



# Wake County Policies and Procedures Manual

## Recreational Waters and Beaches



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## PROGRAM OVERVIEW

Recreational waters in Wake County are monitored for fecal indicator bacteria according to standards in the *Regulations Governing Public Recreational Waters and Beaches*. When the standards are exceeded, Wake County is required to notify beach operators. Those operators are required to notify the public by posting appropriate signage and/or closing the beach area. See Appendix A for location maps of recreational waters sampling locations.

## RECREATIONAL WATERS CLASSIFICATION

Staff ranks beaches by using a risk-based evaluation and classification process that is promoted by the EPA. The ranking is a means to identify the potential risk of disease to swimmers and to protect public health.

The following evaluation factors are used to determine the risk of recreational waters:

- Population of beach users
- Periods of recreational use of the waters
- Nature and extent of use during certain periods
- The proximity to known point and nonpoint sources of pollution
- Effect of storm events on the waters
- Ability for public to access area
- Watershed land use

To efficiently allocate monitoring resources to waters on the basis of use and potential disease risk, recreational waters are placed into one of three tiers.

### **Tier 1 Classification**

Tier 1 Recreational Areas typically exhibit the following factors:

- Designated swimming areas
- Open to public access
- Primarily used by preschool or school-aged children
- Point sources of stormwater within 200 feet of the beach area

### **Tier 2 Classification**

Tier 2 Recreational Areas typically exhibit the following factors:

- No designated swimming area
- Primary activities include skiing, tubing, wakeboarding, and fishing, but not swimming

### **Tier 3 Classification**

Tier 3 Recreational Areas typically exhibit the following factors:

- No designated swimming area
- No swimming allowed
- Boating activities are limited to small vessels not capable of skiing, tubing, etc.
- Previous data show consistently low bacteria levels
- Monitoring may occur on an as-needed basis during peak season or upon specific public/private request

Wake County will continue to reevaluate and reclassify recreational waters as new factors or information is introduced.

## Wake County Recreational Waters

### Tier 1

Umstead Park  
Falls Lake – Beaverdam Swim Beach  
Falls Lake – Holly Point Swim Beach  
Falls Lake – Sandling Swim Beach  
Camp Kanata Lake  
New Life Camp Lake

### Tier 2

Lake Wheeler

### Tier 3

Harris Lake  
Lake Benson  
Apex Community Lake  
Regency Lake  
Private HOA ponds  
Falls Lake – outside designated swim areas

## MONITORING PROCEDURES & PROTOCOLS

Monitoring procedures and protocols are based on guidance from the *Tiered Sampling Design for Beach Managers* recommended by the EPA (National Beach Guidance and Required Performance Criteria for Grants).

### Sampling Frequency

The frequency of sampling is determined by the Classification of Recreational Waters. Samples for Tier 1 areas should be collected at least once per week during the swim season to evaluate compliance with water quality standards. Samples for Tier 2 areas should be collected at least bimonthly during the swim season. Tier 3 areas are sampled as needed. The swim season is typically identified as being between Memorial Day and Labor Day. This period may be extended if warmer weather exists before or after these days, increasing public use.

### Sample Collection Techniques

1. Identify the sampling site on a chain of custody form and with a permanent marker on the bottle.
2. Remove the bottle closure just before obtaining each sample and protect from contamination. Do not touch the inside of the bottle or the inside of the cover.
3. Sampling depth should be 12-18 inches below the water surface. If wading into the water, be careful to avoid stirring bottom material at the sampling location. Water depth for wading should be 30-36 inches at the sampling point.
4. Sample downstream of any water current and take the sample from incoming flow.
5. Grasp the sampling bottle at the base with one hand and plunge the mouth downward into the water to avoid introducing surface scum. Position the mouth of the bottle into the current away from the hand and away from the sampling platform or boat.
6. Lift to remove the bottle from the water.
7. Pour out a portion of the sample to allow for ~1 inch of airspace in the bottle.
8. Tightly close the bottle.
9. Enter the specific details of each sample on the chain of custody form. These details include the sampler initials, sampling time, water temperature, recent rain events, number of swimmers and bathers in/near the sampling area, environmental factors such as animal waste in the area, etc.
10. Place the sample on ice in a cooler for transportation to the laboratory. Do not hold samples longer than 6 hours between collection and initiation of analysis. Do not analyze samples that have exceeded hold time limits.
11. After collecting samples, wash hands and arms with alcohol wipes, disinfectant lotion, or soap and water to reduce exposure to potentially harmful bacteria and microorganisms.

