

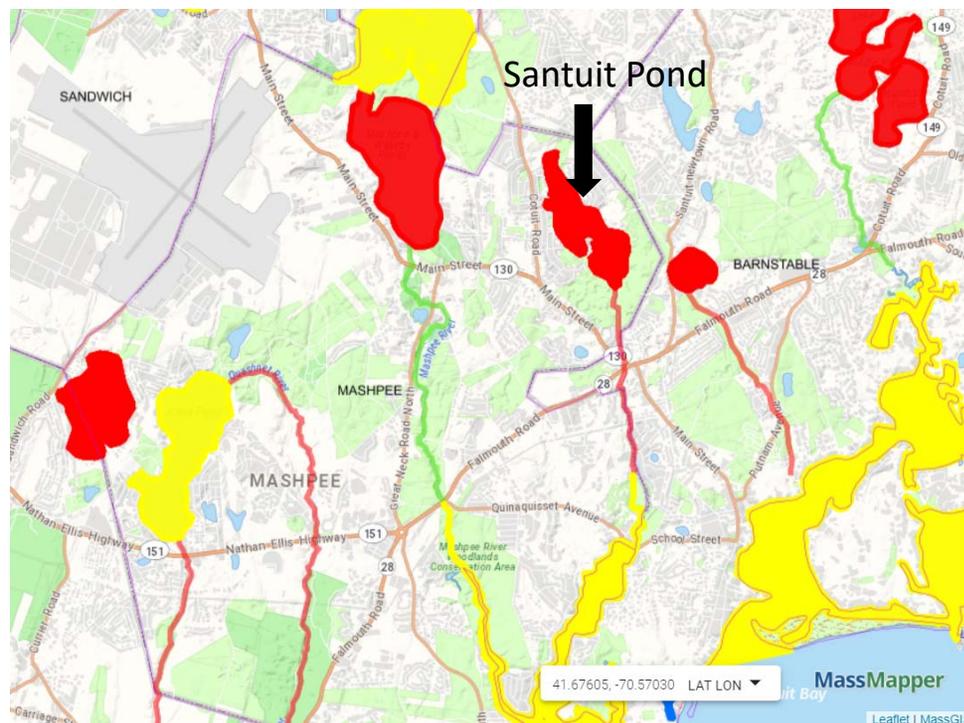


Mashpee Municipal Bylaw Review and Recommendations

Watershed-based Solutions to Increase Resilience to Harmful Algal Blooms in Santuit Pond in a Warmer and Wetter Climate

