



# Improvements in Ottawa County Beaches



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# Beaches Monitored

- \* 2013 – 16 Beaches

- \* Inland Beaches

- \* Grose Park
- \* Georgetown Community Park
- \* Dunton Park
- \* Holland State Park
- \* Maplewood Lake Park
- \* Lakeside Beach
- \* Pottawattomie Park

- \* Lake Michigan (30 miles of shoreline)

- \* North Beach Park
- \* Grand Haven State Park
- \* Grand Haven City Beach
- \* Holland State Park
- \* Tunnel Park
- \* Kirk Park
- \* Kouw Park
- \* Windsnest Park
- \* Rosy Mound Recreation Area

- \* 2012

- \* 16 beaches monitored

- \* 2011

- \* 14 beaches monitored

- \* 2010

- \* 16 beaches monitored

- \* 2009

- \* 17 beaches monitored



# Beach Hazards and Safety

## Algal Blooms

- \* Thrive in warm water during hot, dry weather
- \* Nourished by nitrogen and phosphorus, which is found in waste products and fertilizer
- \* Symptoms:
  - \* Skin rashes
  - \* Hives
  - \* Abdominal pain
  - \* Blisters
  - \* Gastrointestinal issues
- \* If swimming, towel off immediately after and shower as soon as possible



## Fecal Contamination

- \* From human and animal waste, agricultural runoff, and septic systems
- \* E. coli is the indicator for fecal contamination in water
- \* Symptoms of contamination:
  - \* Gastrointestinal illness
  - \* Nausea
  - \* Eye, ear, nose, and throat infections
  - \* Skin rashes



<http://www.gaelforcemarine.co.uk/37343/Gael-Force-Solas-Life-Ring-2-5kg.html>

## Drowning

- \* Since 2010, 326 people have drowned in the Great Lakes, 155 of which took place in Lake Michigan.
- \* Ottawa County specifically has had 7 drowning's since 2010
- \* How to swim safely
  - \* Never swim when there is a rip current, which occurs when there is high winds
  - \* If you find yourself drowning relax your body and try to float
  - \* Only attempt to rescue someone if you feel confident in your swimming abilities, many times rescuers end up being victims as well
  - \* When trying to rescue someone who is drowning always take a floating object



# Steps to prevent recreational water illnesses:

- \* Do not swallow lake water
- \* Wash hands before eating
- \* Take children on frequent bathroom breaks
- \* Have young children wear clean swim diapers
- \* Do not visit the beach when sick
- \* Do not swim in unclean looking water
- \* Avoid swimming after lots of rain
- \* Do not feed gulls
- \* Shower after swimming



# Beach Hazards and Safety

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# Health Department

- \* Monitoring environmental conditions have lead to finding correlations between heavy rainfall and high bacteria levels
- \* Goal: To create predictive models for swimming safety based on environmental conditions



# Factors Affecting Beach Quality

- \* Storm and Rainfall Events

- \* Higher bacteria levels after big storm events
  - \* Mostly due to runoff
- \* High winds cause rip currents



- \* Gulls

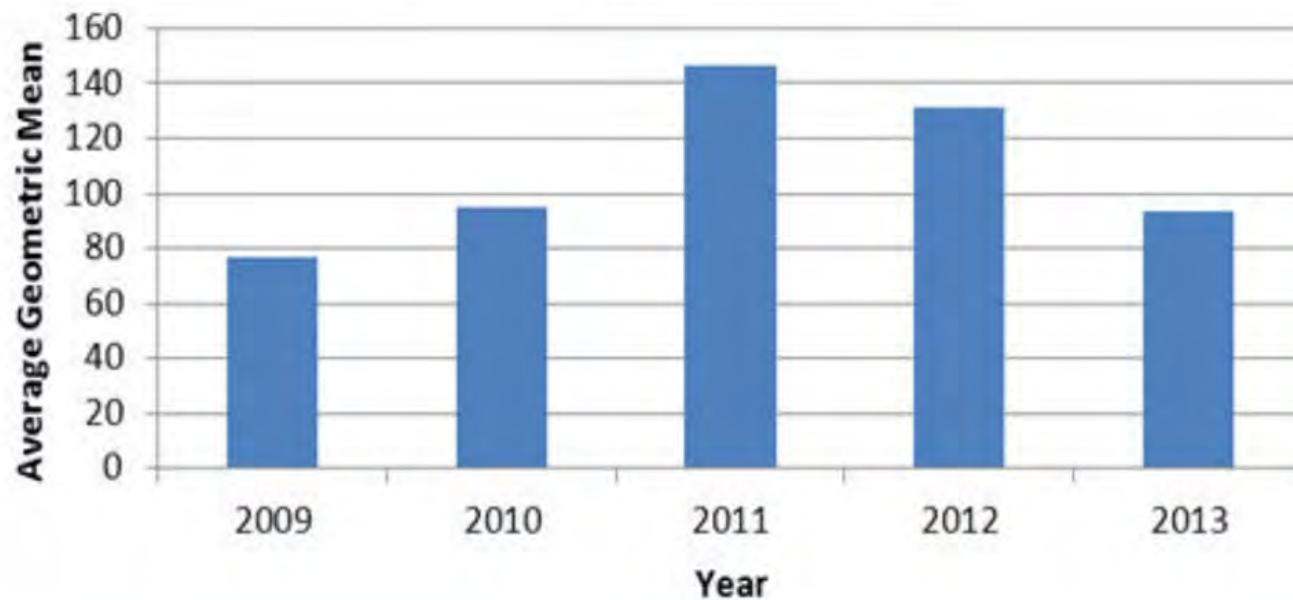
- \* Carry microbes that are harmful to human health





# Comparing E. coli Monitoring Results

**Average of Daily Geometric Means for Monitored  
Ottawa Beaches  
Summer 2009-Summer 2013**



- \* Geometric mean calculated daily from three beach samples
- \* Ottawa County samples weekly, May - August

