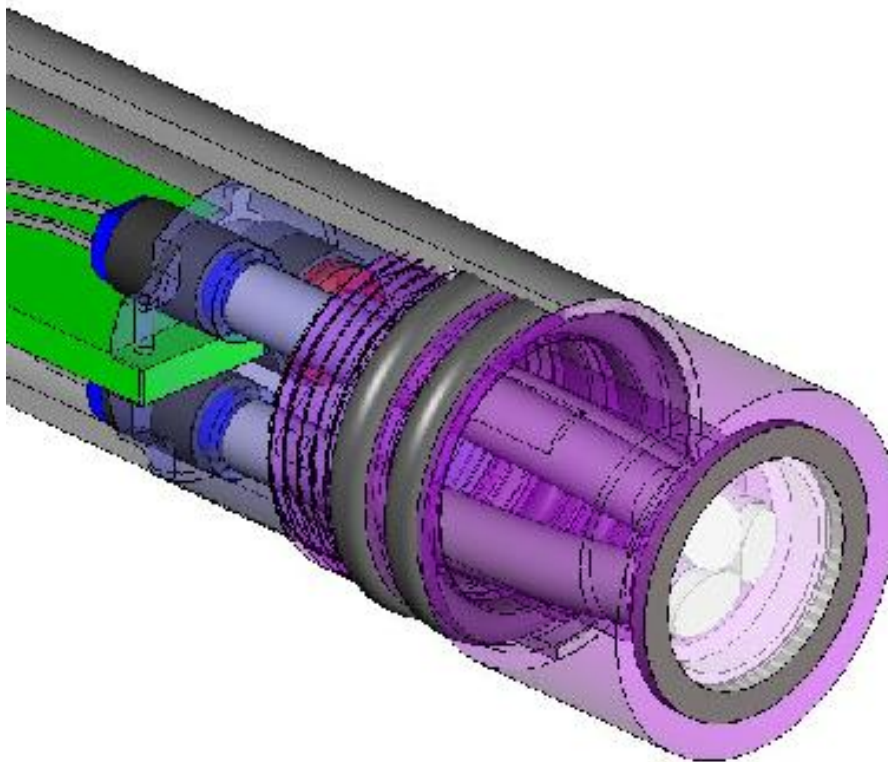
Optical Dissolved Oxygen

- Improved accuracy above 200%
- Faster response
- Screw-on membrane

 [Replacing pH/ORP Sensor Module](#)
[1:46]

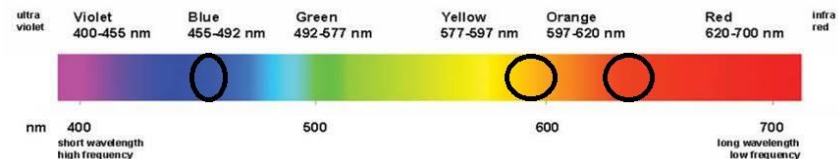
 [Replacing ODO Sensor Cap](#)
[1:46]

Total Algae Probe (Chl + BGA-PC)



Performance Benefits of Total Algae

- Two sensors in one
- **Senses viable cells only**, insensitive to degraded pigments
- More accurate estimate of total algae biomass by addressing underestimate issue with CHL sensors when cyanobacteria are present
- Discriminates between cyanobacteria and other types of algae
- Significantly **less sensitive to common interferences** (turbidity, fDOM, degraded pigments) due to narrow bandpass optics
- Lower detection limits
- Faster response
- Deeper depth rating



Easy calibration in lab



- Calibrate multiple sensors of the same type on one sonde
- Guided calibration procedure
- Software informs user when sensor is stable
- Wireless communication (Bluetooth)

EXO2 Central Wiper







breaking the SONDE barrier

Accessories

EXOWater.com



Field cables



USB Adapter



DCP Adapter



Carrying Cases



Lithium-Ion Battery pack



EXO Handheld



[EXO Accessories List](#)



[EXO Full Parts List](#)



[Field Survival Guide](#)
[2:07]

Ease-of-Use = Time Saved

- Sonde automatically recognizes sensors
- Calibrate multiple sensors in one sonde and use in other sondes
- Bluetooth wireless communication reduces cables in the lab
- Indicator LEDs on sonde confirm health and state
- Magnetic control for Bluetooth





