

**A White Paper
on the
Protection of the Lower Bay of Sebago Lake**
As adopted by the Portland Water District Board of Trustees, January 26, 2004

Vision Statement

The Portland Water District's Board of Trustees believes that 10% of Sebago Lake –the Lower Bay- should be set aside for the sole purpose of protecting the region's drinking water supply, leaving 90% for recreational access and responsible shorefront development.

Overview

The Portland Water District supplies 15% of Maine's resident population with drinking water from Sebago Lake, Maine's second largest and deepest lake. Guided by a commitment to public health, the District employs a multiple barrier approach to ensure quality water at the tap. The first important barrier in this approach is protection of the source. The District's Watershed Control Program, recognized for effectiveness by the Governor in 2001, extends to the far reaches of the watershed. It is comprehensive and multi-faceted, since the lake is a multi-use lake enjoyed by thousands of residents and visitors every year.

By almost any measure, the quality of water withdrawn from Lower Bay is excellent, indicating that this strategy has proven effective. Ongoing monitoring of water quality, coupled with direct actions taken to respond to potential or documented water quality threats, continues to ensure that quality water will be available for generations to come.

Background

Sebago Lake has been used as a drinking water supply for the citizens of Greater Portland since the Civil War. Water is withdrawn from the southern end of the lake. The Lower Bay of Sebago Lake is located in the town of Standish, one of 11 communities supplied with drinking water from the Portland Water District's Greater Portland system.

In 1908, the Maine Legislature established the Portland Water District (the District) as a quasi-municipal, nonprofit organization. The original legislative charter empowered the District to acquire the assets of the for-profit companies then supplying water to Greater Portland and authorized the District "to take and hold, as for public uses, by purchase or otherwise, any land or interest therein or water rights necessary for...preserving the purity of the water and watershed..."

Public Health First

The Portland Water District is an agency dedicated to the protection of public health, first and foremost. In the past 100 years, life expectancy in this country has increased by more than 30 years. According to Dr. Jeffrey Griffiths, MD, of Tufts University School of Medicine, much of the credit for a longer life span goes to advancements in clean water, clean food, and wastewater treatment. To meet our obligations to public health protection, our water must meet or exceed

health and aesthetic standards every day at every tap. We serve water to schools, hospitals and nursing homes - providing water daily to consumers with compromised immune systems who are less able to fight infection than most. So our defense against waterborne disease must be absolute.

Multiple Barrier Approach to Drinking Water Protection

There is no single method or technique that provides complete protection against waterborne disease. The Environmental Protection Agency, the American Water Works Association, and water professionals throughout the world endorse the “Multiple Barrier Approach” to protecting drinking water sources. The federal Safe Drinking Water Act, which governs the protection of public water supplies, is based on this concept. The multiple barrier approach relies on the combined effectiveness of the four protective measures listed below.

1. Protection of the water source through effective controls over land uses,
2. appropriate water treatment,
3. well-maintained water distribution systems, and
4. effective monitoring of water quality and enforcement of standards.

Effective source protection is considered “critical,” according to EPA Assistant Administrator G. Tracy Meehan, as stated in a 2003 memo to state drinking water programs. If contaminants never reach the water, customers are protected regardless of the effectiveness of the other methods. On the other hand, if the source is contaminated, public health protection relies on the integrity of the remaining three barriers, all of which are limited by human ingenuity and subject to human error.

The District was granted an exemption to the filtration requirements of the Safe Drinking Water Act in 1993. To receive this waiver, the District had to comply with a series of criteria. Among these is a requirement to “maintain a watershed control program which minimizes the potential for contamination by *Giardia lamblia* cysts and viruses in the source water,” [40 CFR 141.71 (b) (2)]. and “demonstrate through ownership and/or written agreements with landowners within the watershed that it can control all human activities which may have an adverse impact on the microbiological quality of the source water.” [40 CFR 141.71 (b) (2) (iii)].