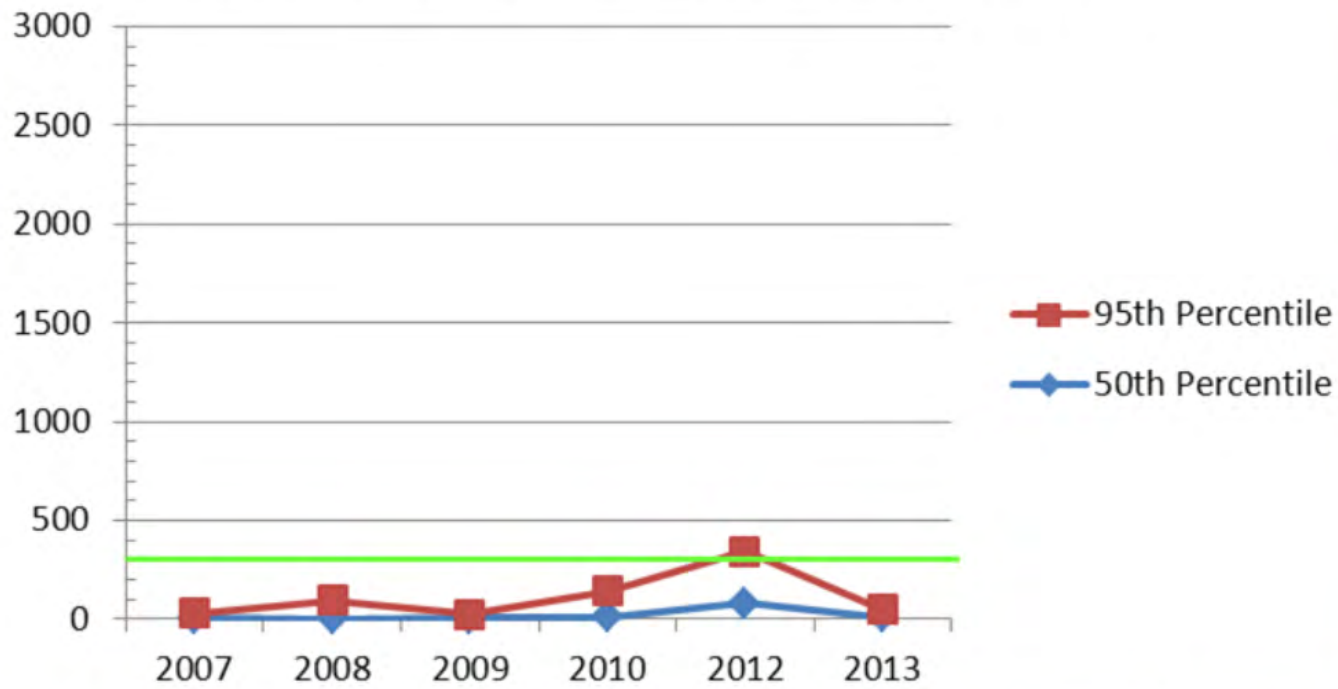




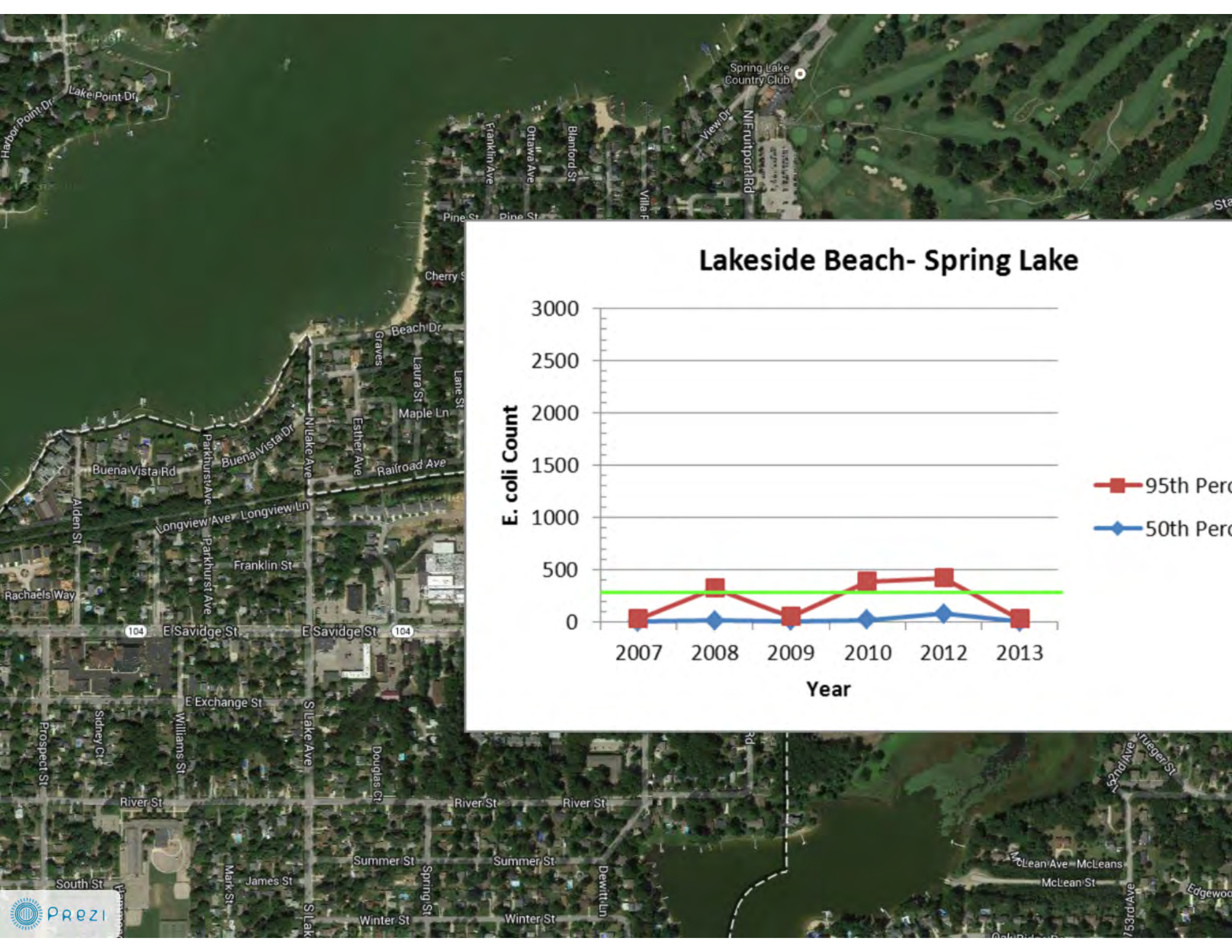




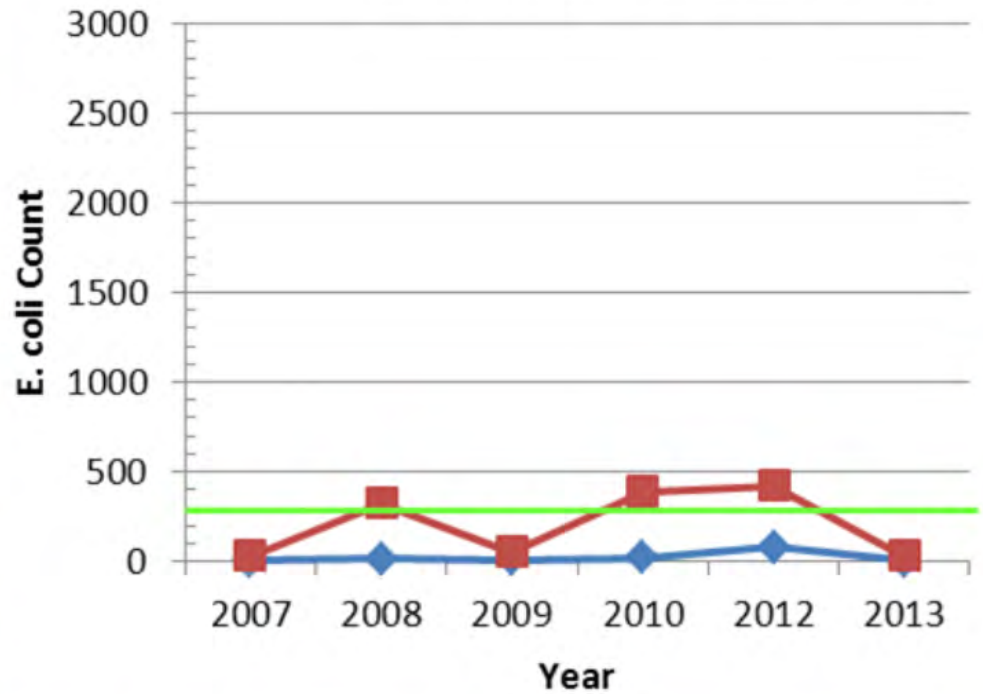
## Pottawattomie Park- Pottawattomie Bayou





