ADVISORY ON LAKE BARCROFT WATER QUALITY

Questions on the quality of the water in the Lake have come up many times over the years. This advisory is an attempt to answer those questions and address common concerns as related to swimming, fishing and individual health. In summary:

- The Lake is a natural body of water in a totally urban watershed and as such is subject to all the vagaries of any natural aquatic system. It is not filtered or treated. However, based on the abundant and healthy plants and animals in the Lake, it is a very healthy natural system.
- Generally speaking, the Lake is safe for swimming, boating and other recreational uses except those occasions noted in the Q&A below. However, the water is not safe for drinking just like any other natural body of water and, as with all bodies of natural water, some individuals may be more sensitive than others to natural conditions.
- WID tests fish and dredge spoils for certain pollutants such as mercury roughly every 10 years and has found the Lake to be relatively (but not completely) free of pollutants from industrial, chemical and biological pollution, with little change over time.
- WID year-round – and LBA during the lifeguard season – regularly observe the water, aquatic life and vegetation to note any changes that might suggest more frequent testing is needed.
- There are no manufacturing or other industrial sources of toxic or biological pollution in our watershed that require monitoring.
- Low levels of toxic materials wash into the Lake from many sources – the atmosphere, vehicles, pets, pesticides, fertilizers, etc. For example, mercury (from coal burning) is introduced via air pollution and rain; and biological agents wash into the Lake from pet debris and other natural sources.
- The quality of water flowing into the Lake has been unchanged over many years. However, thanks to new efforts by Fairfax County, we may expect it to gradually improve over time.[1] Residents should be aware that the low levels of certain toxic materials and biological agents in the Lake still require limiting the consumption of fish and may be problematic for very young children and other more sensitive individuals.

[1] As with any natural body of water, there are from time to time incidents that may cause a temporary reduction in water quality in specific areas of the Lake. These might range from rain storms, which may carry organics (e.g. trees and animal waste) and inorganics (e.g. plastics bottles), to accidental or deliberate infusions of gasoline, oil or even sewage. Except for rain storms, these occurrences are very rare and most are relatively small. Given the water volume of 800 million gallons in Lake Barcroft, the effects of dilution and flow can quickly mitigate their impact, typically affecting water quality for only 24 to 48 hours. These rare occurrences do not affect the trend of improving water quality over the longer term as related to improved conditions upstream. Unusual occurrences are reported in LakeLink and/or on the community web site (www.lakebarcroft.org).

FREQUENTLY ASKED QUESTIONS ABOUT WATER QUALITY & WATER QUALITY TESTING

How does Water Quality affect me and why should I care?

Water quality affects recreation and the health of those using and living near the Lake, as well as the overall health of the Lake itself and its ecosystem.

Is the Lake safe for recreation?

Generally speaking, yes, the Lake is safe for all types of water recreation for a number of reasons: 1) The watershed, which is about 15 square miles, does not have industrial or chemical sources of contamination; 2) The incoming flow is generally clean; 3) the water coming into the lake flows through, flushing the Lake in about two weeks under average weather conditions; and, 4) most importantly, the overall health of the Lake, as measured by the plants and animals present, is superior. Our ecosystem supports a very healthy population of fish, birds, turtles and other living things.

However, keep in mind that the Lake is a natural body of water; it is not a chemically treated swimming pool. There is always the potential for some unusual type of pollution to enter the watershed; for example, a gas station was found a few years ago to be dumping used oil into Tripps Run which runs into the Lake. But the WID staff – and LBA during the lifeguard season – regularly are on the Lake almost every day monitoring the waters and residents are vigilant monitors. Never hesitate to contact the WID directly if you see something unusual.

What is the best way to monitor the water quality of Lake Barcroft?

The goal of the water quality in Lake Barcroft is to insure that it is as safe as can be for recreation in a natural urban free flowing body of water. The health of the Lake's Web of Life (plants, birds, fish, humans, etc.) is the best measure of water quality. It is the mission of all residents, LBA and the WID to monitor the Lake's living system and report changes.

Why isn't the water tested more frequently?

Testing has been and would be undertaken by the LBA, WID and/or the County whenever a distinct threat is thought to be an issue or one is specifically identified. There are several reasons why testing is undertaken only on a case by case basis:

- Static conditions within the watershed – there are no regular sources of contamination
- There are literally hundreds of tests that could be conducted – chemical, biological, etc.
- Conducting even a few tests can be very expensive
- The lag between taking a sample and receiving test results can be several weeks during which much of the water in the Lake is exchanged and the test results may no longer apply.
- Monitoring the wildlife is the best way to monitor water quality.

Has the Lake ever been tested for heavy metals?

Yes. Lead, mercury, cadmium and some heavy metals are considered to be a health risk at certain levels and under certain conditions. Heavy metal sources include: 1) industrial or mining pollution; 2) naturally occurring sources; 3) automobile pollution; and 4) airborne residue from coal-fired power plants. About every 10 years or so, the WID has tested fish from the Lake and the dredge spoils for heavy metals. Levels have been found to be below EPA's levels of concern.

Are heavy metals an issue in Lake Barcroft?

Heavy metals accumulate in animals such as fish and humans over time, and so they are always a concern. Because we have no mining, manufacturing or other types of industry in our watershed, these sources of pollution are not a specific issue to the Lake. However, heavy metals are ever present in our industrial society. Nearly all mercury pollution comes from coal-fired power plants via rainfall; it is a problem in all fresh waters throughout much of North America. Most of the other heavy metal pollution (e.g., cadmium, zinc, etc.) is from automobiles and washes off of the roads during rainstorms. Much of this pollution can be filtered by vegetation and the land, which is a primary reason that the WID and LBA support RPA regulations and maintaining a large Barcroft forest with an abundance of trees and other native plants.