## **Laboratory Methods**

Wake County uses testing methods that are U.S. EPA approved and included in Standard Methods for the Examination of Water and Wastewater. Traditional membrane filtration test for bacterial water quality count colonies of bacteria and are reported as Colony Forming Units (CFU). The newer defined substrate tests that Wake County uses report the results as Most Probable Number (MPN). In MPN tests, the number of wells producing positive reactions provide an estimate of the original, undiluted concentration of target organisms in the sample. The estimate of target organisms, based on probability formulae, is termed the most probable number. The terms CFU and MPN are used interchangeably for reporting purposes.

***Colilert: Detects Escherichia coli in water with 24 hour incubation at 35°C.***

***Enterolert: Detects enterococci in water with 24 hour incubation at 41°C.***

### **Sample Set-up**

1. Samples must arrive at the laboratory and be processed within 6 hours of collection
2. Sample delivery time should be documented on the chain of custody form. Delivery temperature of the first and last samples taken must also be documented.
3. Quanti-Tray sealer must be preheated by turning on and waiting for the light to turn green. Record the initials of the person setting up, reagent information (lot number, expiration date) and sample identification numbers on the Coliform and Enterococcus data sheets.
4. Shake each sample 25 times and pour off excess to bring the sample volume to 100 mL.
5. Add the appropriate testing reagent, shake, and allow the powder to dissolve completely.
6. Carefully pour the entire contents of the sample into a sterile Quanti-Tray 2000. Do not touch the inside of the tray to avoid contamination.
7. Place the tray, well side down, into the rubber insert and slide the insert into the preheated Quanti-Tray sealer.
8. Remove the tray from the back side of the sealer and check to make sure it is properly sealed and labeled.
9. Place the Quanti-Trays, well side down, into the appropriate incubator within 30 minutes of adding the reagent.
10. Record the date and time that incubation begins on the data sheets and incubate samples for 24 hours.
11. Be sure to turn off Quanti-Tray sealer when not in use.

### **Reading Sample Results**

1. After 24 hours of incubation, remove the Quanti-Trays from the incubator and place each tray under UV light.
2. Count the number of fluorescing wells in the Quanti-Tray, differentiating the small and large wells, and record on the data sheets.
3. Refer to the IDEXX product insert to determine the MPN for each tray.
4. Record the MPN, the ending time, and the reader's initials on the data sheets.

### **Data Management**

1. Enter the MPN data into the WQ Samples sheet of the Sample Log spreadsheet. Results that exceed standards should be shown in red on the spreadsheet.
2. Transfer the data to the Wake County website and notify the beach operators if any sample exceeds the standards specified in Wake County's Regulations Governing Public Recreational Waters and Beaches.

## ADVISORIES

Beach owners/operators are responsible for posting advisories to communicate health risks associated with primary contact water activities.

### Green

- No advisory; swim at your own risk
- Posting Requirement:
  - Recent studies show fecal indicator bacteria are below *Regulation* standards. Signage should communicate healthy swimming tips, contact information, and links to the Wake County website.

### Yellow

- Caution; swim at your own risk
- Posting Requirement:
  - Recent test results of fecal indicator bacteria are above *Regulation* standards. Advisory will remain in place until fecal indicator bacteria results are below *Regulation* standards.
  - Preemptive rain advisories will be posted when 0.5" or more rain is forecasted. Rain advisories will remain in place for 24 hours after the rain event.