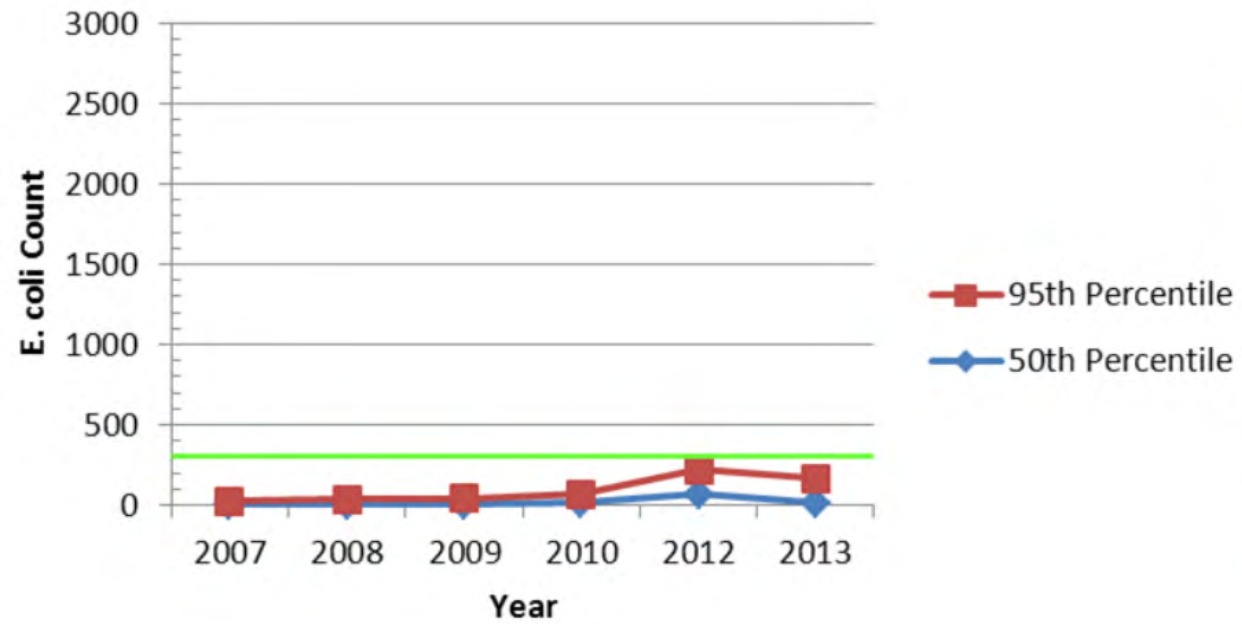


### Lakeside Beach- Spring Lake





## Grose Park- Crockery Lake

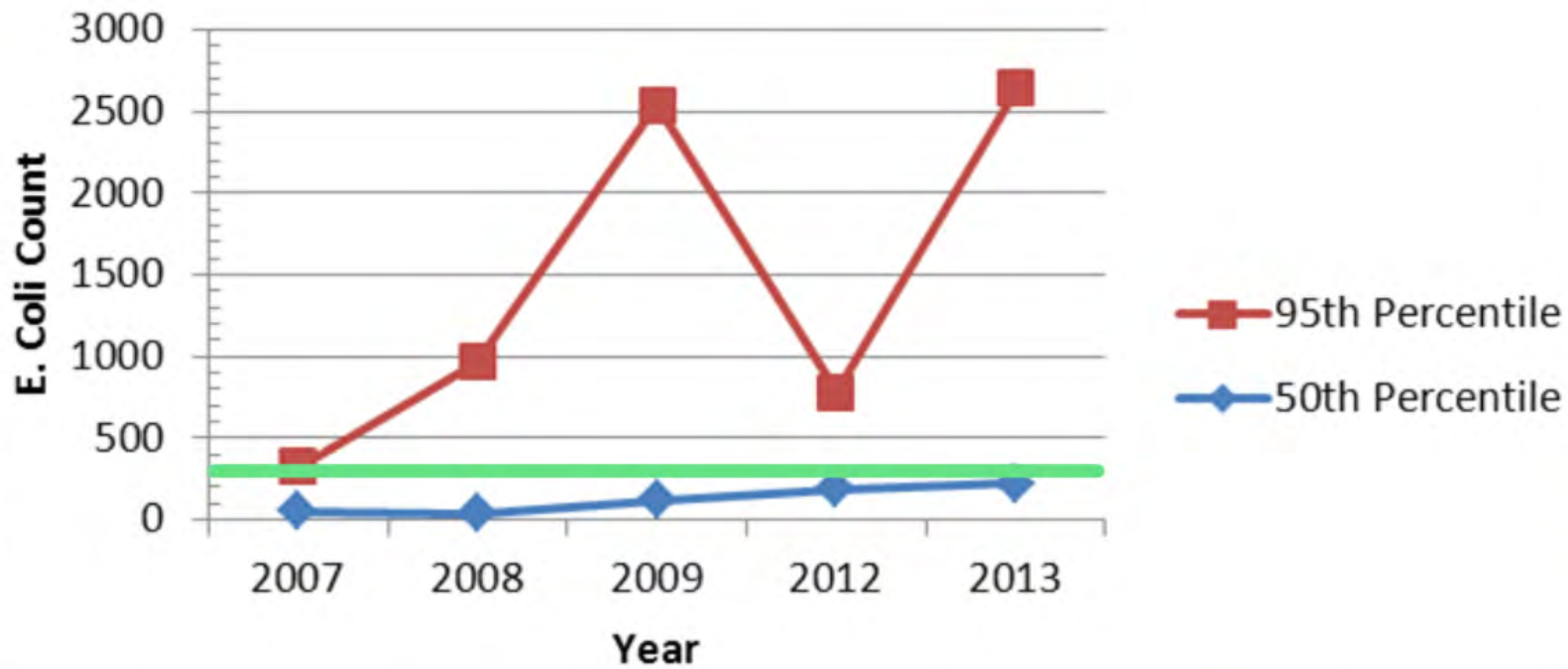


Grose Park

Crockery Lake



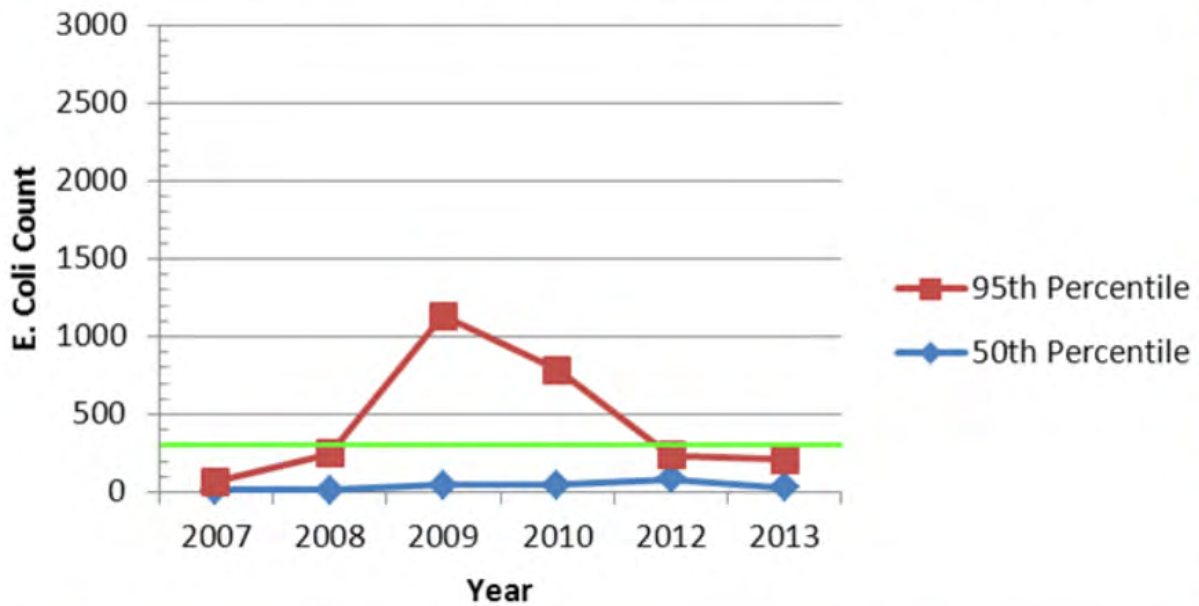
# Maplewood Lake Park - Maplewood Lake



Maplewood Lake