The Potential Consequences of Failed Source Protection Efforts

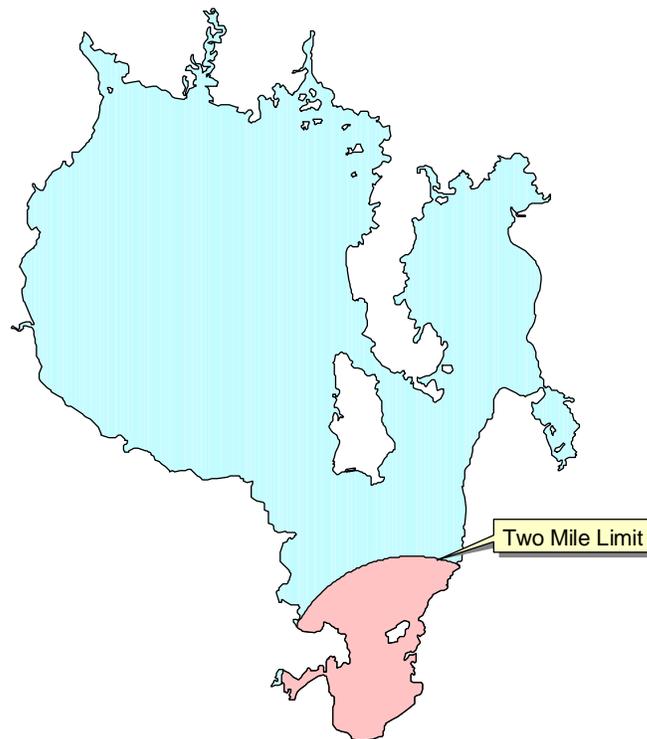
In recent years there have been some well-publicized cases of waterborne disease in North America that illustrate the need to maintain the source protection barrier. The most deadly of these occurred in Milwaukee, Wisconsin, in 1993. Approximately 400,000 Milwaukee residents were infected with the protozoan *Cryptosporidium* and 100 of those infected died. This pathogen, drawn in from the system’s Lake Michigan source, was able to infect the residents of the city despite full filtration and disinfection.

Protection of Sebago Lake

In the simplest terms, protecting a lake water supply requires keeping human activity away from the intakes. Humans are the major source of chemical and microbial contaminants in a water supply. The most comprehensive source protection strategy would be to prohibit human activity in a lake or watershed. In practice, however, this is only feasible for very small bodies of water with limited watersheds. In such cases, it can be possible to purchase much of the watershed land, erect fencing, and/or limit access to essentially the entire watershed. In Maine, this strategy has been successfully employed by Augusta Water District and the Bangor Water District.

By contrast, Sebago Lake is a multi-use lake, which has been enjoyed by residents, campers, fishermen, and boaters for centuries. The lake covers 30,000 acres. The watershed encompasses 300,000 acres and includes parts of 23 towns. Human activity will always occur in the watershed and on the lake. The challenge, then, is to prohibit or restrict activities that are not compatible with the use of the lake as a water supply while allowing those activities that are.

In 1913, the Maine Legislature effectively defined a portion of the lake primarily intended to be managed for drinking water purposes by establishing a “no bodily contact” area extending two miles from the intake structures. This limit is marked by buoys and effectively divides the lake into two parts – 90 percent of the lake designated primarily for recreation, 10 percent primarily for drinking water protection. This division is illustrated by the map below.



Beyond the two-mile limit, with the exception of the District’s authority regarding development within 200 feet of the lake, protection is provided by laws and regulations that apply to all Maine lakes. There are no additional restrictions that apply only to Sebago Lake.

Strategy for Lower Bay

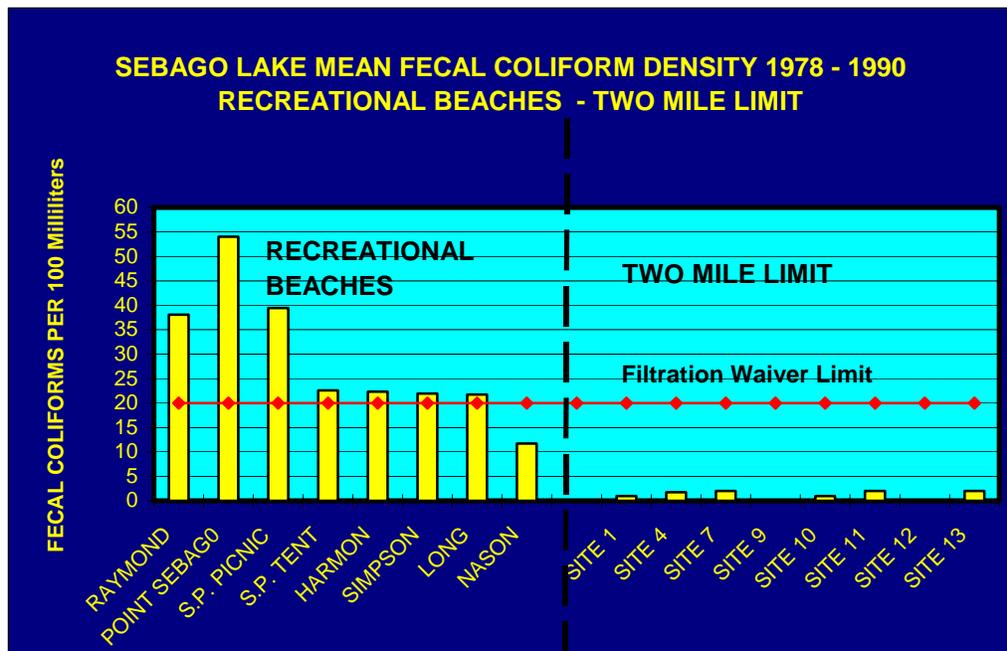
Sebago Lake water quality continues to be excellent, demonstrating that the strategies employed to date have been effective. However, the presence of human activity in the watershed and lake means that operation occurs with some degree of risk. Increasing human activity increases the risk and limiting activity further lowers the risk.