### Red

- Closed; body contact is prohibited; stay out of the water
- Posting Requirement:
  - A public health nuisance has been determined. Beach will remain closed until bacteria levels no longer exceed standards or the nuisance is abated.

## PUBLIC HEALTH NUISANCE AND CLOSURES

### Authority

The Health Director/designee has the authority to take necessary precautions to protect the public from potential health threats by declaring a public health nuisance.

### Examples of Hazards/Incidents

- Microbial – Presence of human sewage (due to pipeline breakage, etc.); Abnormal or exceptional fecal indicator bacteria levels with no significant rainfall
- Chemical – Chemical spill or significant contamination
- Environmental – Extreme floods or rainfall events
- Cyanobacteria – Presence of floating scums

Staff information such as monitoring results, historical data, etc., can play an important role in informing the Director of situations that may warrant this declaration. There may be situations that require staff to apply more scrutiny or gather more information. Several considerations taken to determine beach closures are listed.

### Considerations

- Nature of the incident or hazard – Microbial, chemical, environmental
- Location – Proximity to recreational waters or public swimming area
- Magnitude – Amount of contamination and containment efforts
- Time – Minutes, day, weeks, months
- Other relevant factors – Expert advice, etc.

## EXAMPLE SCENARIOS

### 1: No Exceedance, No Forecasted Rain

- Beach open
- Green advisory posted
- Health Swimming Tips posted

### 2: Standard Exceedance, No Forecasted Rain

- Beach open
- Yellow advisory posted
- Health Swimming Tips posted

### 3: No Exceedance, Significant Rain Forecasted

- Beach remains open
- Yellow advisory posted preemptively
- Healthy Swimming Tips posted
- Advisory remains in place for 24 hours after rain event

### 4: Continuous Standard Exceedance

- Beach open
- Yellow advisory posted
- Healthy Swimming Tips posted
- Staff considerations:
  - Lake's watershed: dense, urban, public & private wastewater
  - No recent rain events
  - Historical data does not support trend
  - Area surveillance – talk to Rangers; look for odors, scum, etc.; inquire at nearby wastewater treatment plants

### 5: Reported Incident

#### Information/Considerations

- City reports <1 million gallons sewage spilled
- Incident upstream of beach
- Spill not contained
- Recent results below standards

#### Management Action

- Public Health Director/designee consults with appropriate parties
- Beach is closed
- Red advisory posted
- Beach remains closed until hazard is mitigated and results are below standard.

# PUBLIC NOTIFICATION

## Communication Plan

The following Communication Plan will be implemented in the event of an advisory issuance, swimming restriction, or rescinding of an advisory.

1. The program manager will be responsible for notifying the beach operators when fecal indicator bacteria exceed standards or of alerts due to a public nuisance.
  - a. Public Beaches: The owner/operator is responsible for posting the Yellow advisory sign, or, for a public health nuisance, the Red "CLOSED" sign.
  - b. Private Camps: The owner/operator is responsible for implemented their own action plan.
2. The Wake County website will be updated with current testing information.
3. In the event of closure, the program manager will notify Wake County's Public Information Office via email.
4. The Wake County Public Information Office will issue a press release of closure.

## Rescinding an Advisory

Yellow advisories will be rescinded when fecal indicator bacteria test results are below standards or 24 hours after a significant rainfall event.

## Rescinding a Closure

1. The Public Health Director/designee and program manager must determine the nuisance is no longer present.
2. Fecal indicator bacteria levels from follow up sampling show what is considered normal for that location as compared to historical records. The number of follow up samples shall be specific to the nuisance and determined on a case-by-case basis.

## Reopening Notification

1. The program manager will notify the owner/operator in writing when the facility is approved to reopen.
2. The program manager will notify the Wake County Public Information Office when the beach allowed to reopen. The Public Information Office will issue a press release of reopening.
3. The program manager will update the Wake County website.