### Georgetown Community Park- Georgetown Lake



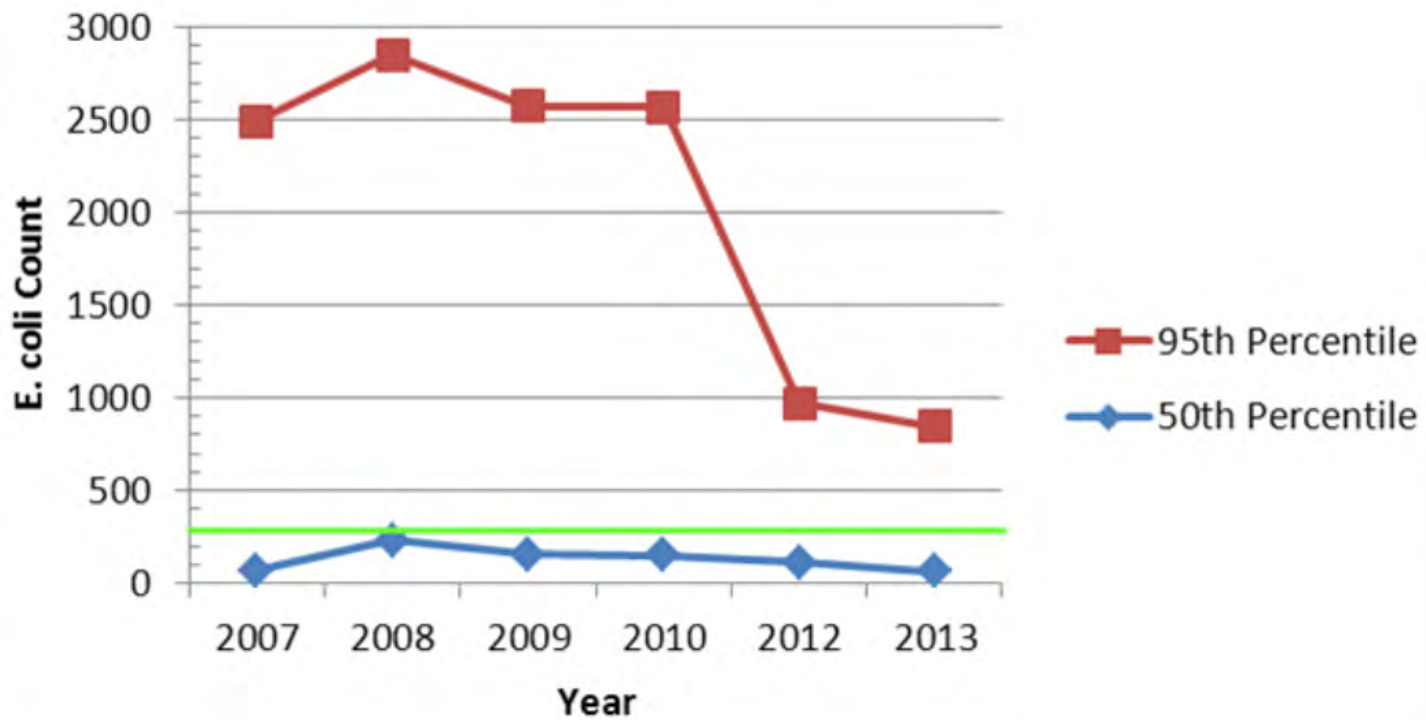
8th Avenue  
Community Park

Rush Creek

Georgetown Community  
Park

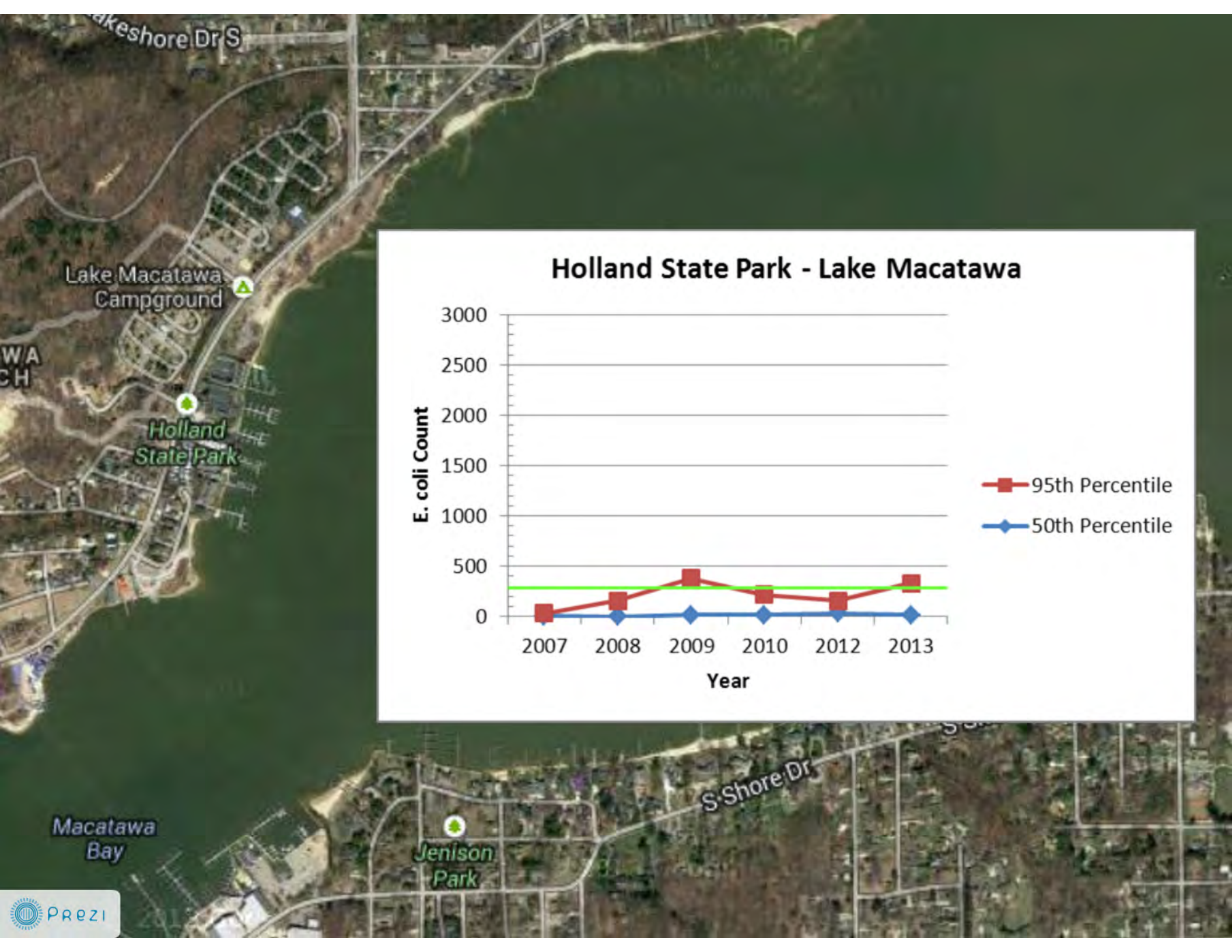


## Dunton Park- Lake Macatawa

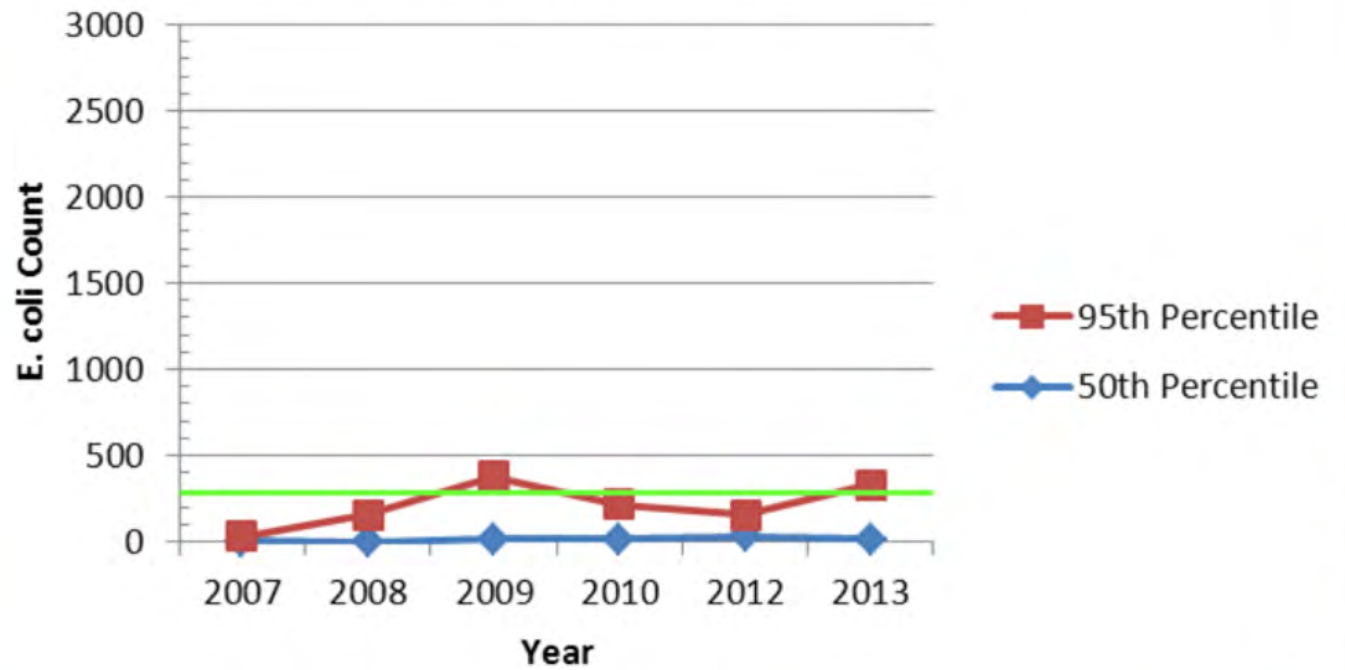


Douglas Ave  
