



CAPE COD
COMMISSION

Communications Toolkit

CAPE COD FRESHWATER STRATEGY: PONDS AND LAKES

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Prepared by Cape Cod Commission Staff.

Cape Cod Freshwater Strategy Communications Toolkit

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How to Use this Document

This communications toolkit is a resource of the [Cape Cod Freshwater Strategy](#), developed by the Cape Cod Commission. It will help highlight the importance of ponds to our region and how communities can help support efforts to preserve and protect our freshwater resources.

This toolkit includes information and best practices on ways to educate pond users about the natural variation in Cape Cod's pond functions and appearance, how human in-water and landside activities impact pond health, connections to the region's economy, and best practices for preserving ponds.

This toolkit is meant to provide language and steps to structure communications in a way that can be productive and increase shared understanding of each perspective.

Communicators can use this document during a variety of planning processes or when planning for management actions in or around ponds to garner support for and educate voters, residents, visitors, and homeowners on ways to protect and restore freshwater resources and build collaborative opportunities around funding and implementing protection and mitigation strategies.

Communicators can apply the information in this document in various situations, such as:

- Incorporating freshwater resource considerations into local and regional planning efforts.
- Educating and engaging residents and visitors to support freshwater resource protection.
- Engaging stakeholders, including abutters and the broader community, in pond-related actions to build support for policy decisions.

This toolkit includes strategies for setting goals and objectives; determining audiences, collaborators, and messaging; and setting outreach strategies and a timeline. It suggests stakeholder groups to engage, opportunities for engagement, and key messages and tools that communicators can use to reach them. This framework also provides general information about best practices for communication within each section.

Encouraging Change through Communications

Leaders can drive meaningful change through effective communication, inspiring the protection and restoration of Cape Cod's ponds and lakes. Clear messaging transforms awareness into action by helping people understand the importance of pond health and the steps they can take to protect it. While many complex factors influence pond health, consistent and accessible messaging makes it easier for communities to engage in solutions.

Strategic communication catalyzes positive change. Education can raise awareness of the issue. Storytelling brings issues to life, sparking individual actions that scale into larger community efforts. By focusing on solutions, communication fosters hope, deepens understanding, and motivates collective action—leading to a healthier future for Cape Cod's freshwater pond resources.

Effective communication relies on knowing your audience, telling local stories, forming connections, crafting targeted messages, and discussing relatable impacts and solutions. Freshwater resource managers and communicators can emphasize the importance of ponds to communities and local economies while using best practices to communicate the threats, impacts, and strategies for protection and restoration.

One challenge in freshwater communication is addressing public concerns about changes to existing conditions. Residents may wonder why action is necessary, particularly in their own backyards. Outreach efforts should educate communities about the personal, economic, and environmental costs of inaction.

This communications toolkit empowers individuals to support local and regional change by providing clear guidance on how and why to engage in decision-making. Key messages that inspire civic engagement and outline clear steps for involvement can effectively increase community participation.

Proposed Goals and Objectives

What are you hoping to achieve through communicating about the importance of protecting and restoring freshwater resources?

A solid communication plan is executed using clear goals and objectives. Communication campaigns should generally aim to inform or influence behaviors in large audiences by increasing knowledge and providing a call to action. Once goals are in place, communicators should set measurable and time-bound objectives that support them. Consider the human and financial resources available to ensure the objectives are achievable within the specified time frame. Each goal may have one or multiple objectives that support it; specific objectives should include a concrete, time-bound deliverable.

PROPOSED GOALS:

- Increase stakeholders' understanding of freshwater issues and the need to address them.
- Build public understanding and support of the Freshwater Initiative.
- Increase cross-collaboration between boards, departments, agencies, and other stakeholder groups working to improve water quality.
- Support the community in addressing the challenges around improving freshwater resources.
- Educate pond users about:
 - the natural variation in Cape Cod's pond functions and appearance
 - how human in-water and landside activities impact pond health
 - connections to the region's economy
 - best practices for preserving ponds

OBJECTIVES:

- Proactively reach out to stakeholders and key interest groups that may be affected to better understand their interests and determine what support is needed to mitigate challenges.
- Engage Town board and committee members in stakeholder outreach when feasible, leveraging their expertise and direct implementation experience for presentations, newsletters, and speaking opportunities.
- Continue to develop and share communications materials on freshwater issues and potential solutions.
- Host and attend events that address local and regional water quality issues and possible solutions.

Best Practices in Environmental Messaging

Communicators can adopt these best practices when designing communications plans and campaigns around freshwater ponds.

USE SIMPLE, STRAIGHTFORWARD, CONSISTENT LANGUAGE:

- Avoid technical jargon. Use accessible language for a wide range of audiences.
- Maintain consistent vocabulary across all platforms and communications campaigns.
- Unify messaging across different communication channels.

UTILIZE COMPELLING VISUALS:

- Engage your audience with photos, videos, or infographics.
- Use local images to make the issue tangible and meaningful.
- Show real people and situations to illustrate the impact of degraded pond health on neighborhoods/communities.

HIGHLIGHT POSITIVE STORIES AND TESTIMONIALS:

- Share stories of people taking action and achieving positive results.
- Connect individuals to the broader community and the benefits of proactive pond protection.
- Make actions seem less overwhelming by showing others making similar decisions.