## APPENDIX A – RECREATIONAL WATERS SAMPLING LOCATIONS

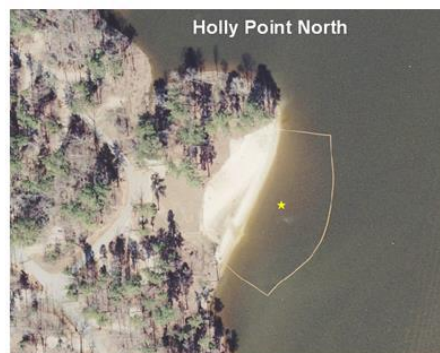
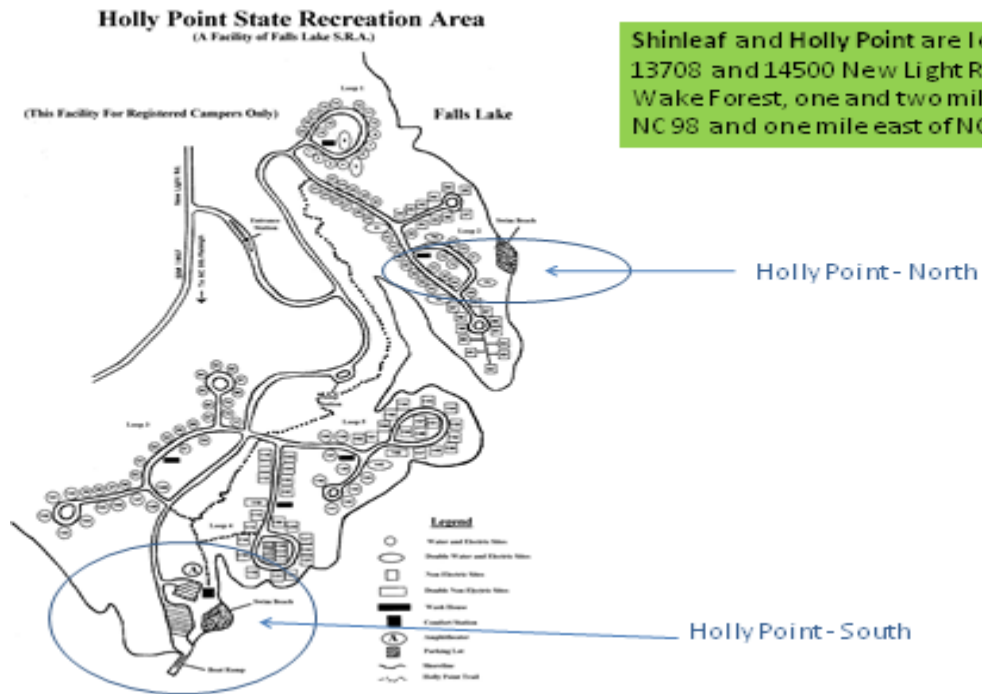
### Umstead Park



