

SPOTTING POLLUTION FROM 440 MILES UP

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Seeing is Believing

That's the mantra of Blue Water Satellite, Inc. (BWSI), which uses satellite data to find the locations and concentrations of some of the worst threats contaminating our waters. "If you're using grab-sampling, you're missing the boat," says Blue Water Satellite CEO Milt Baker. "Think about it. If you're taking seven or eight one-liter samples from a reservoir that contains billions of gallons of water, what are the chances you're getting an accurate reading on the contaminants in the *entire* body of water? Not very good."

Blue Water Satellite uses raw data from USGS' Landsats 5 & 7, and processes the data through their patented (& patent-pending) algorithms to detect the locations and concentrations (in Parts Per Billion) of blue green algae (cyanobacteria), Chlorophyll-*a* and phosphorus in water. The company also has the ability to detect phosphorus in surface soils, helping their water-quality clients determine where the nutrient loads are originating.

"It's a high-tech but common sense approach to testing or monitoring the quality of your raw water" Baker emphasizes. "Things like cyanobacteria and chlorophyll-a aren't evenly distributed in your lake or reservoir or hydroelectric impoundment.

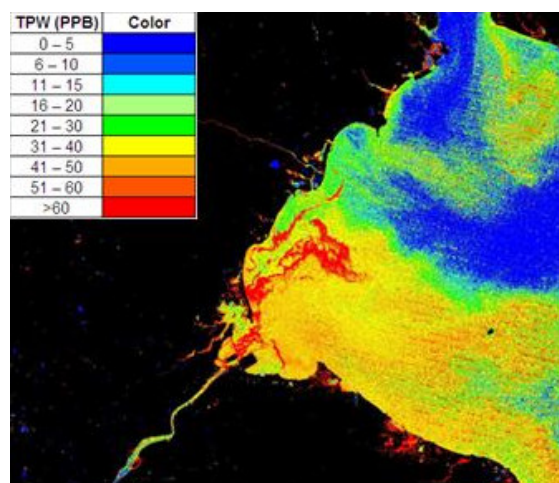
If you're dipping bottles into the water, how do you know that tiny bit of water is representative of what's going on even a few feet away? You don't, but we do."

Blue Water Satellite is located in Bowling Green, Ohio, just off-campus from Bowling Green State University, where the technology was developed under the direction of Dr. Robert Vincent, who entered the world of remote sensing in 1966. The science behind Blue Water's technology is based on the ratios between the bands of reflected light. That eliminates the vagaries associated

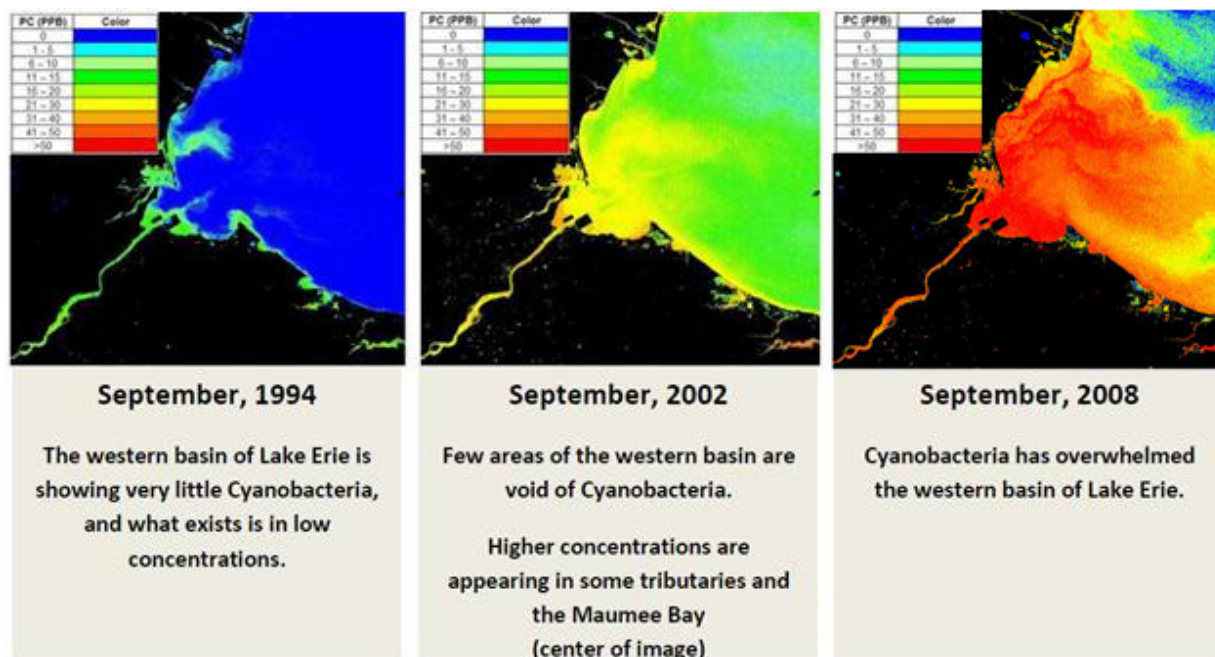
with sun glint and other obstructions to getting a clear view of what's in the water, and how much of it is there. BWSI's technology has been subjected to numerous ground-truthing studies and peer reviews.