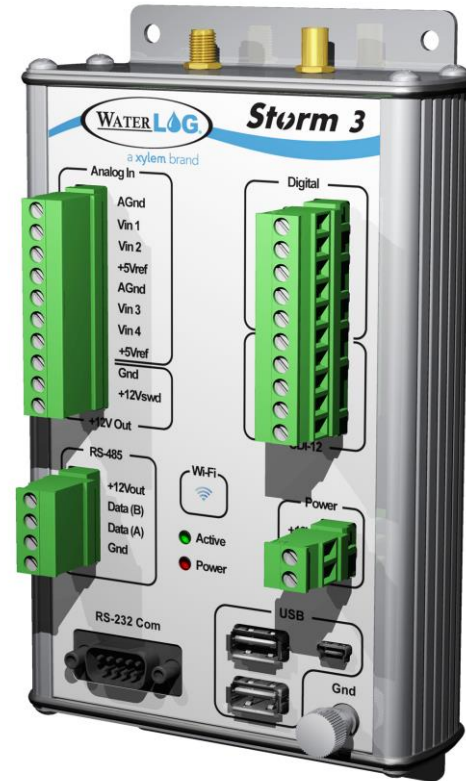
breaking the SONDE barrier

Real-time data delivery

EXOWater.com



Modbus Adapter



Storm3 Data Logger



[EXO Accessories List](#)



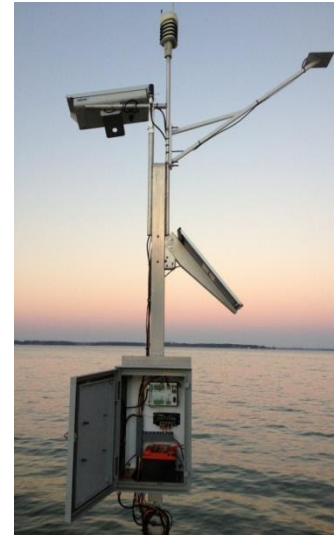
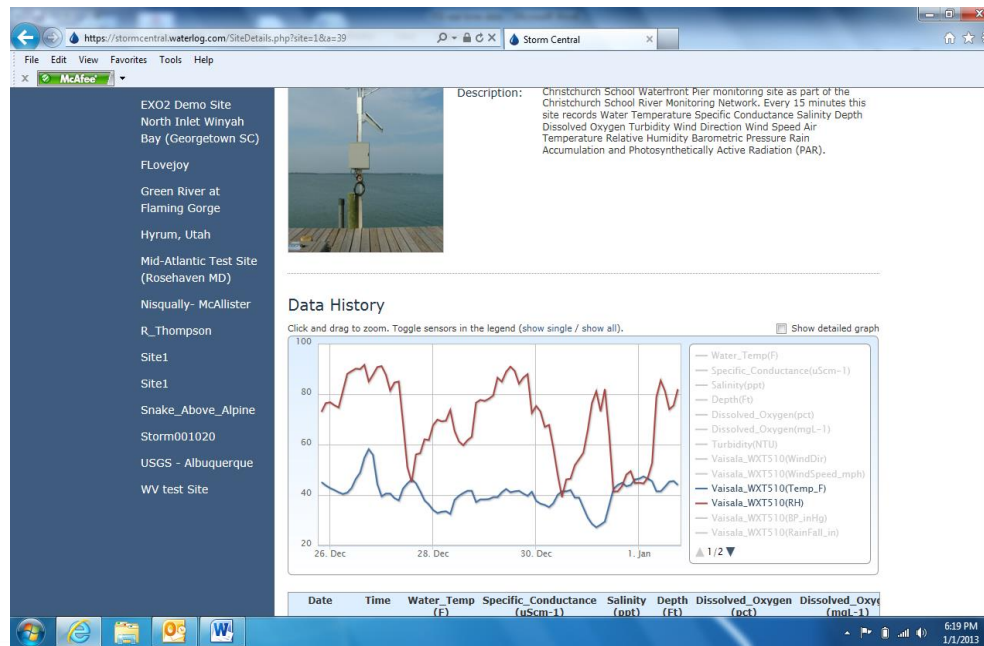
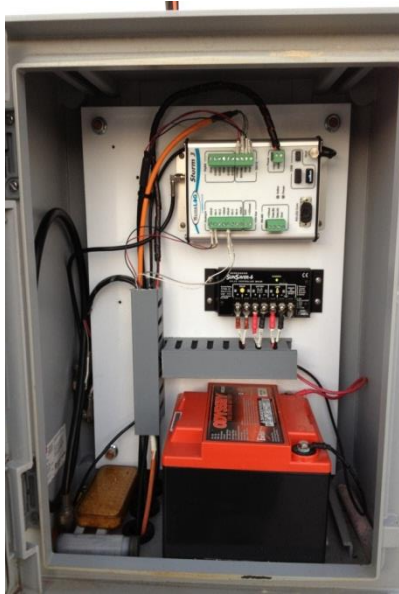
[EXO Full Parts List](#)



