

*Delivering Healthy Water: building
the science-policy interface to
protect bathing water quality*

Workshop #3 - Economic Implications

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Returns on “Blue” Investments

- **Investing capital in coastal and riparian improvements will generate revenue**
 - Tourism, jobs attraction/retention, etc.
- **Cost benefit analyses should be employed**
 - More rapid analysis/notification (increased public health protection = avoided damages)
 - Mitigation measures should be based on sound science (target funds for maximum return on investment)
 - Tiered implementation approach (cost distributed approach)
- **Once you have made improvements get the word out!**
 - Poor public perception based on historical situation can be a confounder to future success

Direct Economic Benefits

- Increased property values
- Attractive to external venues
- Small business opportunities
- Increased usage
- Tourism
- Population retention
- Attract new investments



Clean Water = More Usage = Revenue

Attendance	North Beach						Zoo Beach					
	2005	2006	2007	2008	2009	2010	2005	2006	2007	2008	2009	2010
					**						**	
Weekday	126	101	470	641	890	1025	13	1	5	3	3	13
Weekend	803	748	900	1632	854	3427	TBD	TBD	136	78	128	235
Maximum	3800	3450	4650	5600	2680	6590	TBD	TBD	395	175	463	725

**2009 was an unusually cool summer.

- Racine's Average Weekday Beach Usage has gone up 10-fold
- Racine's Weekend Usage has Quadrupled
 - \$230,650/day (Based on a \$35/person/day, Shaikh & Tolley)

Usage = Venues = Tourism

Midwest Living

25 Coolest Midwest Lake Vacation Spots



More cool in the city: Chicago, Minneapolis/Saint Paul, and Racine, Wisconsin

Chicago Many of the city's biggest attractions (including Lincoln Park Zoo, John G. Shedd Aquarium, Field Museum and Navy Pier) are within sight of Lake Michigan. Chill out on a sandy beach, or ride bikes (left) along the Lakefront Trail.

Minneapolis/Saint Paul Locals love to bike, jog and skate through the parks and gardens linked by Minneapolis' Chain of Lakes. In Saint Paul, Lake Como has a conservatory and zoo.

Racine, Wisconsin Along Lake Michigan, Racine's North Beach (20 miles south of Milwaukee) is one of the nicest urban public beaches you'll see — clean, white sand, with easy access to downtown's shops and restaurants.

Chicago Office of Tourism/Meet Minneapolis/Visit Saint Paul/Real Racine Read about a budget weekend in Chicago

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- I LOVE this beach.
- It's clean and spacious.
- The lake here is shallow and exceptionally clear.
- This is a truly amazing place.
- Don't forget your swimsuit if you're going to Racine!
- North Beach is super clean, huge...
- At the southwest end of North Beach is the North Beach Oasis, a little hut on the water that serves up snacks, sandwiches, pizza, pop and last but NOT least, BEER! Right on the lakefront!
- It's (Racine, WI) an easy going Saturday afternoon getaway.
 - Excerpts from blogs about North Beach and Racine

Tourism = Recognition



10 North Beach RACINE, WISCONSIN



On the shore of Lake Michigan, this beach in downtown Racine will keep your family active. When your kid isn't enjoying the summer water, she'll probably want to set sail on the pirate ships and swing on the ropes at Kids' Cove, one of the state's largest playgrounds. Your family can play volleyball on nets available to borrow or rent a kayak or surrey bike at the nearby pier. Pedal or walk on the bike path about three blocks to Racine Zoo, where kids can feed a giraffe. cityofracine.org

The 10 Best Beaches for Families: 2011

Indirect (Passive) Returns

- ❑ Community identity
- ❑ Community pride
- ❑ Sense of place

Providing Equity...

- Beaches are an asset
- Recognized as important across all community segments
 - Age
 - Race
 - Economic status



Wisconsin's First Handicap Accessible Beach



qPCR Feasibility Studies

- Ability of the method to accurately characterize water quality
 - Will you use the same indicator as your culture-based assay?
 - Is live vs. dead cells important?
 - Will the assay work with your samples?
 - Inhibition, underestimation
 - Unexplained false negatives w/o inhibition
- Turn-Around-Time
 - Will you be able to collect and process the sample in order to make it “real time”?
 - Distance of site to analytical lab
 - Do you have diurnal variation?
- Cost
 - Will you benefit from capital outlay and increased consumable costs?
 - Could you function as a regional laboratory thus generating revenue to offset start up costs?

Capital and Consumable Costs

- **Defined substrate (Enterolert)**
- Instrumentation
 - Sealer = \$4500
 - UV viewing cabinet/lamp = \$500
- Consumables
 - 1 Field sample
 - Analyzed as a single sample
 - 2 QC samples
 - \$15.00/sample
 - Amount would be less if QC cost distributed among multiple samples
- **Culture(membrane filtration onto plated agar)**
- Instrumentation
 - 6-place manifold, UV sterilizer, vacuum pump = \$5442
- Consumables
 - Assuming 1 field sample analyzed
 - 4 QC samples
 - \$17.00/sample
 - Amount would be less if QC cost distributed among multiple samples
- **qPCR (Enterococci by Taqman)**
- Instrumentation
 - Range of prices, options, configurations
 - Thermocycler, qPCR workstations, specialized pipettes, centrifuges, segregated refrigerator and freezers
 - Average = \$50,000
- Consumables
 - Assuming 1 field sample analyzed
 - Analyzed in duplicate
 - Includes Specimen Processing Controls
 - 3 QC samples
 - \$54.30/sample
 - Amount would be less if QC cost distributed among multiple samples

Calculations based on list and/or negotiated pricing. Actual costs may vary from lab to lab.

The Way Forward

- What is the way forward for broader implementation?
- Further comparative studies
 - Know your beach
- Years of comparative data
- **USE THE SANITARY SURVEY TOOL**
 - Correlations b/w inhibition and ambient conditions
- Virtual Beach
 - Helps make sense of environmental conditions and analytical results
- Cost-benefit analysis