## Falls Lake – Beaverdam Swim Beach

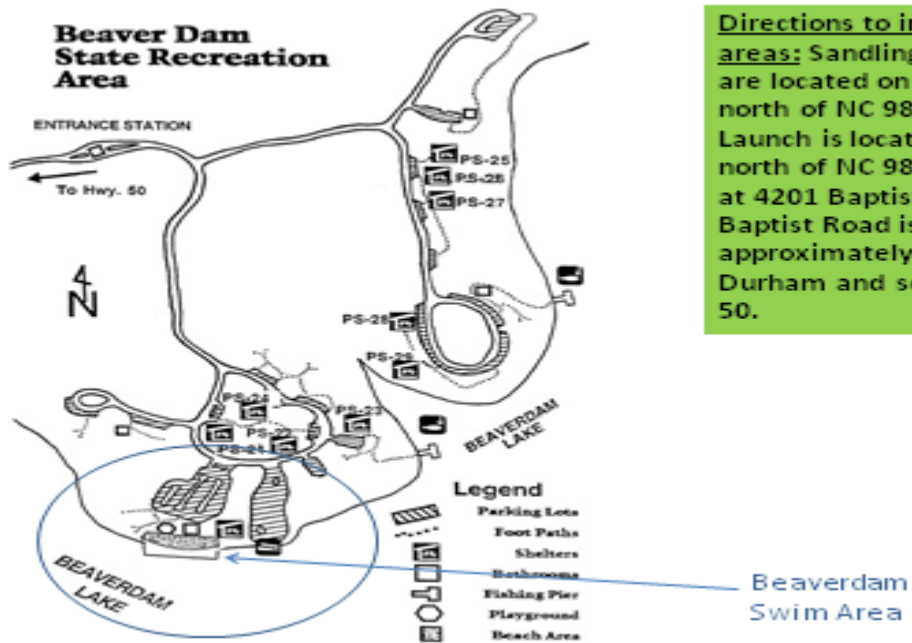


## Falls Lake – Holly Point Swim Beach





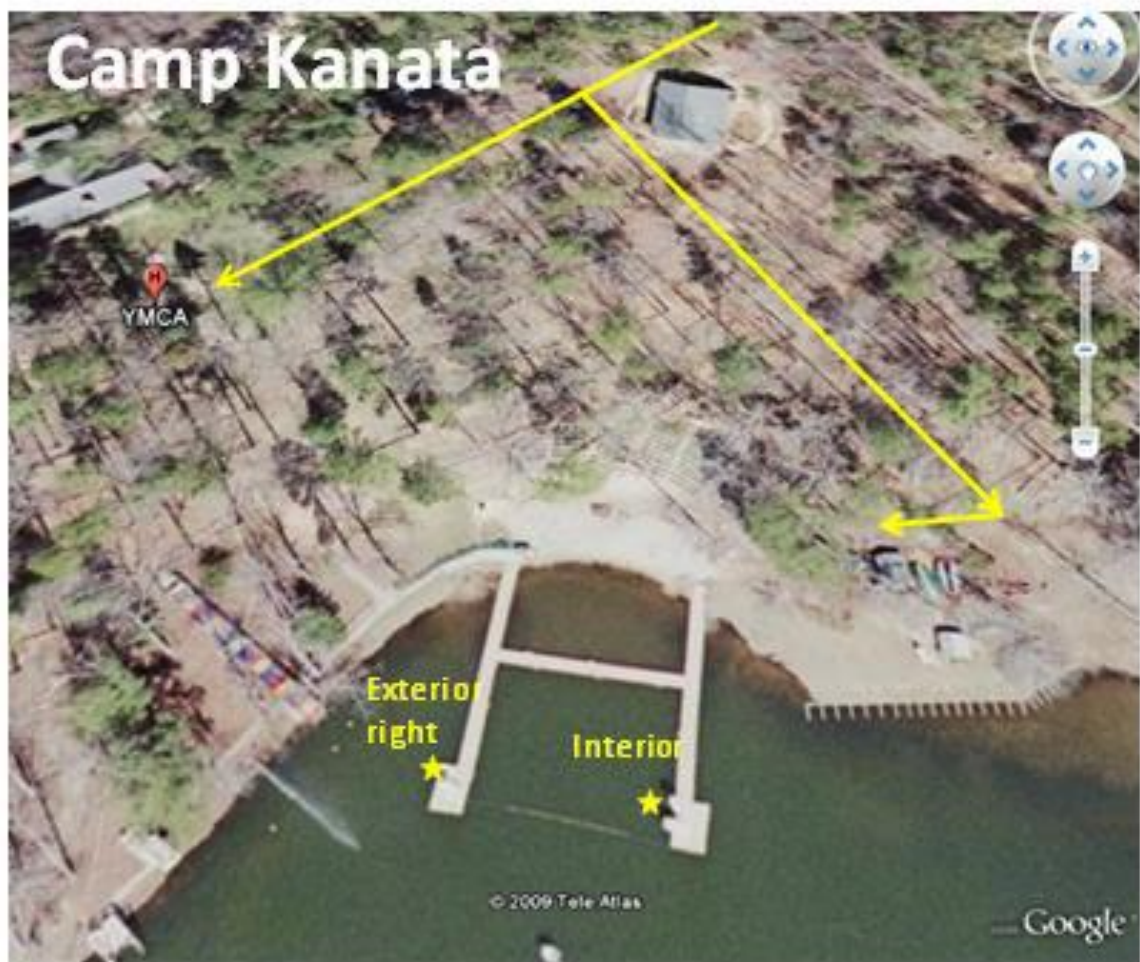
## Falls Lake – Sandling Swim Beach



Directions to individual recreation areas: Sandling Beach and Beaverdam are located on NC 50, three miles north of NC 98. The Highway 50 Boat Launch is located on NC 50, two miles north of NC 98. Rollingview is located at 4201 Baptist Road in Durham. Baptist Road is on NC 98, approximately five miles east of Durham and seven miles west of NC 50.