[Field Survival Guide](#)

[2:07]

Real-Time Data Delivery





- Real-time data is viewable on any internet-connected device
- Data can also be sent to SCADA system

Mounting & Locations



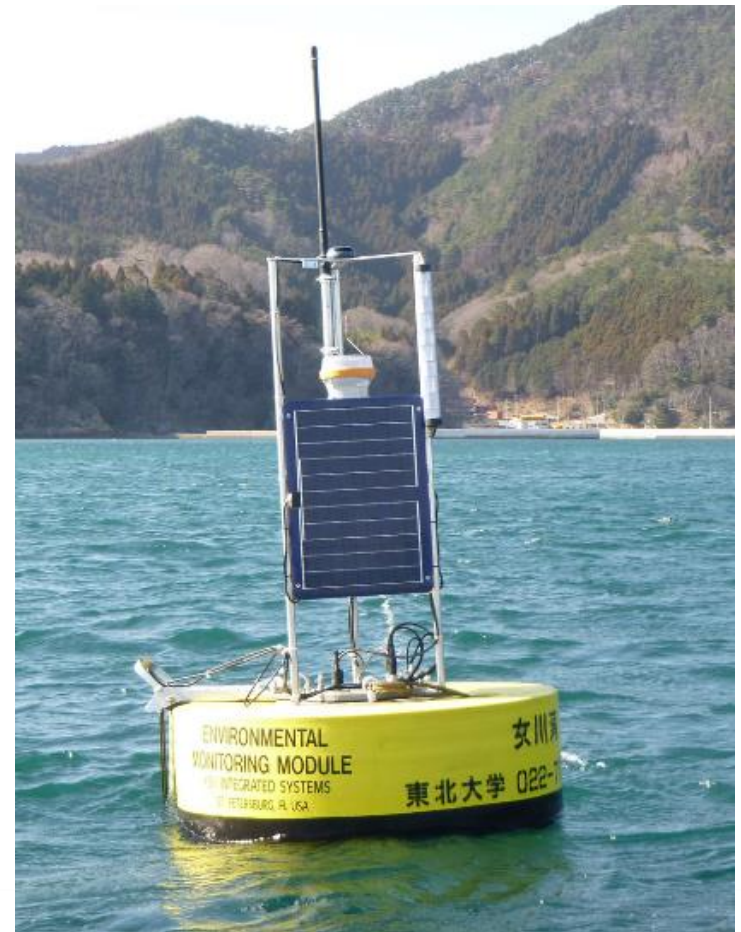
Mounting & Locations



Mounting & Locations



Buoys



Vertical Profilers





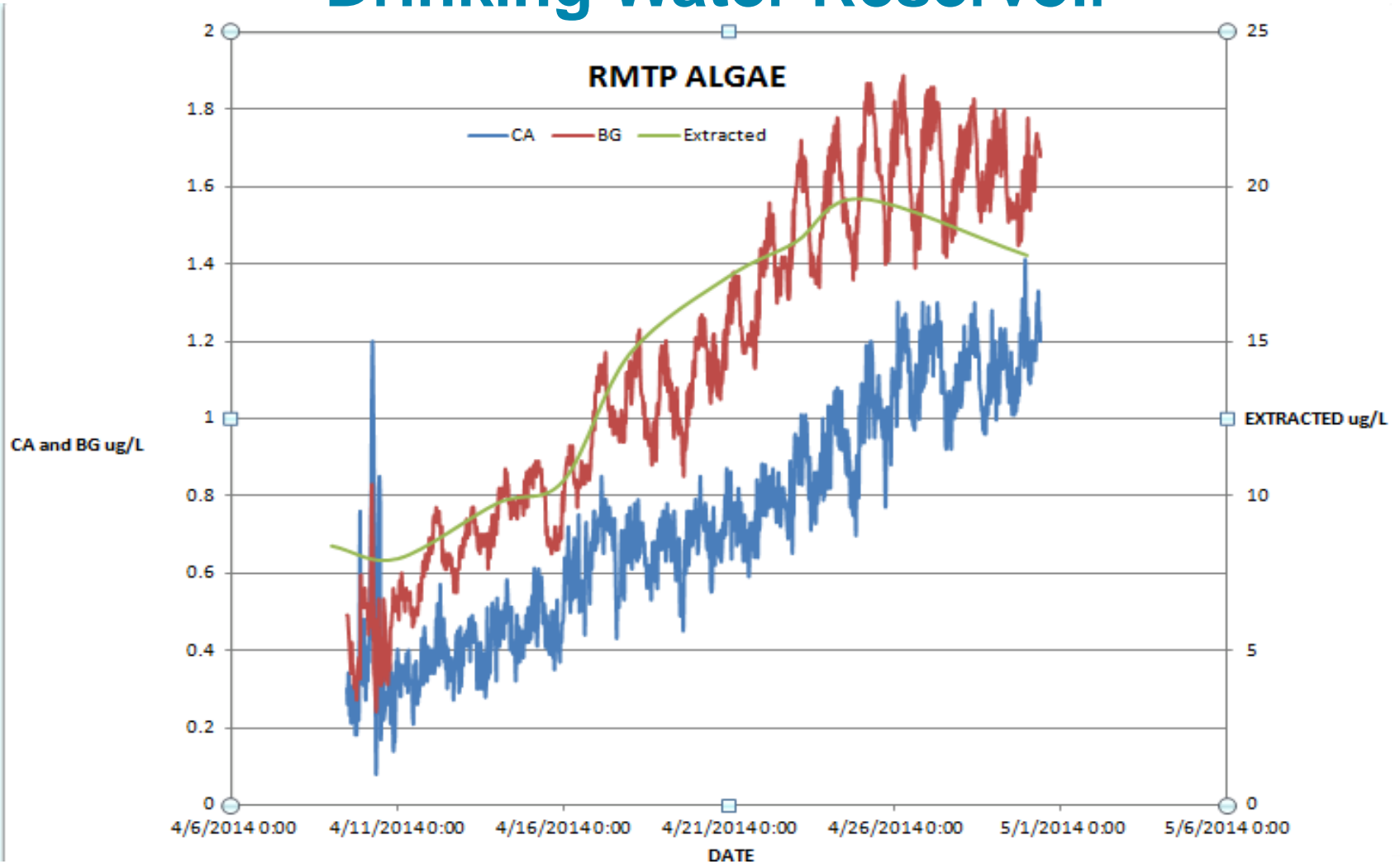
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Applications