Can I drink Lake water?

No one should ever drink water from any free-flowing waters no matter how clean they may appear. There is a potential for a variety of pathogens – bacteria, parasites, etc. – in the waters of Lake Barcroft, as in any stream, lake or pond.

Are the fish caught in Lake Barcroft safe to eat?

Fish accumulate heavy metals and the larger the fish, the greater the accumulation. Mercury in particular is a problem and the general recommendation by the EPA and the FDA is to eat no more than 6 ounces of mid-Atlantic freshwater fish per week. The state of Virginia is presently researching the subject. However, in 2010 West Virginia issued an advisory recommending that no more than two meals per month of locally caught freshwater fish.

Overall, is the Lake safe for swimming?

Lake Barcroft is a natural body of water with a variety of risks that are outlined below in more detail. Because it is a natural body of water with two major inflows and one outflow, anyone entering the water should use common sense. Individuals with open wounds, compromised immune systems or known allergies to substances that may occur in water are at most risk and perhaps should not enter the Lake. Small children are at risk and should be watched carefully due to some of the physical aspects of the Lake (e.g. currents, debris, etc.) and because of their propensity to stick things in their mouth. Further, everyone has different sensitivities or allergies, and we all should be aware of the potential for reactions of all sorts – skin rashes, intestinal distress and the like.

What biological risks are in Lake Barcroft?

There is potential for variety of biological risks. Many animals use the Lake including beaver, muskrat, raccoon, snakes, birds, fish (of course), etc. - even deer have been seen swimming across the Lake. To our knowledge, there are no recent sightings of poisonous snakes in the lake. But Copperheads are known to occur in the Holmes Run canyon. When it comes to snakes, give them all a wide berth – many of the non-poisonous snakes will bite with veracity if cornered or handled. All of our wildlife is wild and should be respected from a distance. Organisms that we cannot see are of more concern and a wide variety of pathogens (disease producing microorganisms), parasites and the like are ever present.

What about pathogens and parasites in the Lake?

Intestinal distress of one sort or another is sometimes reported by residents who have been enjoying the waters of the Lake. But the vast majority take pleasure in the water and never suffer from any distress. Different people react to environmental pathogens and parasites in different ways. Further, the risk of some types of infection is increased when entering any body of water and Lake Barcroft is no exception. Those with open wounds should stay out of any natural waters. As always, the youngest and the oldest and those with compromised immune systems are the most susceptible.

Are there other risks?

Lake Barcroft is a natural body of water with a variety of physical and natural risks. Physical risks include such things as storms especially lightning, currents during and after a storm, debris of all kinds, unstable bottom, drop-offs, etc. Most of the physical risks are transient; therefore, common sense is warranted when swimming or wading. Although much of the bottom is mud, there is always a potential for sharp rocks, sticks and even glass to be on the bottom. Wearing water or wading shoes is always prudent. At the first sight of any lightning or hearing thunder, one should leave the water and not return for at least 30 minutes following the last sign of lightning or thunder. Additionally, diving from either the shore or a boat can be dangerous because the water depth varies considerably around the Lake.

What is Swimmers Itch?

"Swimmers itch" is sometimes reported by residents. It can be caused by algae although it is usually associated with a parasite (trematode) whose life cycle includes birds and snails and occasionally some mammals. During one stage in this life cycle, the parasite may burrow shallowly into your skin but this is abnormal as humans are not part of the parasite's life cycle. It causes a patchy red itchy rash on the skin; it is rarely severe or widespread and usually goes away on its own in a few days. It is rarely reported but may be present anytime. Certain types of algae can also cause a skin itch (dermatitis) or eye irritation and under certain conditions some individuals may be susceptible. These are typically minor affects.

What can be done to reduce the risk of Swimmer's Itch and the like?

Aside from staying out of the water, it is always an excellent idea to dry off after leaving the water. Better yet, hosing off or pouring a gallon of fresh water over yourself or your child after swimming is a very wise idea. One could carry a container of water to the beach just for that rinsing. However, in a free flowing lake such as Barcroft, pathogens are very rarely in such high numbers that they would be a severe problem.

Is the Lake safe all year around?

During periods of drought, the Lake may have outbreaks of algal growth and potentially higher levels of pathogens. In severe droughts when algal blooms are seen in the water, it would be best to curtail swimming as some people are sensitive to certain algae or other microscopic life in the water. Certainly the ice in the winter can be problematic. The currents of the Lake and incoming waters do cause a great variation in ice thickness and no ice can really be deemed safe so neither WID nor LBA endorse walking or skating on the ice at any time.

Are there times when I should not swim?

After heavy storms a great deal of debris including large, partially submerged limbs and even whole trees are washed into the Lake. When high volumes of waters pass through the Lake, there can be submerged currents so one should not enter the water for swimming or boating. Additionally, during a storm, the upstream properties are flushed of all sorts of debris and residue from pets, wildlife and the like. It would be prudent to stay out of the water long enough for the upper parts of the Lake to flush this residue. After every storm, the WID staff is out on the Lake assessing its condition and removing debris.

What do the flag colors at the beaches mean?

The flags are posted by the LBA Water Safety personnel and represent:

- Green- good to Go
- Orange- Swim with caution - high risk advisory
- Red with international *no swim* symbol in white- strictly closed to swimming