## Camp Kanata

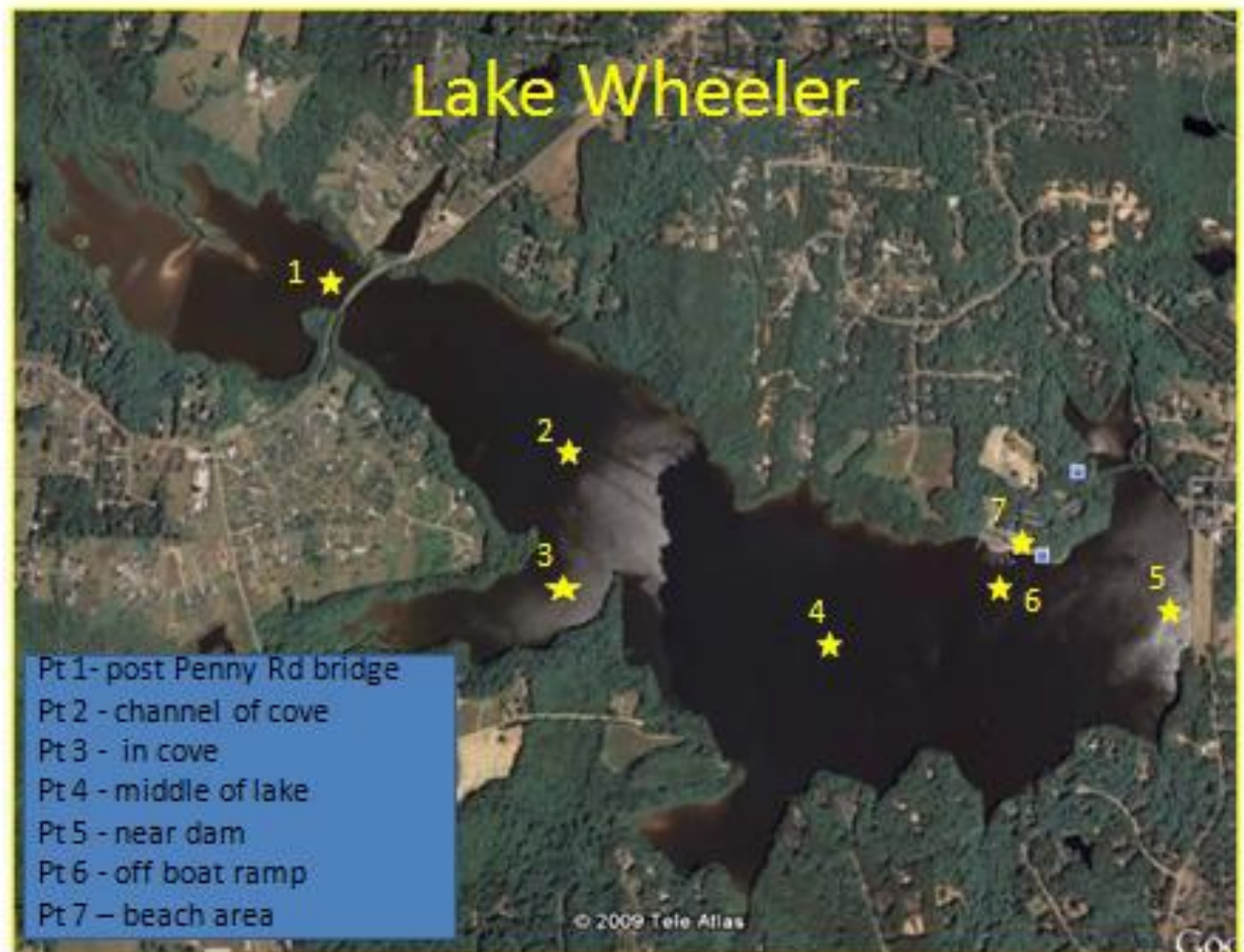


## New Life Camp





## Lake Wheeler



## Falls Lake – outside designated swimming areas

- POINT 1: Just past point of land on left
- POINT 2: Just past boat ramp
- POINT 3: Danger buoy between two points of land
- POINT 4: Just off Rolling View Marina
- POINT 5: Between danger buoy and mile marker
- POINT 6: Just before bridge near other channel
- POINT 7: Right off opening on left
- POINT 8: Between mile marker 5 and a rocky point
- POINT 9: Before no wake zone at bridge
- POINT 10: Between boat ramp and ridge
- POINT 11: Just before bridge at Six Forks
- POINT 12: Between points at mile marker 3
- POINT 13: Between points with opening to left
- POINT 14: Near “beaches” before road
- POINT 15: Between point and point with rock just past cove
- POINT 16: Just past old road bed

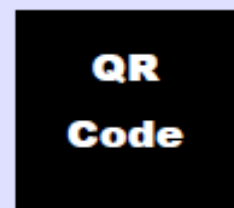


## APPENDIX B – SIGNS

### HEALTHY SWIMMING TIPS

- Try not to swallow lake water. Swim with your mouth closed. Keep your head above water.
- Go to the bathroom before going in the water. Take children to the bathroom often.
- Put a new swim diaper on your child before entering the water. Check and change swim diapers often.
- Wash hands with soap and water before eating.
- Take a shower after swimming.
- Don't go in the water if it is raining or has rained in the last day. The water is likely to have more germs.
- Stay out of the water if you have diarrhea or vomiting.
- Pets are not allowed in beach areas.
- Do not feed the birds. Feeding birds attracts them to the beach area where they poop a lot.