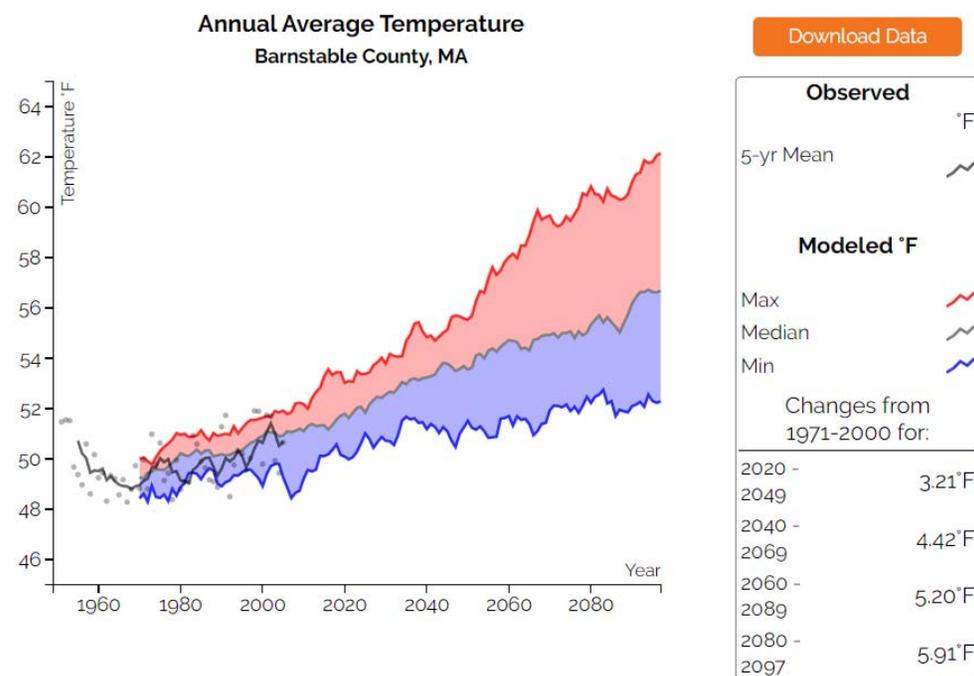
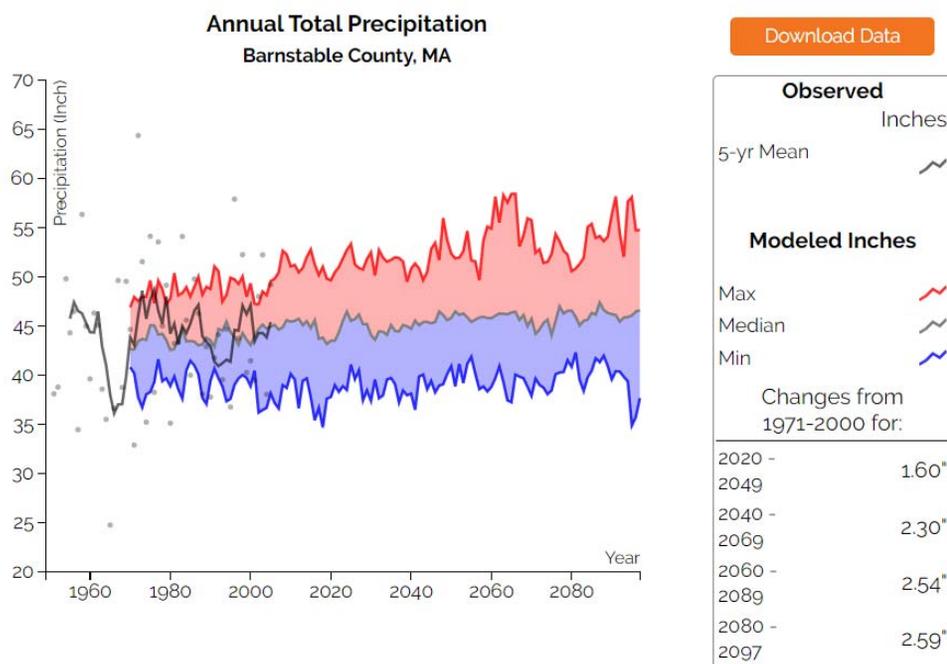
Protecting Mashpee's Ponds
April 15, 2022

Santuit Pond & Other Mashpee Waterbodies



- 2 - Attaining some uses; other uses not assessed
- 3 - No uses assessed
- 4A - TMDL is completed
- 4C - Impairment not caused by a pollutant
- 5 - Waters requiring a TMDL

Climate Change & Impacts to Water Quality



Climate Change Impacts

- Increased runoff
- Increased stormwater and nutrient loading to waterbodies

- Increased water temperatures
- Potential increase in conditions favorable for harmful algal bloom

Resources Reviewed – Mashpee

- Chapter 107 - Nitrogen Control Bylaw, Mashpee General Bylaws
- Mashpee Water District Irrigation Policy
- Chapter 84 - Erosion and Sedimentation Control, Mashpee General Bylaws
- Chapter 85 – Illicit Connections and Discharges to the Municipal Storm Drain System, Mashpee General Bylaws
- §174-27.2 Stormwater Management, Mashpee Zoning Bylaws
- Chapter 172 – Wetlands Protection Bylaw, Mashpee General Bylaws
- Chapter 172 – Wetlands Protection Regulations
- Boating in Mashpee Rules and Regulations

Resources Reviewed – Other Municipalities

- Town of Falmouth Nitrogen Control Bylaw
- Town of Harwich Fertilizer and Nutrient Control Regulation
- Town of Brewster Fertilizer Nutrient Control
- Town of Orleans Fertilized Nitrogen and Phosphorous Control Bylaw
- Town of Duxbury Conservation Commission Wetlands Protection Bylaw
- Town of Hingham Wetland Regulations
- Town of Scituate Wetlands Protection Rules and Regulations
- Metropolitan Area Planning Council Climate Resilient Land Use Strategies
- Neponset River Watershed Association Model Stormwater Bylaw
- Northern Middlesex Stormwater Collaborative's Model Stormwater Bylaw and Regulations
- MassDEP Model Water Use Restriction Bylaw