The Places You'll Go with EXO



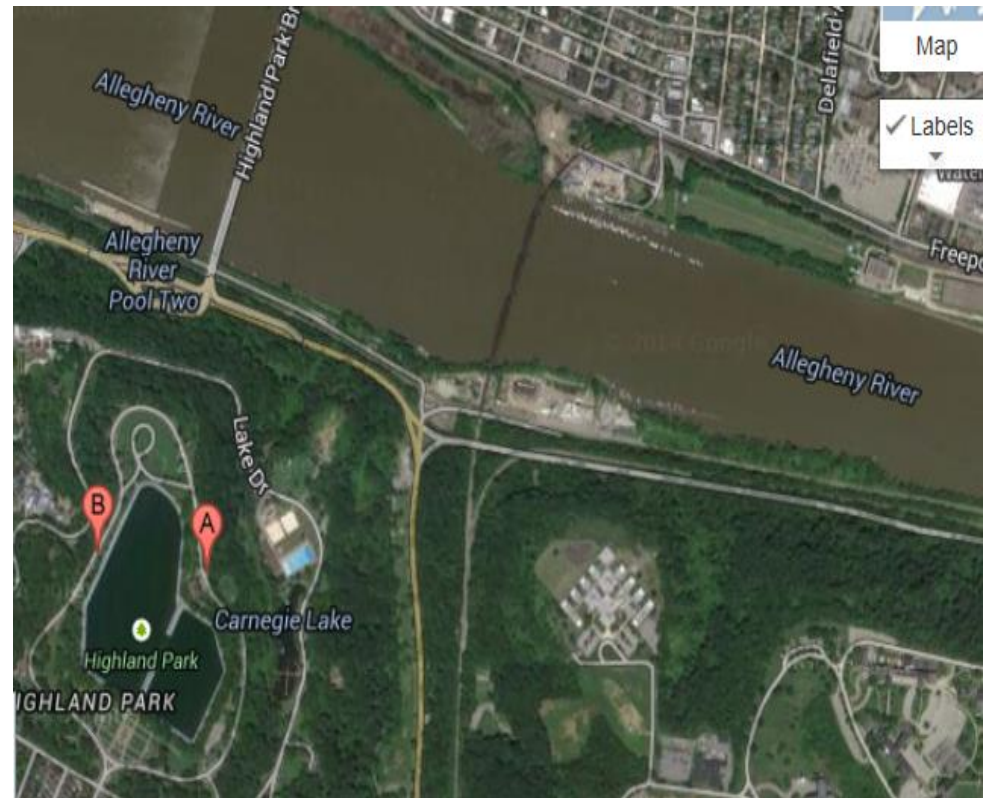
Cincinnati, OH Drinking Water Reservoir



Pittsburgh Drinking Water



Pittsburgh Drinking Water



Toledo and the Western Basin



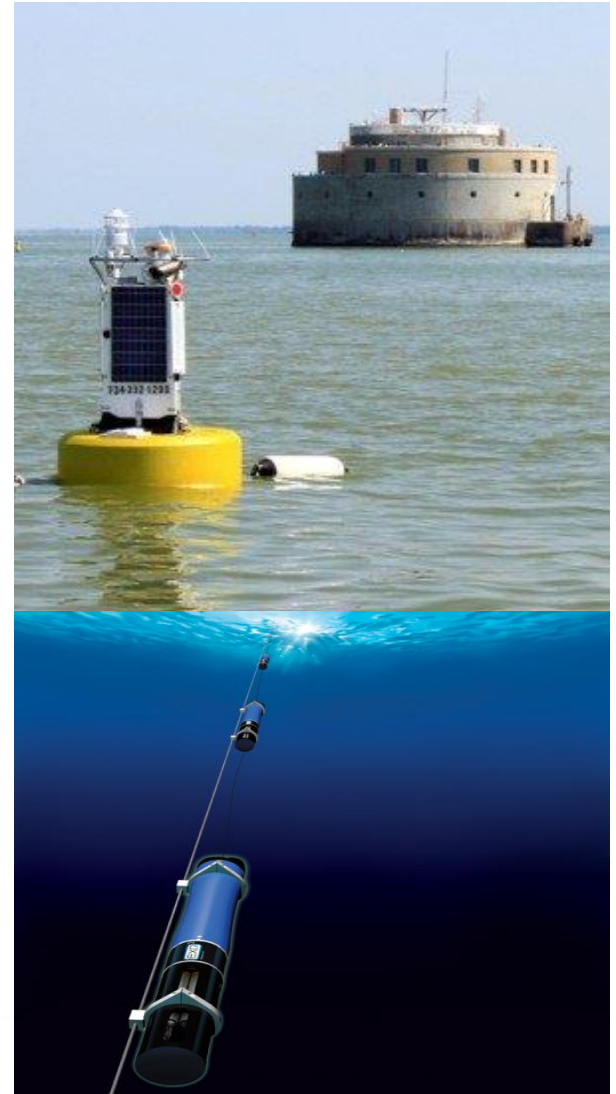
Toledo and the Western Basin

Toledo Buoy