For nearly 100 years, the District has effectively protected the quality of water in Lower Bay through a combination of the following strategies:

1. Surveillance and Enforcement of Intake Protection Zones,
2. Land Acquisition or Establishment of Conservation Easements,
3. Enforcement of Legal Controls on Development,
4. Public Education and Outreach, and
5. Monitoring and Direct Actions.

In general, these protection methods are listed from most effective to least effective. It is much more effective to own land and prohibit access than it is to try to enforce restrictions or regulations.

The effectiveness of this strategy is illustrated by the chart below. Fecal coliform bacteria counts are compared for locations inside the two-mile limit with those outside. Though not all fecal bacteria are pathogenic (disease-causing), they are an indicator of the potential presence of pathogens and are strictly limited in sources of public drinking water. The horizontal red line on the chart indicates this limit and shows that where human contact is permitted, the limit is often not met.



Surveillance and Enforcement of Intake Protection Zones

The most significant tool employed to protect Lower Bay was established by a 1913 act of the Maine Legislature. This Private and Special Law prohibits bodily contact within two miles of the intakes and prohibits trespassing on District lands acquired “for the purpose of protecting the purity of the waters.” Later amendments prohibit trespassing within 3000 feet of the intakes. Regular surveillance of Lower Bay ensures that these restrictions are enforced.

Land Acquisition or Establishment of Conservation Easements

In the first years after the District was chartered, the District trustees were compelled by public health concerns to acquire some critical lands using eminent domain authority. Since then, most acquisitions have been of smaller parcels purchased at market value from willing sellers. In almost every case, the sellers have approached the District to purchase their property. In 2000, the District adopted a policy regarding land acquisition around the Lower Bay. The policy targets the remaining parcels located inside the two-mile limit and at least partly within 500 feet of the shore. As these become available, the District seeks to purchase them at market value from a willing seller. Once purchased, any existing buildings are demolished and the parcels re-vegetated.

The District presently owns approximately 2500 acres of land around Lower Bay. Access to this land is limited. Fencing has been erected around some key parcels and signage is used to notify people of prohibitions on trespassing, camping, and fires.

When outright purchase of properties is not possible (due to cost or the wishes of the owner, for example), an alternative is to purchase conservation easements prohibiting development of land in perpetuity but allowing property owners to continue to own and use the land for low impact activities.

Enforcement of Legal Controls on Development

Several important state and local laws and regulations are designed to protect water quality by controlling the scope and type of land development. The Private and Special Law for the protection of Sebago Lake requires that the District approve the placement of “any cottage, stable, or other structure to be occupied by man or beast within 200 feet of the high water mark of the shores of Sebago Lake.” All Maine lakes are further protected by the Mandatory Shoreland Zoning Act and the Natural Resources Protection Act. Though not charged with their enforcement, the District works with local and state authorities to ensure development is consistent with these laws. Outside the shoreland zone, the District reviews and comments on larger developments that are reviewed under local ordinances or state laws such as the Site Location of Development Law.

Public Education and Outreach

Most people will modify their activities and practices to protect a lake if made aware of alternatives. Providing information about the state of the lake and lake friendly practices is a critical protection tool because so much human activity is not governed by the legal controls described above. Practices range from providing environmental education in local schools to visiting shorefront property owners during the summer. The principle behind all of these efforts is that protection of a multi-use lake requires cooperation.

Outreach can also take the form of agreements that detail steps to minimize lake impacts with organized groups that utilize District land. In recent years, such agreements have occurred with the Sebago Boating Club for use of the Sandbar, the Windham Rotary for the annual fishing derby, and with Standish Sno Seekers for a snowmobile rally. Though facilitating access can present some additional level of risk, developing cooperative agreements with responsible individuals that would access the lake anyway can provide additional security and stewardship beyond that provided by District employees.

Monitoring and Direct Actions

Water quality monitoring in Lower Bay has been ongoing since the inception of the District. Presently, more than 10 significant water quality monitoring programs are maintained each year. The purpose of these programs is to evaluate the existing state of lake water quality and, by comparison with past data, assess whether the lake has improving, declining or unchanged water quality.

It is important to note that monitoring alone is not a protection effort. It is the response to monitoring that protects the source. When data reveal an existing or potential threat to water quality, the District takes steps to strengthen existing protections or incorporates new measures to safeguard the source. It is this monitoring and subsequent direct actions that ensure that the District's Watershed Control Program will remain effective into the future.

A Portland Water District Vision of Lower Bay

The District will continue to work with the tools that have been made available to preserve the most important barrier protecting public health in Greater Portland, an uncontaminated Sebago Lake. **The Portland Water District's Board of Trustees believes that 10% of Sebago Lake – the Lower Bay- should be set aside for the sole purpose of protecting the region's drinking water supply, leaving 90% for recreational access and responsible shorefront development.**

Unanimously Approved by the Portland Water District Board of Trustees

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