Recommendation Categories



Nutrient Source Control

- Reduce nutrients before potential to enter surface or groundwater



Stormwater Management

- Minimize erosion and reduce runoff potential prior to reaching surface waters



Water Conservation

- Reduce amount of water used for irrigation to minimize potential transport of nutrients

Nitrogen Control Bylaw



Nutrient Source Control



- Adopted in 2015 to regulate fertilizer use on residential lawns and reduce N loadings to surface waters and groundwater
- Amended in 2017 to address phosphorus (freshwater lakes and ponds)
- Prohibits use of fertilizer containing N or P outside of growing season
- Other use restrictions (impervious surfaces, near wetlands, within 24 hours of heavy rain)

Recommendations – Nitrogen Control Bylaw



Nutrient Source Control



- Specify an amount of nitrogen fertilizer required as slow release (>20%) and annual rate (<1 lb per 1,000 SF)
- Add language referencing that a subdivision plan shall comply with loading rates from lawn fertilizer as specified in the Zoning Bylaws (§174-27)
- Require a Certified Fertilizer Applicator to submit soil test results, type and amount of fertilizer, and an irrigation plan for approval by the Enforcement Authority for fertilizer application to lawn greater than a specified area

Recommendations – Nitrogen Control Bylaw



Nutrient Source Control



- “Nutrient Control Bylaw” – Change the name of the Nitrogen Control Bylaw to more broadly reflect nutrient control, including phosphorus
- Include some exemptions in revised bylaw
 - Gardens, Agriculture, First Growing Season, etc.
 - Do not include exemption for golf courses
- Add new performance standards to §107-4
 - Minimize or prohibit outdoor storage of fertilizer
 - Specify type of nitrogen and application rate for existing and new lawns

