100 Polk County Plaza • Suite 180 • Balsam Lake, WI 54810 • 715-485-8500 • FAX 715-485-8501

RECREATIONAL BEACH TESTING SUMMARY REPORT

SUMMER 2021

PROJECT PURPOSE: To initiate and conduct bacteriological water testing of selected public recreational beaches located in Polk County to identify swimming beach water quality trends for purposes of swimmer safety.

Nine beaches were monitored for fecal bacteria. They included Lotus Lake, Big Butternut Lake, Half Moon Lake, Lake O' The Dalles, N. Twin Lake, Balsam Lake, Antler Lake, S. Twin Lake, and Church Pine Lake.

MONITORING/TESTING PROCEDURES: *Italics=EPA Beach Monitoring Guidelines*

1. SAMPLING FREQUENCY

Sampling was conducted once a week under the direction of the Environmental Health Specialist.

The current recommendation for sampling is four times within a 30-day period.

2. DURATION OF SAMPLING

Sampling occurred weekly from May 27, 2020 through September 2, 2020.

It is recommended that sampling occur throughout the time of recreational use, usually May 1 through September 30 of each year, depending on the weather.

3. TIMING OF SAMPLES

Sampling generally occurred on Tuesdays between 3:00 p.m. and 5:30 p.m or Wednesday mornings between 7:00 a.m. and 8:30 a.m.

It is recommended that sampling occur at each location, and generally the same time of day. For crowded beaches at which bather-to-bather contamination may be a significant route of microbiological exposure, sampling when recreational use is highest may be appropriate.

4. DEPTH OF SAMPLING

Samples were collected at knee to chest-depth in waders, approximately 12-24 inches below the surface.

Samples should be taken from just below the water surface, in ankle to knee-depth water, approximately 12 to 24 inches deep.

5. INDICATOR ORGANISMS

The indicator organism tested for was fecal coliform that detects all E.coli and some Klebsiella bacteria.

Indicator organisms at a minimum should include fecal coliform or E. coli bacteria.

6. LABORATORY ANALYSIS

The Polk County Health Department used the state accredited Commercial Testing Laboratory in Colfax, WI. The samples were transported to the Polk County Health Department and stored in a refrigerator overnight for not more than 48 hours. The Commercial Testing Laboratories picked up samples every Wednesday morning. Samples were analyzed within 24 hours at the laboratory, and results were available by Friday afternoons. The lab notified the Health Department by telephone when results exceeded 400 CFU/100 mL. Written results were received within one week.

All laboratory analyses of recreational water quality should be conducted by a laboratory accredited for wastewater analyses. Specimen transport time should not exceed 48 hours at 2-10 degrees Centigrade. Specimens should be sent iced in Styrofoam mailers.

Analysis should be completed within 24 hours from the time samples are received in the laboratory. Preliminary results should be available and obtained from the laboratory as soon as possible, preferably within 24 hours. Written results should be provided within one week after sampling. The laboratory should telephone results if there is need for additional attention or immediate action.

INDICATOR ORGANISMS LEVELS & RESULTS

LEVELS INDICATING A NEED FOR ATTENTION

CFU= Colony Forming Units

Additional sanitary surveys and other related evaluations, including more frequent sampling if levels appear to be on an increasing trend, are recommended when indicator organisms exceed any of the levels given below:

Fecal Coliform	Two consecutive samples > **400 CFU per 100 mL** (single sample), OR **200 CFU per 100 mL**, based on the log mean of at least 5 equally spaced samples in a 30-day period.
E. coli	**235 CFU per 100 mL** (single sample), OR **126 CFU per 100 mL**, based on the log mean of at least 5 equally spaced samples in a 30-day period.