WOOD

Howard B.  
Dunton Park

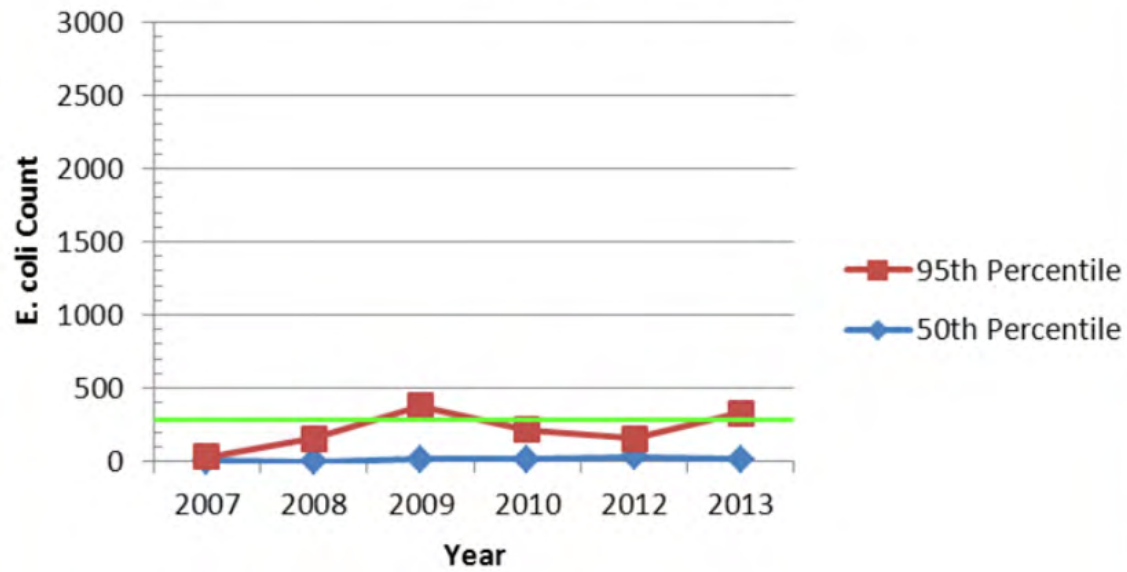


### Holland State Park - Lake Macatawa



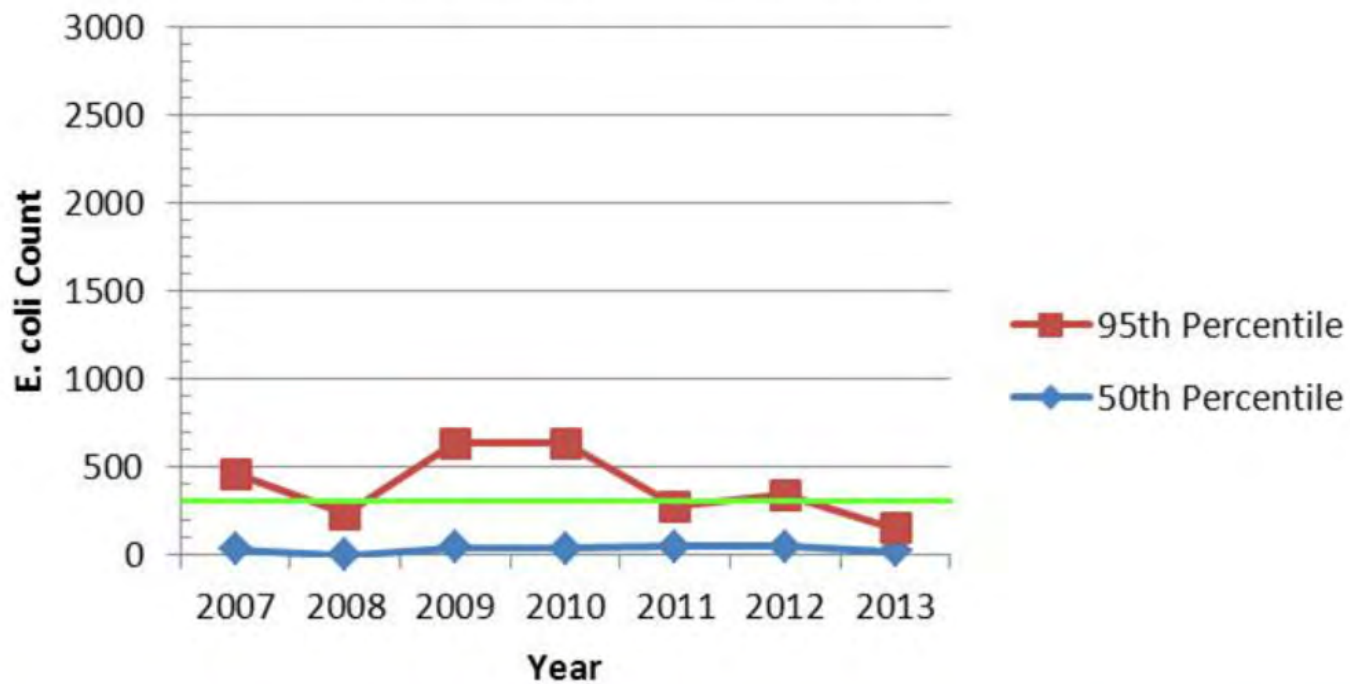


## Holland State Park - Lake Macatawa





## Tunnel Park - Lake Michigan



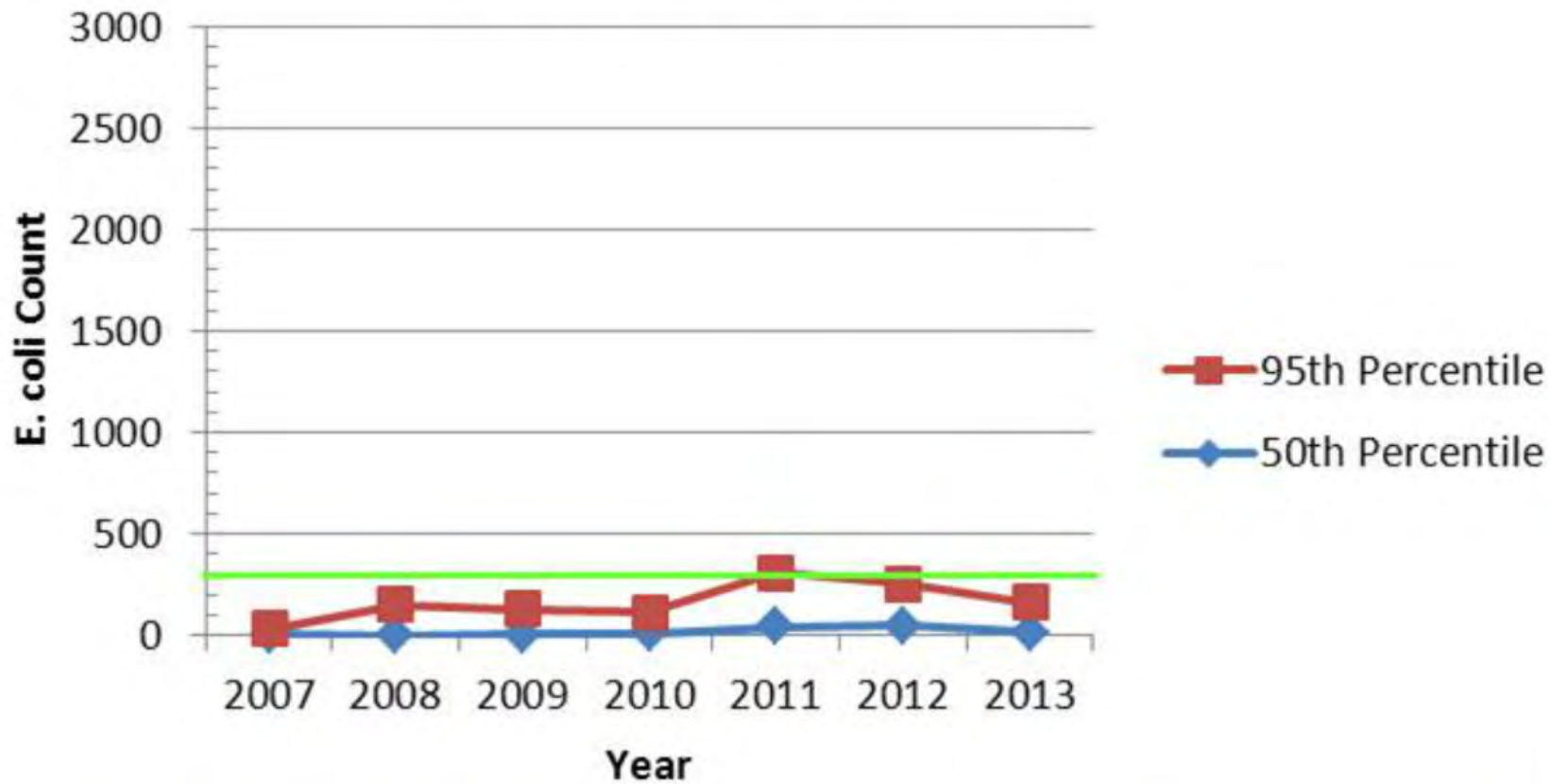
Tunnel Park