Recommendations – Zoning Bylaw

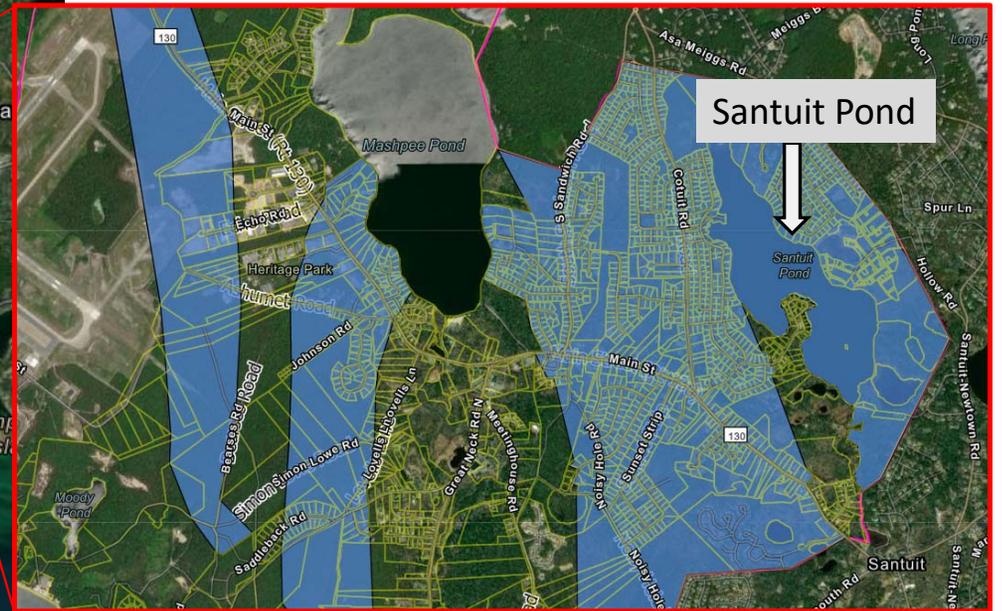
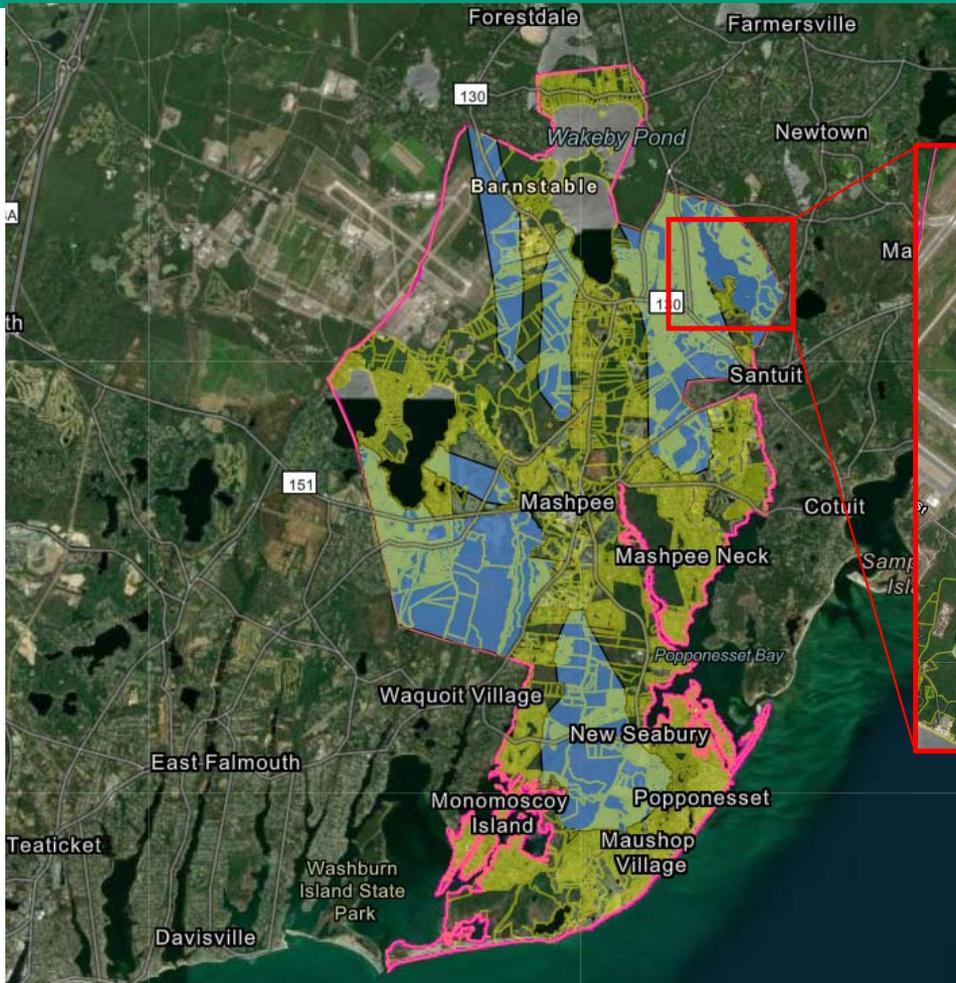


Nutrient Source Control



- Application of fertilizer containing N or P currently prohibited within Groundwater Protection District
- Expand prohibition to within 100 feet of the Groundwater Protection District to further protect public water supplies

Groundwater Protection District



Ground Water Protection District



Parcel Lines

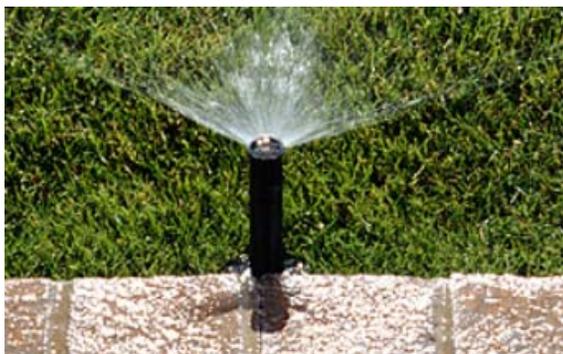


Mashpee_Boundary



Water District Irrigation Policy

Water Conservation



- Prohibits new Water District customers from connecting automatic outside irrigation to District water service
 - Must use private well to supply irrigation system
- Existing customers who use automatic outside irrigation
 - Recommends water conservation measures (rain sensors, low flow heads)
- Existing customers with private well required to use well for irrigation
- Voluntary outdoor water use restriction