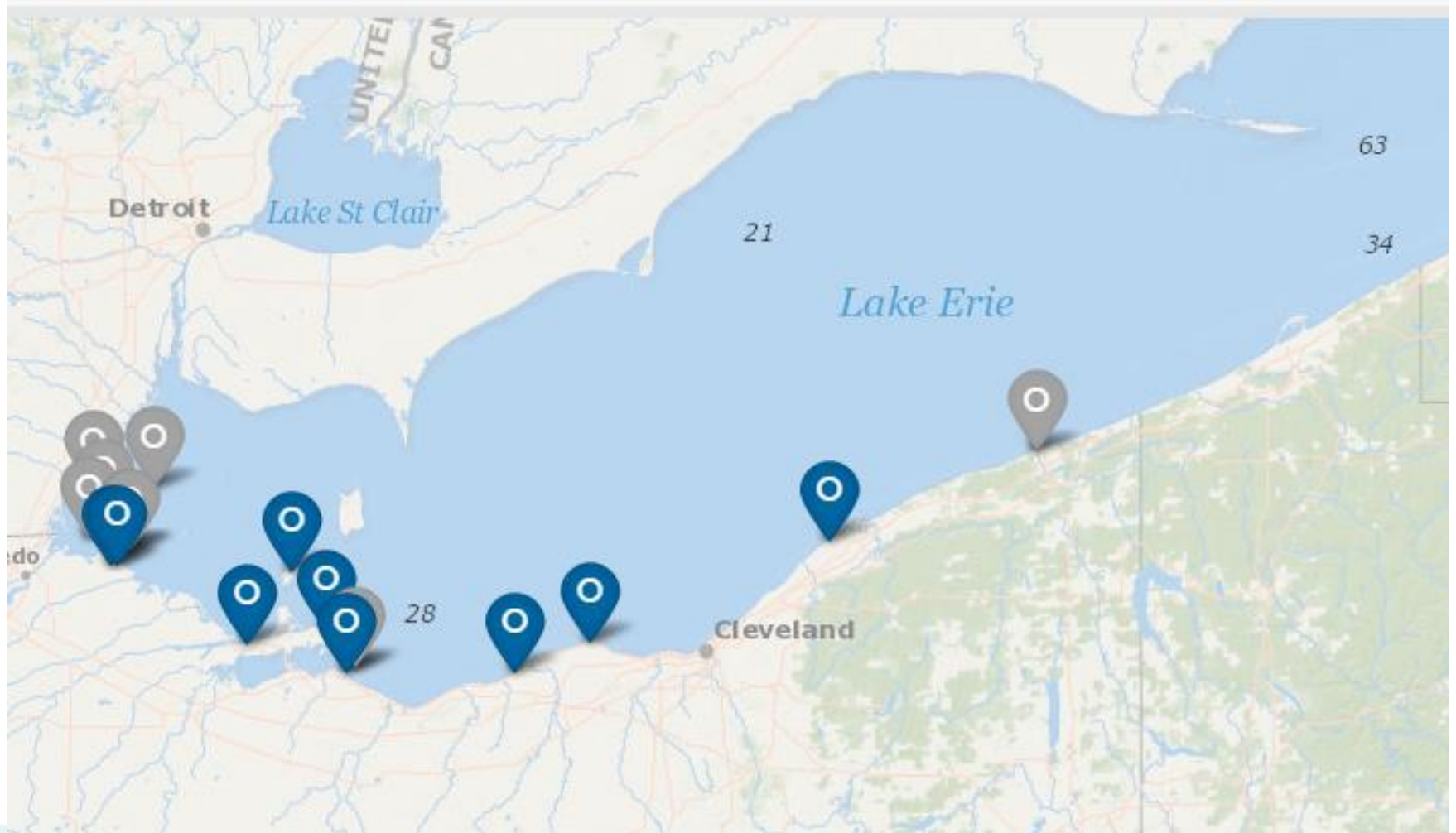
- (2) EXO2 sondes mounted at different depths (water temperature, conductivity, pH, ORP, TDS, turbidity, total algae (blue-green algae and chlorophyll)).
- Water current and direction
- Wind speed, barometric pressure, rainfall
- Video camera