Lakeshore Ave

Lakeshore Ave

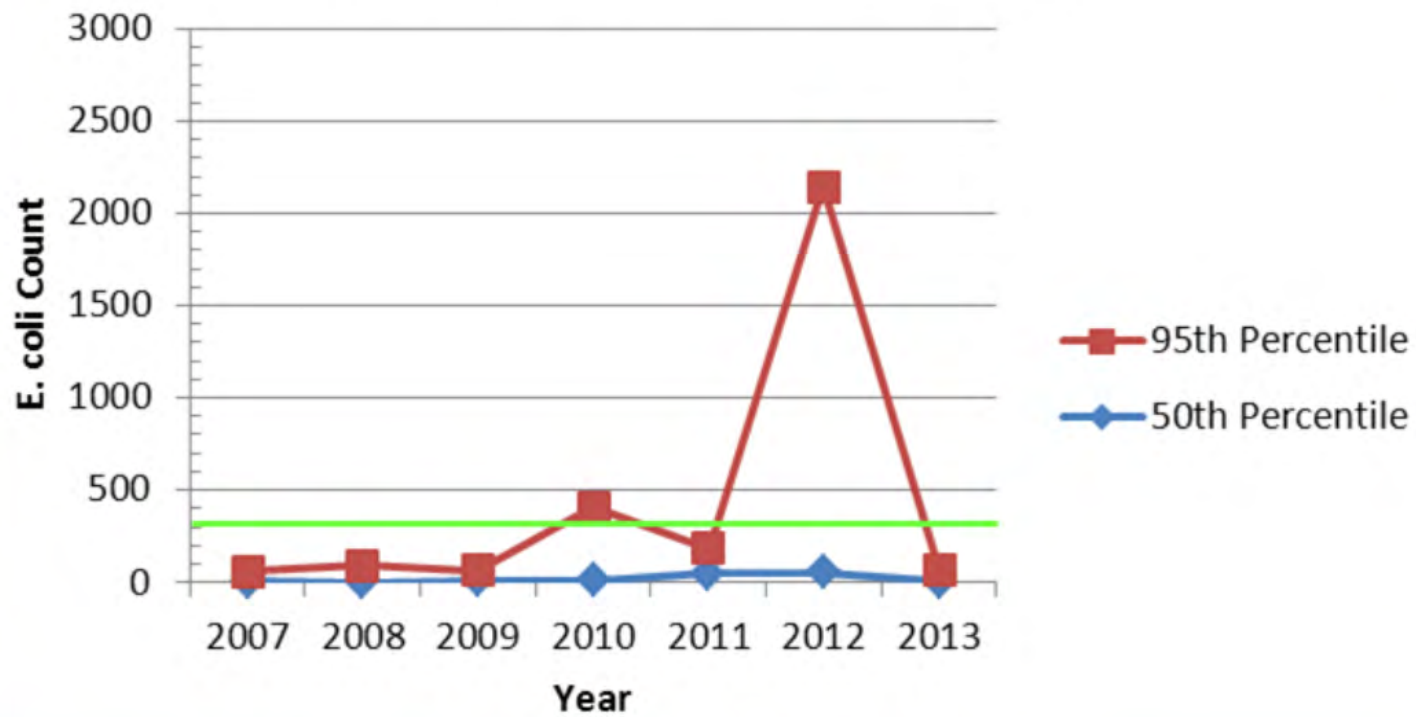


## Kouw Park - Lake Michigan



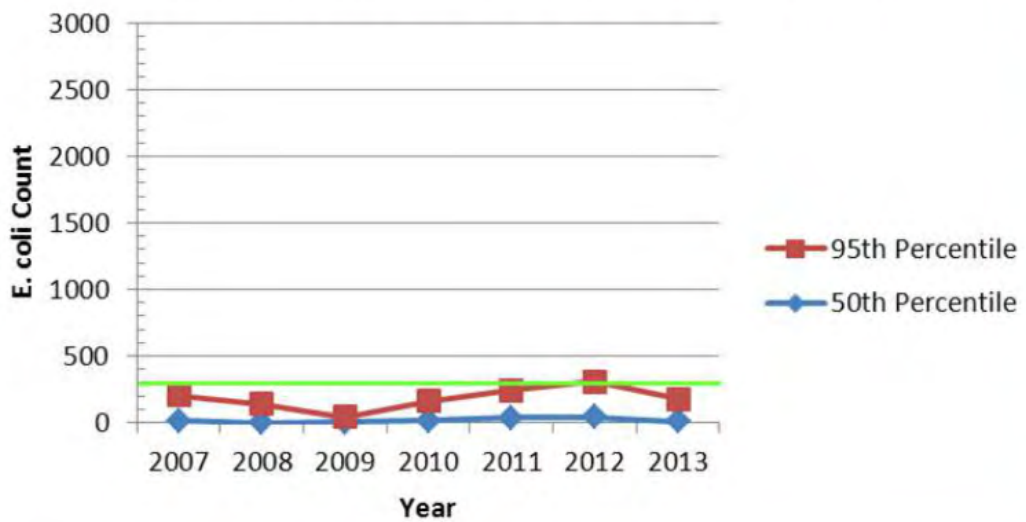
Kouw P

## Windsnest Park - Lake Michigan





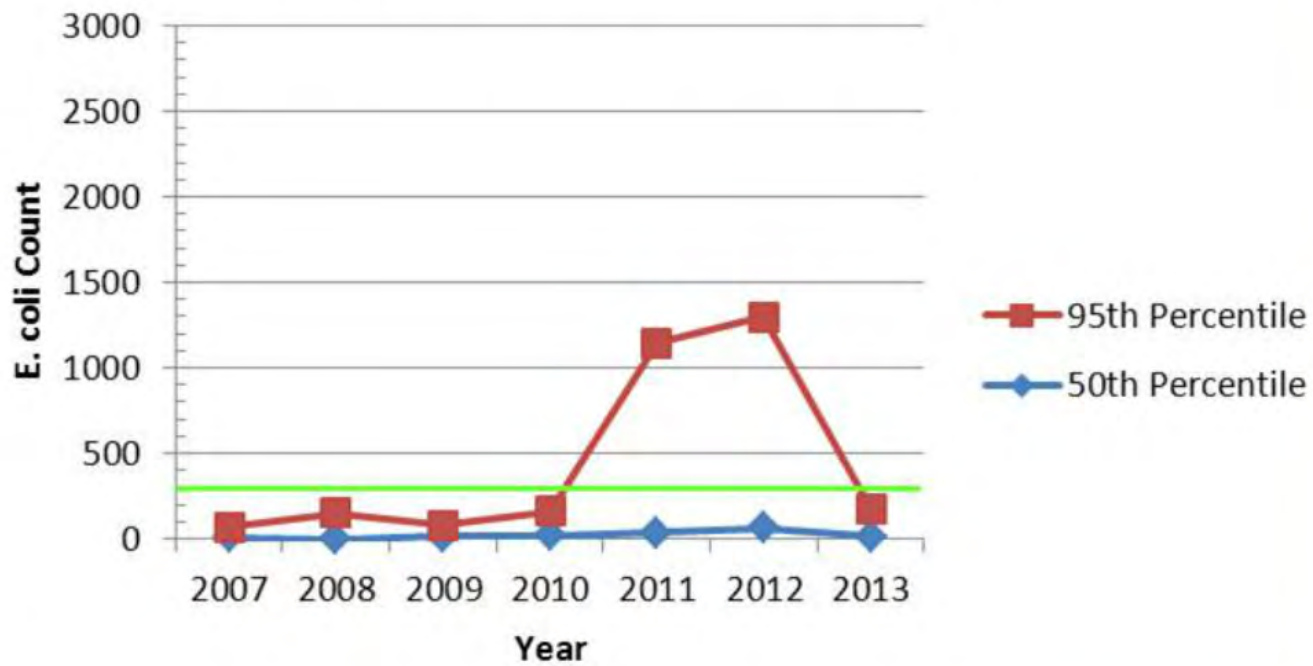
### Rosy Mound Recreation Area - Lake Michigan



