

PORTLAND WATER DISTRICT SEBAGO LAKE WATERSHED

EXECUTIVE SUMMARY

The Portland Water District provides drinking water from Sebago Lake to more than 190,000 people in the Portland metropolitan area. Sebago Lake has a surface area of approximately 30,500 acres and is fed by water from a direct watershed of more than 142,000 acres. The lake lies within the towns of Windham, Standish, Sebago, Naples, Casco, Frye Island and Raymond. Portions of the towns of Harrison, Otisfield, Norway, Waterford, Albany Township, Greenwood and Bethel lie within the Crooked River watershed, which drains into the Songo River and then to the lake at its northern end. The watershed is more than 50 miles long from Bethel to Standish and more than 13 miles wide. Approximately 86 percent of the watershed is undeveloped woodland. Agricultural land occupies approximately 6 to 7 percent of the watershed. Residential, commercial and industrial development occupies 7 to 8 percent of the watershed, but increases in density closest to the lake.

The Portland Water District owns approximately 2,500 acres of land along the southern shore of the lake, near its intakes. Sebago Lake State Park and a portion of the White Mountain National Forest are located in the central and northern portions of the watershed, along with several privately held conservation easements. However, the majority of the land in the watershed is privately owned. Approximately half of the towns in the watershed control development with municipal zoning ordinances. The remaining towns have not adopted specific zoning to control development. All towns have, however, adopted the state-mandated Shoreland Zoning, which influences development within 250 feet of the lake and the Crooked River.

The reconnaissance of the watershed for the SWAP identified existing non-residential land uses that could impact water quality. These activities include the handling and storage of petroleum and other chemicals, gravel pits, human and animal waste storage and disposal and waterfront recreational facilities. In addition to stationary land uses, a variety of sensitive materials are transported along major roadways in the watershed including US Routes 302, 114, 35 and 5, which pass through the watershed near Sebago Lake and/or the Crooked River.

The Portland Water District has determined that there are approximately 4,000 developed or developable parcels of land along the approximately 100 miles of Sebago Lake shoreline. Shorefront development poses a threat to the quality of the lake from subsurface wastewater disposal, lawn fertilizers, gravel roads and driveways and increased recreational access. Local and state laws relating to Sebago Lake give the Portland Water District authority to review certain aspects of development proposals within 200 feet of the shore. The Portland Water District has also developed productive working relationships with the Planning Boards and Codes Enforcement Officers of the seven towns around the lake as a means of monitoring development along the shore. Nevertheless, development pressure is very high for this waterfront property and significant future development is likely.

Sebago Lake serves the dual function as the source of supply for the Portland Water District and the dominant recreational resource for the area. There are public boat launches around the lake, including one in the southern end of Lower Bay in Standish. There are also numerous private and association access points to the lake. All recreational uses are permitted on the lake, except within the designated protection areas granted to the Portland Water District. No recreational

activity that involves bodily contact with the water is permitted within two miles of the Portland Water District's intakes. However, small, motorized vehicles (e.g., snowmobiles and four-wheelers) do go on the ice within two miles of the intakes during ice fishing season. No trespassing of any kind is permitted within 3,000 feet of the intakes. These restricted zones are marked by buoys and enforced by Portland Water District staff and volunteers.

Water quality data collected by the Portland Water District classify Sebago Lake as oligotrophic, which suggests minimal nutrient enrichment from the watershed area. The data show that the lake has low phosphorous and bacteria counts, high dissolved oxygen concentrations and good clarity. The data also indicate that the quality of the lake has remained stable over time.

The Portland Water District regularly collects water quality data from tributaries and the major rivers flowing into the lake. Elevated concentrations of phosphorous and coliform counts have been noted at certain sampling points.

The density of development in the direct watershed of Sebago Lake ranges from low in the upper watershed to high near the lake. The Portland Water District has developed and is implementing a dynamic Watershed Control Program to monitor water quality and improve conditions that pose a potential threat to the water quality of the lake. However, residential development pressure around the lake is high. The area will also continue to experience pressure to develop commercial and industrial projects along the Route 302 corridor. Based on these factors, the overall susceptibility of the Sebago Lake water supply to degradation of its water quality is considered to be moderate.

SWAP RANKING AND RECOMMENDATIONS

The SWAP assessment factors indicate that overall susceptibility of the water quality in Sebago Lake is moderate. This conclusion is based on the general conditions observed, including the density of development, current and anticipated future development pressure, the type and location of activities in the watershed that handle materials that can lower water quality and historical and recent water quality data. Specific factors considered in assessing the overall risk are summarized in Table 4.