Sondes also mounted inside drinking water crib

Data transmission provides real time monitoring for many partners



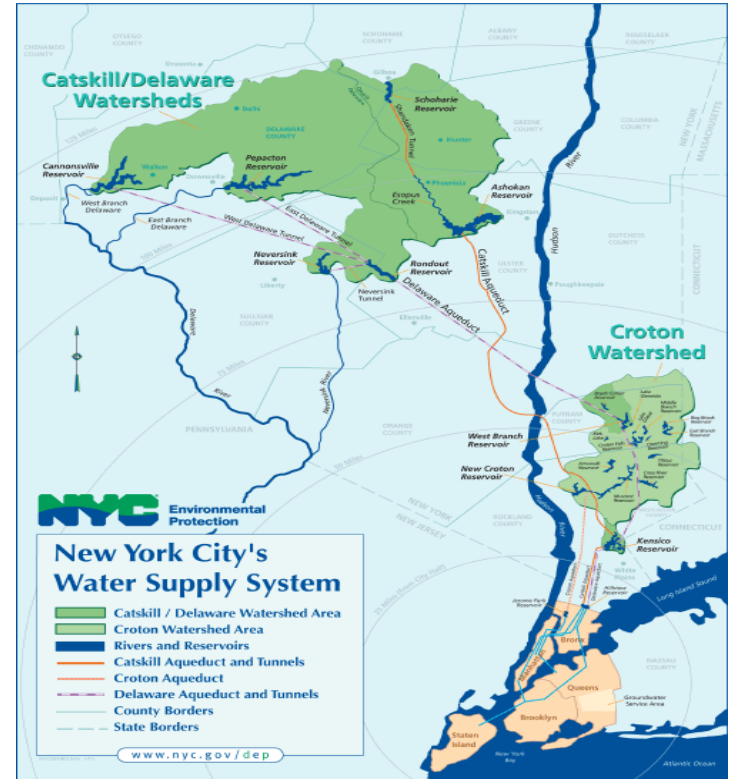
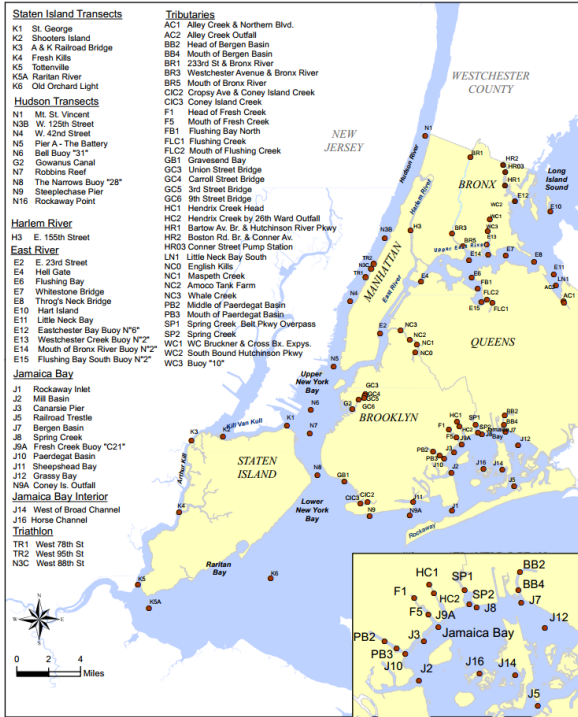
Lake Erie



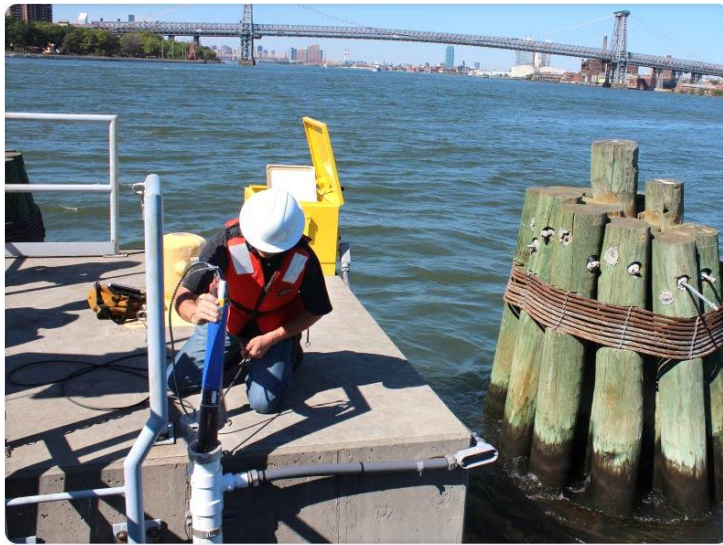
New York City



Harbor Water Quality Survey 2014



New York City



Benefits of EXO sonde with real-time data delivery

- **Hassle-free water quality monitoring system**

- Easy to calibrate
- Anti-fouling features

- **Portable**

- Can be deployed almost anywhere
- Logging at user-defined intervals

- **Less time spent in field**

- Data is stored internally in sonde
- Stored data can be sent anywhere
 - Lab computer
 - Smart phone/tablet
 - SCADA system

- **Alerts**



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Water Monitoring and Sampling Experts



AVAILABLE NOW

EXO UNIVERSITY an online training portal of self-guided lessons for getting the most out of your EXO platform.

- FREE to enroll

Why EXO?

- Versatile instrument that can be used in a variety of applications
- Reduced operating costs
- Invest in a platform suitable for changing needs
- Durability/ease of use



[EXO Smart Ports – Smart Sensors](#)

[1:46]





breaking the SONDE barrier

EXO

Advanced Water Quality Monitoring Platform

EXOWater.com

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937-776-8611