Rosy Mound Natural Area  
Rosy Mound Natural Area

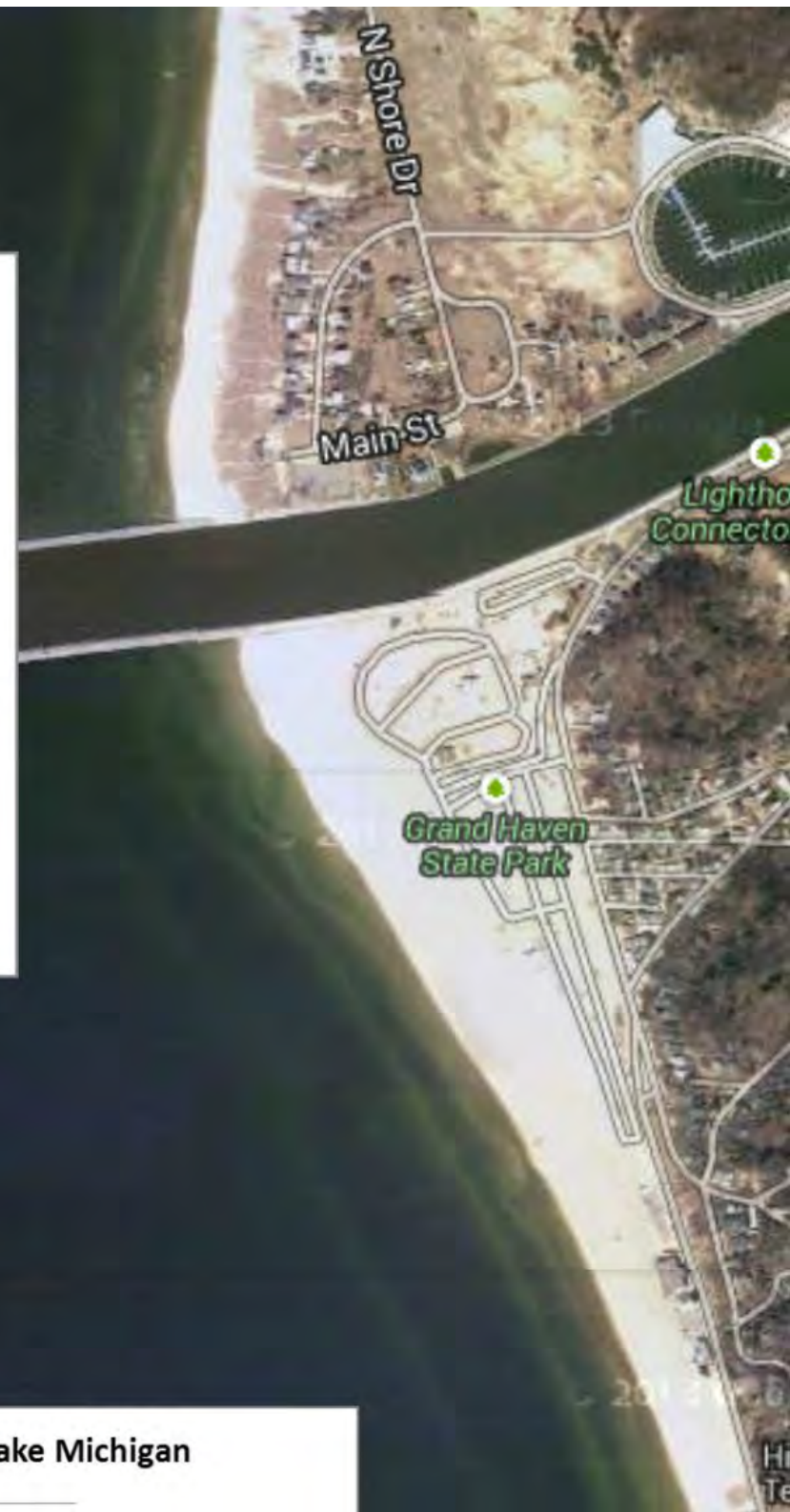
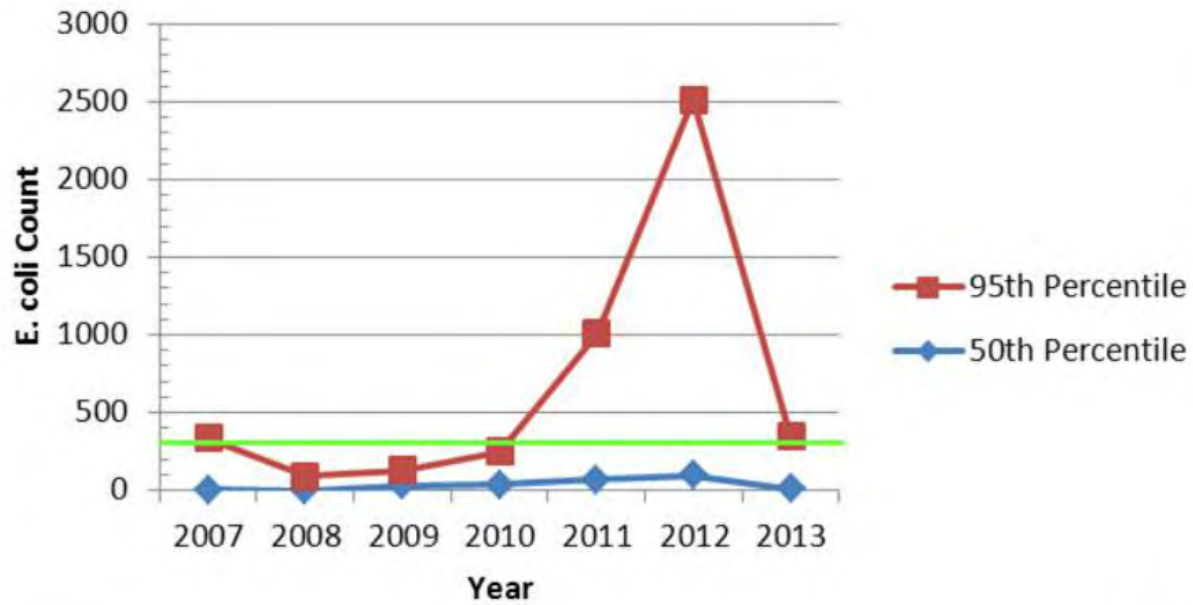


### North Beach Park - Lake Michigan





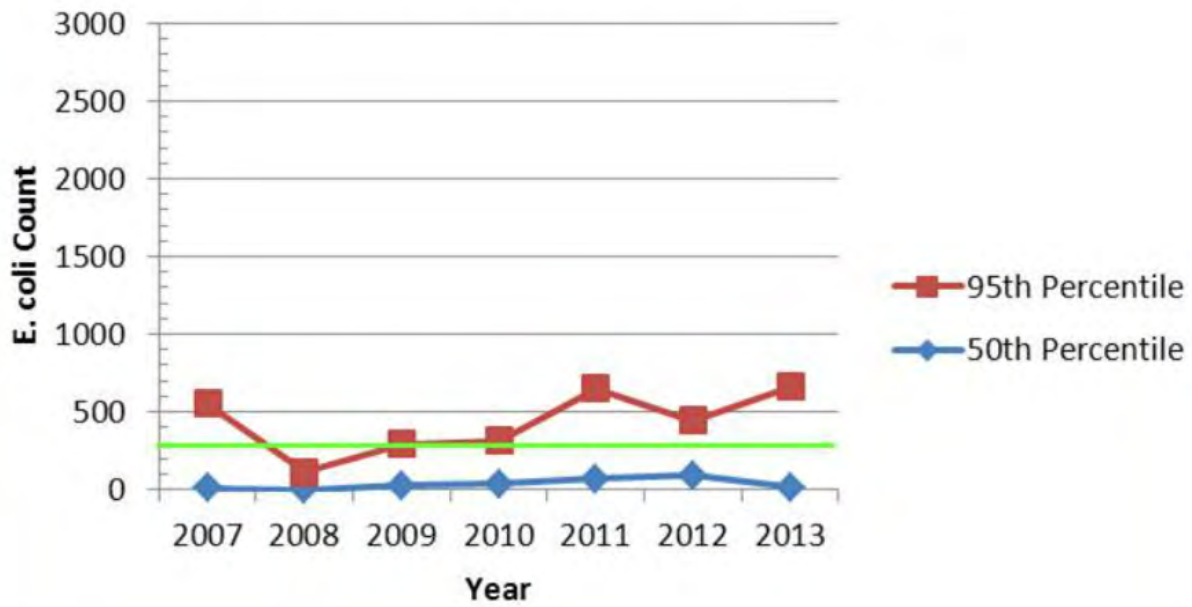
## Grand Haven State Park - Lake Michigan



## Grand Haven City Beach - Lake Michigan

3000

### Grand Haven City Beach - Lake Michigan



Highland Park  
Tennis Courts



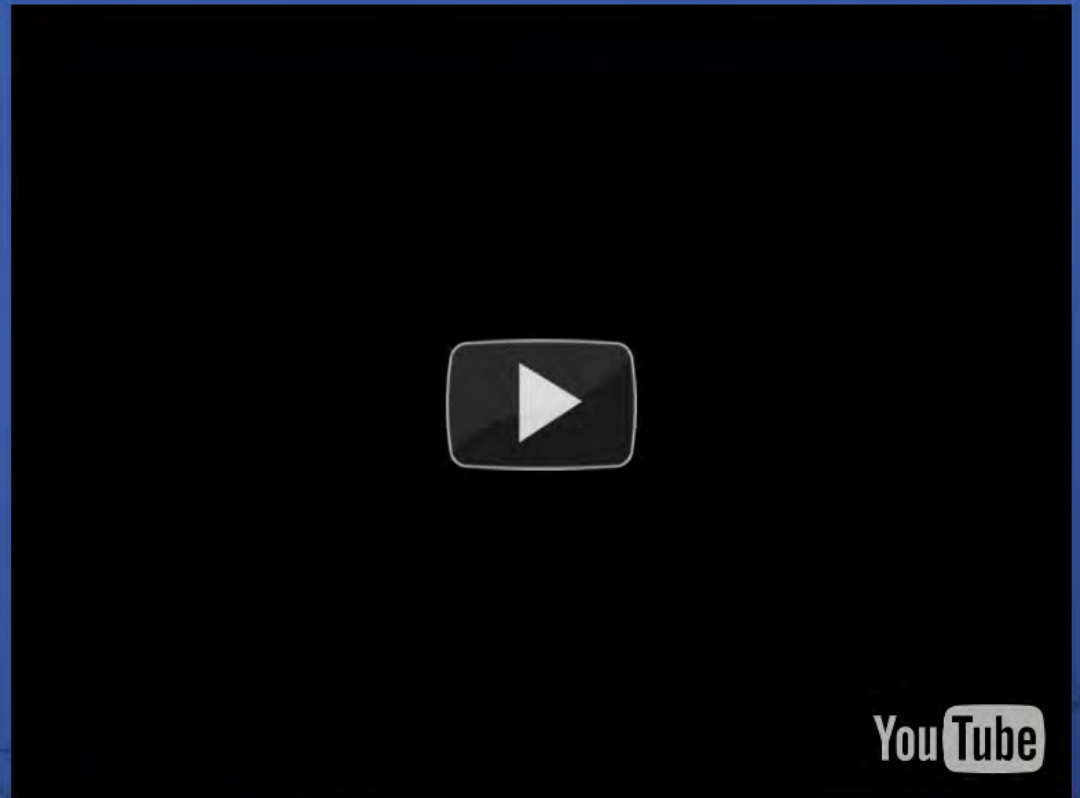
# Gulls in Ottawa County

Elizabeth Alm and Tom Gehring  
Institute for Great Lakes Research  
Central Michigan University



# Great Lakes Restoration Initiative

- \* Are border collies effective in reducing gulls on beaches?
- \* If yes, will fecal bacteria at beach be reduced?