SEBAGO LAKE SURFACE WATER ASSESSMENT

Zone	Measure	Findings	Risk Level
Watershed	Ambient Water Quality	Class GPA, in full compliance for trophic status. Lake water quality is high. Certain tributaries have water with elevated phosphorous and coliform bacteria.	Low-Moderate
	Existing Conditions	Watershed is predominantly forested but includes high-density residential, commercial and industrial uses. The intensity of development increases close to the lake.	Low-Moderate
	Future Development	Varying zoning control on future	Moderate

		development. Approximately half of the towns in the watershed have no zoning, including two shoreline towns. Growth and development pressure is high.	
	Overall		Low-Moderate
Shoreland	Lake Classification	Oligotrophic	Low
	Soils	Erodible soils are present along certain shoreline segments. Camp roads also contribute to erosion.	Low-Moderate
	Activities Posing a Threat	The shoreline includes several areas with high-density residential development and many shoreline beaches, resorts and marinas.	Moderate
	Potential for Future Threats	Future shoreland development controlled by zoning. Project review includes the Portland Water District. However, there are approximately 4,000 developed or developable shoreland lots around the lake.	Moderate
	Overall		Moderate
Intake	Raw Water Quality	Lake quality is good and stable. Filtration waiver granted.	Low
	Ownership/Control	District owns shoreline at intake but there is little conservation ownership along other portions of the shore. District has comprehensive Watershed Control Program.	Low-Moderate
	Activities Posing a Threat	Recreation (boat launch, motorized vehicles, parking, ice fishing) adjacent to intake zone.	Low-Moderate
	Potential for Future Threats	Increased recreation in unrestricted areas, persistent contaminants (e.g., MTBE), invasive plants and increased shoreline development pose a risk that degraded water quality will encroach into the District's restricted intake zone.	Moderate
	Overall		Low-Moderate
Overall			Moderate

Recommendations

The overall ranking for the susceptibility of Sebago Lake to threats of contamination is moderate. At present, the watershed has limited development and the forested land serves to protect water quality. The large size of the lake is also an important buffer that attenuates nutrients and contaminants from the surrounding watershed. However, the intensity of the current development and the pressure for future development increase with proximity to the lake. While new stormwater management and other regulations may mitigate some impacts from

future development, it will continue to pose a threat to the ability of the lake to maintain its high water quality in the future.

The Portland Water District has a Watershed Control Program to monitor water quality, improve existing practices and guide future development in the watershed. Based on discussions with the staff, the program is implemented in a dynamic manner, with annual review of the component activities and periodic alterations, as appropriate. The Watershed Control Program is a strong base for protecting the quality of the lake. In addition to the current activities conducted in the Watershed Control Program, the Portland Water District and watershed towns may also want to consider the following actions to provide added protection to the source water quality for the future.

- Protection of land from development will also protect and improve the quality of water flowing into Sebago Lake. **To this end, the Portland Water District should foster more land conservation in the watershed.** While it may not be feasible for the District to purchase significant new tracts of land for conservation, the District could facilitate communication and coordination among the many existing land trusts and large landowners within the watershed. Currently there appears to be enthusiasm from several groups, but coordination among the groups is limited.
- Currently the towns of Sebago and Frye Island have no land use zoning and the Town of Naples has village zoning. As development pressure increases, towns without zoning may be vulnerable to poorly planned, high-density growth. Development may also be attracted to these towns because there are fewer restrictions, making the transactional cost of development lower than in the surrounding communities. **All shoreline towns should consider zoning that incorporates protections for the lake.**
- The Portland Water District benefits from the 3,000-foot and 2-mile statutory limits granted in its charter. However, the location of the current boat launching area in Standish forces a significant amount of recreational boating traffic to cross close to the District's intakes to enter the northern portion of the lake. Water quality monitoring data collected near the boat launch document that fuel-related compounds are being discharged into the lake at this location. **The Portland Water District and the Town of Standish should continue to work together to locate an alternative boat launch site that provides users with better access to the lake without encroaching on the District's intakes.**
- The upper portion of the direct watershed, along the Crooked River, is an important source of water to the lake. Water quality monitoring data along the Crooked River included several data sets with elevated phosphorous and coliform counts. **The Portland Water District should work closely with the Lakes Environmental Association to monitor activities in the upper watershed and to advocate for land use practices that are protective of high water quality in the Crooked River and its smaller tributaries.**

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