Natural Color Landsat Image Western Lake Erie



Blue Water Satellite scan for Phosphorus Western Lake Erie



“And it’s cost-effective” Baker points out. “We can test a 10,000 acre body of water for phosphorus or cyanobacteria for just over \$3000. That’s less than you’d pay to send a crew out in a boat, ship a few water samples to a lab and pay for testing. And with our technology, you see the condition of the whole lake.”

GOING BACK IN TIME

Most of Blue Water Satellite’s work involves ongoing monitoring contracts, but much of the data they produce is used for baselining.

“A lot of our clients want to see when and where their problems began” says Louis Sanderson, Blue Water’s Senior Project Scientist. “So we retrieve stored data from as far back as 1982, process it through our algorithms and show them how things have changed in their water body over the years.”

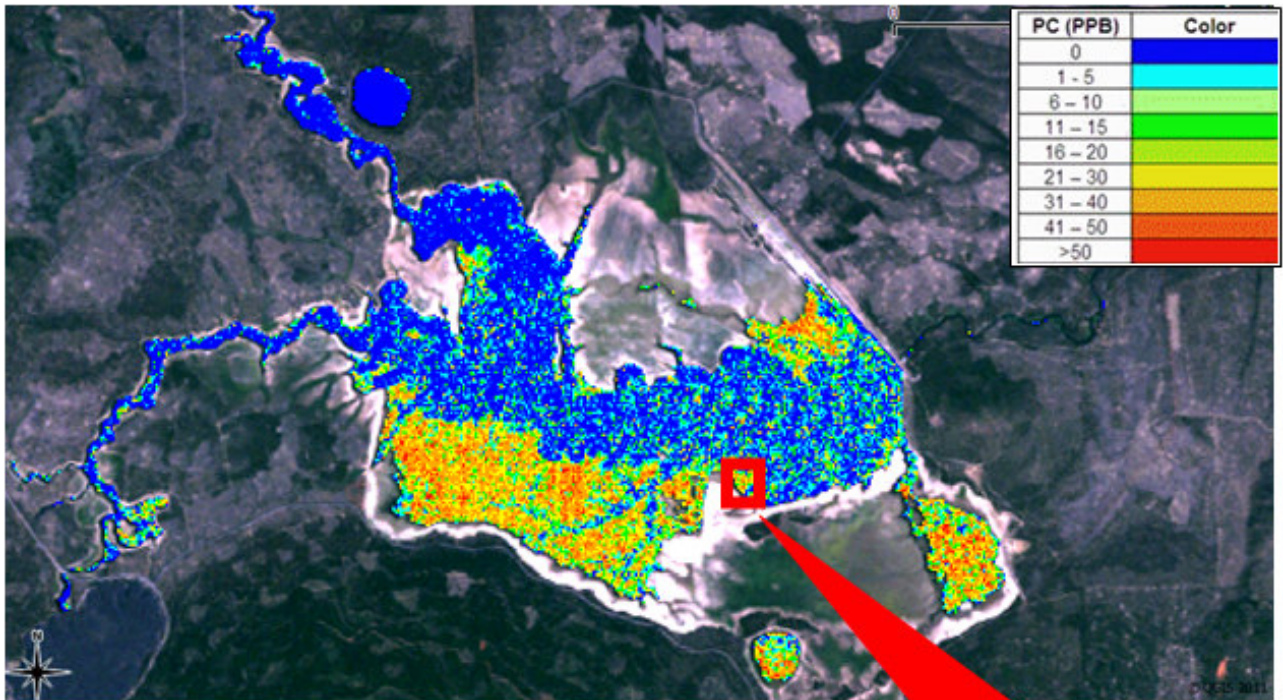
This ability to take old information and run it through new processes allows BWSI clients to track not only

degrading water conditions, but whether remediation efforts are working and water quality is improving.

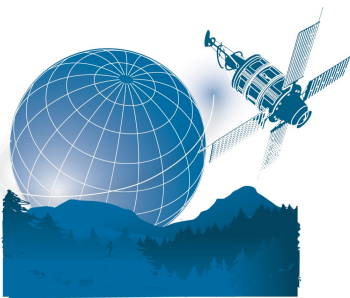
Despite scanning the globe from an altitude of 483 miles, the Landsat satellites’ resolution allows BWSI to detect precise conditions in “samples” of about 98’ x 98’ (30m x 30m). Each pixel is Geo-tagged for lat & long, and the TIF files the company delivers work in ArcGIS and other GIS software systems for closer analysis and determination of precise concentrations at any single location.

Blue Water Satellite CEO Baker says the company is developing algorithms to detect other constituents such as E. Coli and Nitrogen, and has been successful in early tests using higher resolution data from commercial satellites.

“We’ve done work around the U.S. and in several other countries. The U.S. EPA just put out its first request for satellite monitoring for HABs (Harmful Algal Blooms) last month. The world is catching on that satellite detection of pollution is the way to go. We haven’t even scratched the surface.”



Wickiup Reservoir, OR, July 27, 2001



BLUE WATER
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