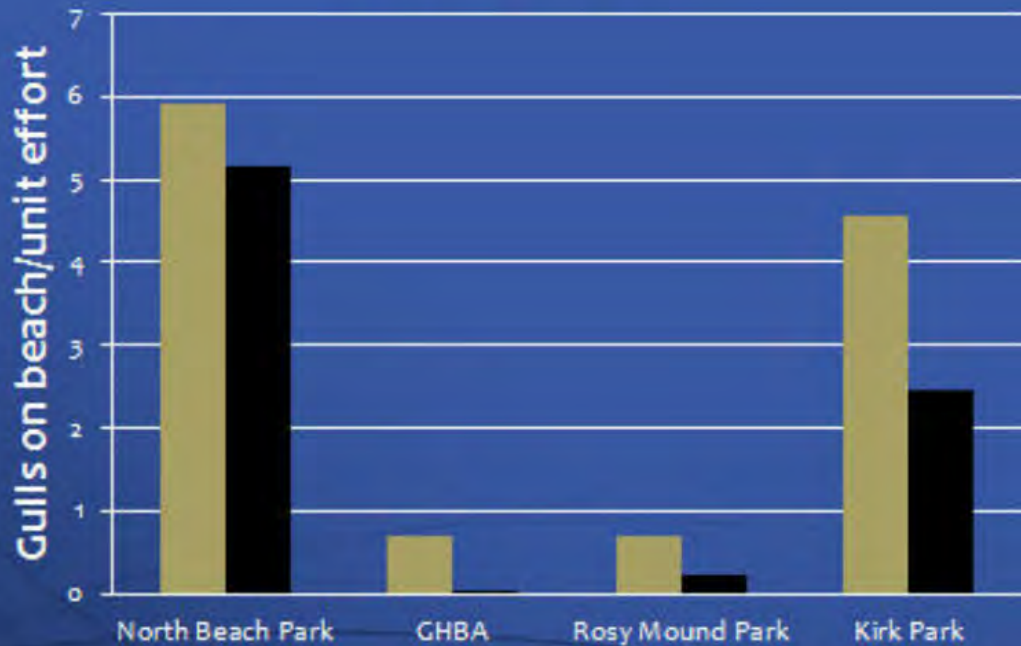




# Dogs are effective at reducing gulls

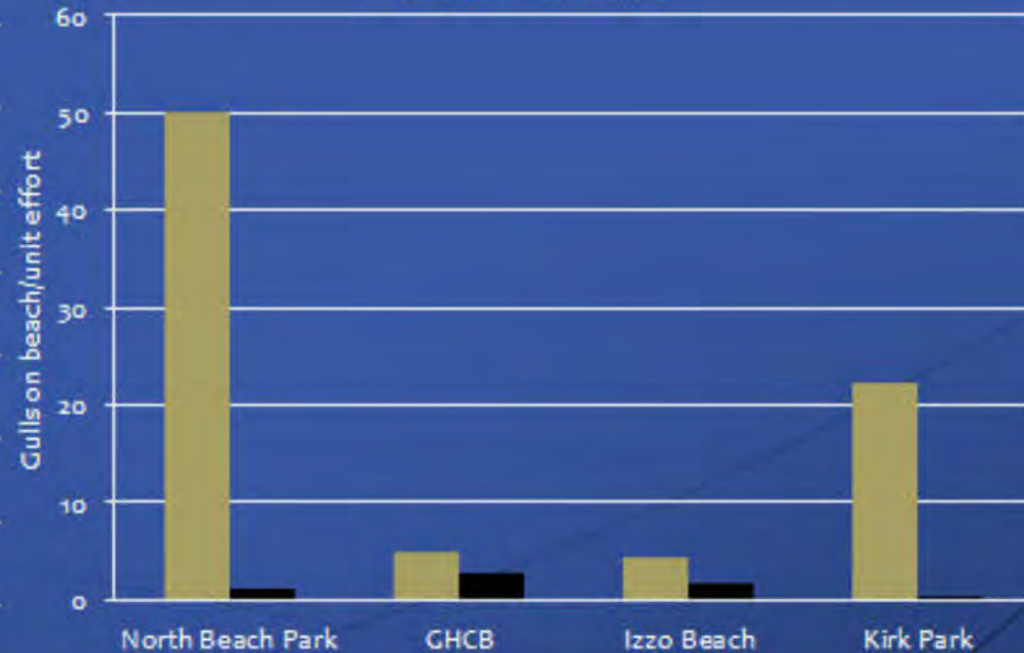
2012

Control Treatment

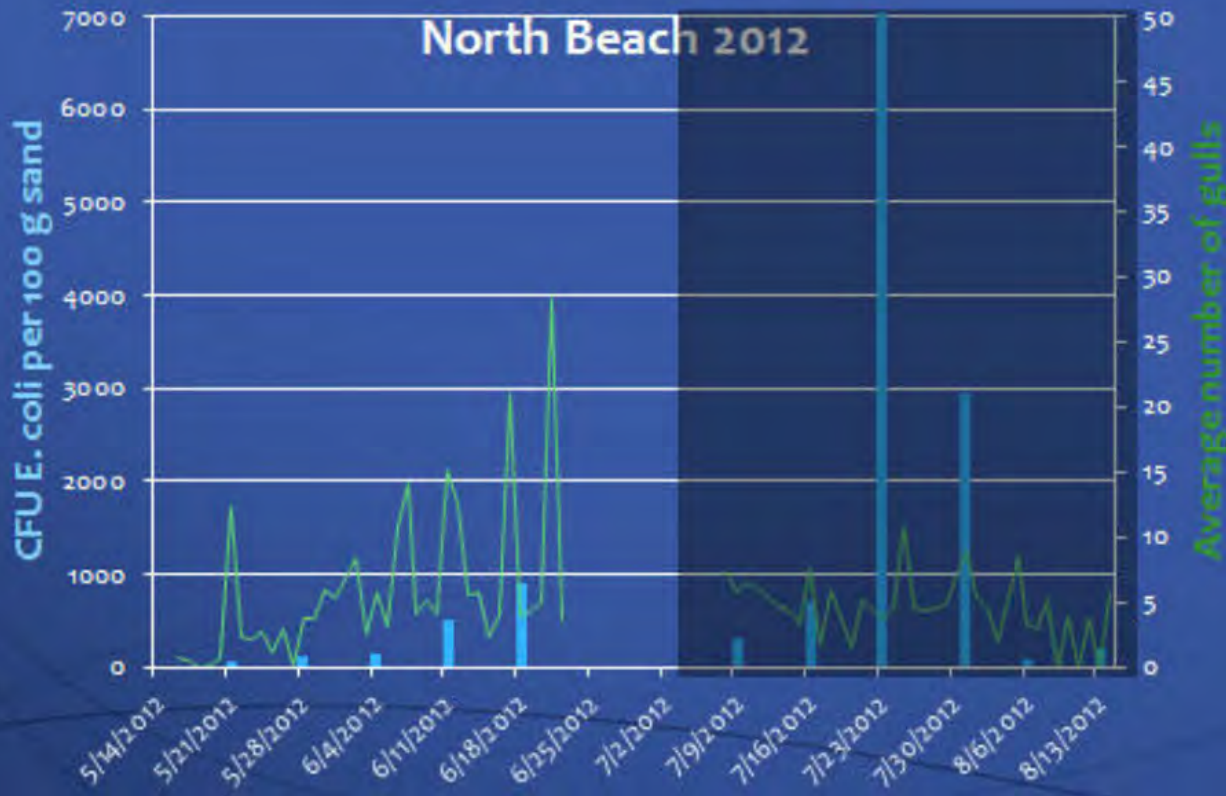


2013

Control Treatment



# Dogs are effective at reducing gulls



but reducing gulls will reduce *E. coli* in sand only if dogs are present at beginning of season



# Ottawa County



- \* How are beach gulls using different landscape types in Ottawa County?
- \* Where are they really hanging out?

- Capture gulls (June)
- Fit with transmitter
- Track movements (June, July, August)





# Beach captured gulls

select beaches (in greater proportion to availability)



select landfills (in greater proportion to availability)



use wastewater treatment in proportion to its availability (neutral)



**X** avoid developed (urban), agricultural, and open water landscapes





# Thank you

Grand Haven Beach Association

Ottawa County Parks & Recreation Commission

Izzo family

Ottawa County Health Dept.

Dustin Jordan, CMU

CMU gull team – Jay, Justin, Kaley, Amelia, Angela, Patrick

CMU *E. coli* team – Rebeccah, Mike, Yuanyuan, Kara, Quri,

Lucas

Dr. Nancy Seefelt, CMU

EPA Great Lakes Restoration Initiative

Ottawa County Administration