7. SUMMER 2021 FECAL COLIFORM TEST RESULTS in CFU per 100ml

TEST DATE	Lotus Lake	Big Butter-nut	Half Moon Lake	Lake O' the Dalles	North Twin Lake	Balsam Lake	Antler Lake	South Twin Lake	Church Pine Lake
June 2, 2021	60	<10	<10	<10	<10	<10		10	<10
June 9, 2021	10	60	190	10	40	80	40	60	40
June 16, 2021	90	<10	290	<10	<10	30	<10	50	<10
June 23, 2021	1000	10	10	10	60	10	1600	10	380
June 30, 2021	20	150	180		10	10	<10	120	<10
July 7, 2021	90	<10	50	20	<10	<10		10	10
July 14, 2021	40	<10	50	10	<10	30	<10	<10	<10
July 21, 2021	10	30	50	<10	20	300		<10	10
July 28, 2021				<10					
Aug. 4, 2021	10	<10	150	10	<10	10		20	10
Aug. 11, 2021	490	<10	<10	53	<10	<10	10	10	40
Aug. 18, 2021	<10	10	10	<10	<10	<10	190	30	<10
Aug. 25, 2021	>8000	1200	660	10	170	290	190	390	280
Sept. 1, 2021	260	<10	10	20	<10	30	<10	20	<10

RECOMMENDATIONS FOR CORRECTIVE ACTION

LEVELS OF ORGANISMS TO PROMPT CORRECTIVE ACTION

According to the Polk County Human Health Hazard Ordinance, when recreational waters fail to meet the standards or guidelines, the Environmental Health Specialist, Health Officer or their designee may close, post warning signs, notify releases to media, or otherwise restrict use of the recreational areas. They must take into consideration the causes for the elevation of microbiological indicators, and keep the beach closed until corrective action has been taken and standards or guidance levels are met.
Although EPA guidelines recommend using the median or log mean of samples taken within a 30-day period, this approach provides information that is more helpful in assessing the longer-term water quality. As such, these standards are useful in determining the suitability of a beach for recreational uses or evaluating environmental factors that may affect water quality:

a. To provide immediate response, the most recent single value for decision making, with confirmatory re-sampling and analysis, if data are questionable is recommended.
b. Evaluation of long-term data collection is important in refining the sanitary survey, and for recognizing conditions that may result in higher concentration of microbial indicators.

UNPOSTING BEACH ADVISORY WARNING AREAS

Unposting of beach advisory recreational areas is appropriate when repeat samples reach concentrations lower than those at which posting is recommended.

HIGH READING ACTION TAKEN

There were no consecutive high readings during the 2021 season, and as a result, none of the beaches were closed and no re-sampling was required.

High levels may be attributed to wild animal feces such as from ducks and geese and excessive run-off due to large amounts of rain. The analytical test used at the laboratory does not distinguish between animal and human feces. An evaluation of the long-term microbiological sampling data is more indicative of the quality of lake water.

CONCLUSION

Considering the fecal coliform results as listed in this report, it can be concluded that the microbiological levels at all Polk County swimming beaches were relatively **normal and below the recommended limits** for the 2021 season.

The following recommendations are being made for future public swimming beach safety and health:

1. Continued Sampling: It is recommended that sampling continue annually at each of the tested beaches and be initiated through the local health department at all public swimming beaches in Polk County.

2. Sampling Period: For future summer swimming seasons, sampling is recommended to begin on May 1 and conclude on September 30 as indicated by the EPA. At a minimum, sampling is recommended June 1 to August 31.

3. Sanitary Survey: It is recommended that a sanitary survey be conducted by a Registered Sanitarian at all recognized Polk County public beaches.

4. Signage: It is recommended that signs for posting beaches be available to the public beach operators and/or the Polk County Health Department. Signs should be posted when sample results are high, severe rain storms occur, or sewage spills or storm water discharges occur. Signage should read similar to the following:

WARNING!
BEACH ADVISORY
SWIMMING AREA HAS HIGH LEVELS OF BACTERIA THAT MAY CAUSE ILLNESS
SWIM AT YOUR OWN RISK…MORE INFO AT www.polkcountyhealthdept.org

Respectfully Submitted,

Brian Hobbs, RS EHS
Environmental Health Specialist
Polk County Health Department