Recommendations – Water District Irrigation Policy

Water Conservation



- Consider Adopting an Outdoor Water Use Bylaw
 - Strengthen enforceability
 - Expand applicability to private well owners and areas outside of Water District
 - Standards for in-ground irrigation systems
 - See DEP model bylaw
- Consider amending Zoning Bylaw to Require Submission of Irrigation Management Plans with Proposed Developments

Illicit Connections & Discharges to Municipal Storm System



Nutrient Source Control

- Adopted bylaw in 2020, required by MS4 Permit
- Include improper disposal of pet waste in section 85-7 Prohibited Activities
 - Pet waste source of bacteria and nutrients



Stormwater Management



Stormwater Management



Stormwater Management



A bioretention practice in a suburban road median, capturing stormwater during a rain event.

Photo Credit: Image reproduced with permission from Montgomery County, MD Department of Environmental Protection

- Adopted bylaw as part of Zoning Bylaw in 1999
- Amended in 2000, 2007, and 2021 (MS4 Permit)
- New residential or non-residential development requiring Planning Board approval
- Requirements for stormwater treatment and recharge consistent with DEP Stormwater Standards and Handbook

Recommendations – Stormwater Management

Stormwater Management



A bioretention practice in a suburban road median, capturing stormwater during a rain event.

Photo Credit: Image reproduced with permission from Montgomery County, MD Department of Environmental Protection

- Consider adopting stand-alone stormwater regulations
 - Greater flexibility in making changes to requirements
- Require BMP designs that optimize N and P removal
 - Specialized filter media
 - Internal water storage zone
- Design BMPs for changing climate
 - Updated design storm precipitation
 - RMAAT Climate Resilience Design Standards & Guidelines

Wetlands Bylaw and Regulations



Nutrient Source Control

- Adopted bylaw in 1988, last amended in 2018
- In addition to MA Wetlands Protection Act
- Regulates activities within wetland resource areas



Stormwater Management

Recommendations – Wetlands Bylaw and Regulations

Nutrient Source Control



Regulation 31: Nitrogen Loading/Lawn Standards

- Prohibit application of fertilizer containing N or P within wetland resource areas (includes buffer zone)
- Eliminate provisions no longer applicable:
 - Fertilizer provisions, vegetated berm, and annual reports
- Keep applicable provisions:
 - Lawn area limits, depth of loam, lawn alterations, lawn clippings, new or expanded lawns

Recommendations – Wetlands Bylaw and Regulations



Stormwater Management

- Consider increasing the existing 100-foot Buffer Zone to 150 feet
- Consider increasing naturally vegetated buffer strips (NVBS) from the minimum of 50 feet to at least 50% of the Buffer Zone width



Recommendations – Wetlands Bylaw and Regulations



Stormwater Management



- Specify tree-replacement requirements within the Buffer Zone
- Require a base fee to replace a tree within the Buffer Zone if site conditions do not allow for mitigation tree planting
- Limit impervious area allowed within Land Subject to Coastal Storm Flowage (LSCSF)

Proposed Stormwater Management Requirements

1. New residential construction or improvements to existing residential lots in wetland jurisdiction

- a. Contained within the Wetlands Bylaw/Regulations
- b. Administered by the Conservation Commission
- c. Focus on non-structural site planning and design and small structural LID practices on residential lots

2. Projects subject to approval by the Planning Board

- a. Contained within the Zoning/Stormwater Bylaw and associated Stormwater Regulations
- b. Administered by the Planning Board
- c. MA Stormwater Standards and Handbook and additional requirements

Recommendations – Boating in Mashpee Rules & Regs

General Recommendations



- Restrict boat use to minimize turbidity and avoid resuspension of bottom sediments
- Applicable to Santuit Pond and other designated waterbodies
- Prohibit the use of motorboats, limit the speed of motorboats (< 5mph), or limit horsepower of motorized boats
- Exception for boats owned by an agency of the United States Government or by a State, County, City, or Town

Questions & Discussion

