SANTUIT POND NUTRIENT REDUCTION PROJECT

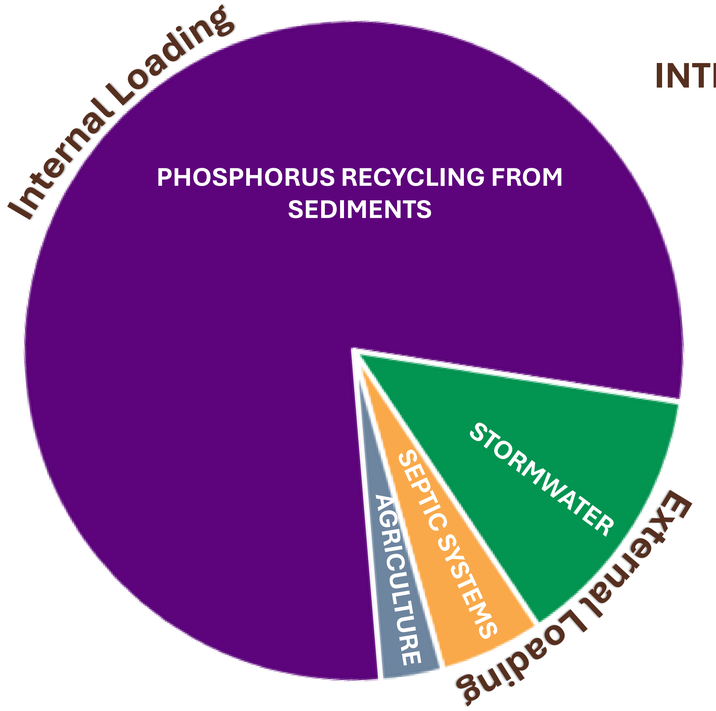
Problem: *Santuit Pond is suffering from excessive phosphorus pollution. This has caused impairment to aquatic life and poses a public health risk due to persistent harmful algal blooms.*

In-Pond Solution *Aluminum sulfate treatment (alum) will be applied to inactivate phosphorus to address phosphorus recycling, reduce algae blooms, and improve water quality.*

To learn more about what the Mashpee Wampanoag Tribe and the Town of Mashpee are doing to improve Water Quality, please visit the Santuit Pond Learning Hub!

SOURCES OF PHOSPHORUS AT SANTUIT POND*

*AECOM 2010



INTERNAL LOADING

78% Phosphorus Recycling

Nutrient cycling is the movement of nutrients, such as phosphorus, through a lake or pond ecosystem. Plants, algae, and other aquatic life use nutrients to grow. When those organisms die, a portion of the nutrients return to the sediment. Over time, and under certain conditions, those nutrients are released ("recycled") back into the water body, and the cycle starts over. The Santuit Pond Nutrient Reduction Project aims to short circuit this recycling loop through nutrient inactivation.

EXTERNAL LOADING

Scan for more ways to help reduce External Loading!

13% Stormwater

Stormwater has the potential to carry phosphorus and other pollutants into our beloved water bodies. Green infrastructure projects, such as the Town Landing Project, reduce impacts of stormwater runoff. Additionally, small, mindful adjustments to everyday activities can reduce the amount of phosphorus that stormwater carries into Santuit Pond - many of which you and your neighbors are already implementing!

Mindful adjustments include:

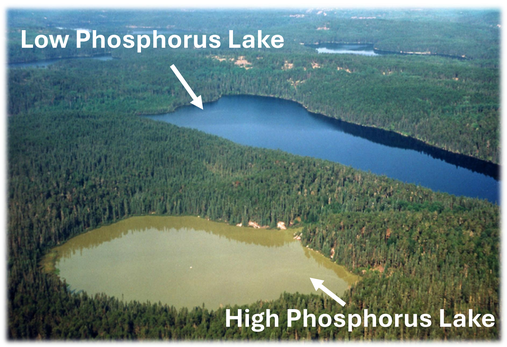
- Replacing Hardscape and Lawn with Native Vegetation
- Selecting Zero-Phosphorus Fertilizers
- Diverting Stormwater from Potential Pollutant Sources
- Removing Leaves & Debris from Streets and Drains
- Cleaning up Pet Waste & Disposing of it Properly

3% Agriculture

All cranberry bogs adjacent to the pond are now inactive. However, some release of phosphorus to Santuit Pond may still be occurring.

5% Septic Systems

A portion of the phosphorus from septic systems will enter water bodies over time, even if the systems are properly functioning and well-maintained. Failed septic systems release even more. The Town of Mashpee Board of Health instituted the Mashpee Septic System Management Program in 2021. Under this program, property owners around Santuit Pond were issued a town order requiring an inspection and pumping of their septic systems. Septic Systems determined to be out of compliance with Title 5 were required to implement remedies within 18 months of the 2021 town order.



Experimental Lakes Area in Canada, showing the impact of phosphorus on algal growth and water clarity.

High Phosphorus Levels have led to Multiple Impairments at Santuit Pond

Excessive concentrations of total phosphorus in Santuit Pond have resulted in excessive algae and plant growth. Some forms of algae are toxic and harmful to humans and animals. Algal blooms also reduce **transparency** and can lead to high **pH** levels and low **dissolved oxygen**.

*** In-Pond Solution ***

The overall goal of the Santuit Pond Nutrient Reduction Project is to reduce the impact of excess phosphorus on Santuit Pond, improve water quality conditions, prevent harmful algal blooms, and improve fish and wildlife habitat.

Phosphorus will be removed from the water through alum treatments. Once released, alum binds to and inactivates the phosphorus, trapping it permanently in the sediments at the bottom of the pond, and prevents it from being released back into the water. This reduces "internal loading," which is when nutrients are recycled within the pond. The goal is to lower phosphorus levels by 81%.

It is anticipated that two alum treatments will be necessary to achieve the project's goals. The first treatment is scheduled for the fall of 2026, and a second will be performed in the fall of 2027.

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