### What do these signs mean?



# Notice

- This week's water test showed the number of germs in the water were within the accepted levels.
- Remember, lake water is not chlorinated to kill germs.
- Lake water quality can change quickly.

## Swim at your own risk:

- Do not drink the water
- Wash hands before eating
- Shower after swimming or wading
- Do not go in the water if you are sick



Wake County tests this lake water for germs (*E. coli* and enterococci bacteria) each week from May through September. Please read and follow what the signs say. For more information visit: [www.wakegov.com/water](http://www.wakegov.com/water)

QR Code

# Caution

- Either this week's water test showed the number of germs in the water are above the accepted levels OR
- There is a rain advisory.
- You have a higher chance you could get sick if you go in the water today.

## Swim at your own risk:

- Do not drink the water
- Wash hands before eating
- Shower after swimming or wading
- Do not go in the water if you are sick



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QR Code

# Beach Closed

- This area is closed for contact.
- No swimming or wading.
- You could get sick if you go in this lake today.

## For your safety:

- Stay OUT of the water
- Do not get water in your mouth
- Wash hands before eating



Wake County tests this lake water for germs (*E. coli* and enterococci bacteria) each week from May through September. Please read and follow what the signs say. For more information visit: [www.wakegov.com/water](http://www.wakegov.com/water)

QR Code