TAILOR MESSAGES TO EACH TARGET AUDIENCE SEGMENT:

- Consider the audience before crafting or adapting key messages.
- Make messages audience-specific to enhance their meaning and impact.

USE DATA EFFECTIVELY:

- Incorporate statistics and other data to help people understand and remember the message.
- Highlight the local impacts of degraded pond health and the need to support pond restoration efforts.

Key Audiences and Collaborators

Who are you trying to reach, and which partners might help you to reach them?

Audience Segmentation

Segmenting audiences involves dividing a wider audience into specific groups with similar needs, values, or characteristics. This approach recognizes that different groups respond differently to communication tactics and messages, maximizing the impact by tailoring strategies to each group's needs.

BENEFITS OF AUDIENCE SEGMENTATION:

- **Relevant Messaging:** Tailoring messages based on the values and needs of specific audiences makes communication more effective and efficient.
- **Communication Platforms:** Different groups use different platforms. By segmenting audiences by demographic factors like age and education, communicators can connect more effectively.
- **Shared Barriers:** Addressing specific barriers common to a particular stakeholder group increases the likelihood of action.
- **Calls to Action:** Different groups may require unique calls to action. Planning for these differences ensures smoother communications efforts.

TARGET AUDIENCES:

- Municipal officials, including select boards, town council, boards and committees involved in conservation, finance, recreation, health, planning, and zoning.
- Municipal staff involved in administration, conservation, recreation, planning, health, zoning, and communications.
- Environmental advocates and potential collaborators and partner organizations, such as land trusts.
- Local pond stewards, including pond groups and neighborhood associations.
- Developers, homeowners, realtors, and local business owners connected to ponds, pond buffers, and watersheds.
- Year-round residents, seasonal residents, and visitors.

Prioritizing Stakeholders

Prioritize stakeholders based on their influence and interest in freshwater resources or pond health. Some may only need information, while others require consultation or collaboration. Partner with agencies and organizations that share similar goals to expand the audience and leverage online platforms for education.

Targeted outreach messages and methods are based on the needs and interests of stakeholder groups. These groups should broadly include:

- People directly involved in freshwater management planning and implementation.
- Those who will enjoy the benefits of and/or bear the costs of local freshwater improvement plans.
- Potential collaborative and partner agencies and organizations.
- Governance bodies responsible for deciding and enforcing related policies and regulations.

Communicators should modify outreach to fit their local context and ensure all viewpoints are heard throughout the process. It may be helpful to prioritize stakeholder groups based on their level of influence and/or interest in freshwater management. Some individuals or groups need to be informed broadly about planning or management projects, others may warrant proactive consultation and collaboration. Cross-promoting communications materials with other agencies will help town staff build and expand their audiences.

Opportunities for Involvement

Conducting outreach and engagement should be a significant component of freshwater management planning. Residents have decision-making roles around local water quality planning and funding, either through town meeting votes or other votes related to project financing.

As priorities for management are determined, town staff should host a series of presentations that walk residents through the priorities and anticipated projects, respond to questions and concerns, and elicit feedback. Content should be comprehensive but high-level, and residents should have the opportunity to provide meaningful feedback whenever possible. Towns need to explain the nature of the problem, such as observed impairments, potential pollutant sources, and environmental and economic impacts of degraded water quality. Towns should also collect feedback from public meetings, workshops, or surveys to determine best approaches or feasibility of various planning elements such as support for management approaches and financing solutions.

Key Messages

Effective freshwater communication relies on clear, compelling messaging. Here, we outline key themes that resonate with audiences and adaptable regional messages, rooted in the Cape Cod Commission's Freshwater Strategy goals and resources.

Increasing awareness of the background, threats, and solutions related to pond health is a core function of the key messages that make up any freshwater communications campaign. An informed audience can reduce barriers to participation and increase the likelihood that actions toward pond management are supported locally.

Key messages should first raise awareness of freshwater issues, providing context for specific actions that can help address them. Each audience has a unique role in pond conservation. By tailoring messaging and outreach strategies to specific interests and responsibilities, we can ensure broad-based engagement and sustained action to protect and restore Cape Cod's freshwater resources.

SUGGESTED MESSAGING FOR SELECT AUDIENCE GROUPS

Municipal Officials

Municipal officials can engage residents, businesses, and stakeholders through public outreach, education, and policy discussions. They advocate for the implementation of strategies such as improved wastewater management, stormwater mitigation, and land conservation by securing funding, collaborating with regional and state agencies, and enacting local regulations to ensure sustainable water quality and ecosystem health.

KEY MESSAGES

- **Economic and Public Health Importance:** Healthy ponds enhance property values, support recreation-based tourism, and contribute to public health and healthy drinking water.
- **Regulatory and Funding Considerations:** Federal and state programs and local funding can support pond protection, restoration and monitoring.
- **Policy and Decision-Making Role:** The Cape Cod Commission's Freshwater Initiative provides data and tools to guide watershed-based planning and regulatory decisions.

COMMUNICATION METHODS

- **Briefing Documents:** One-page summaries including key takeaways.

- **Workshops and Webinars:** Invite state and local experts and Cape Cod Commission staff to discuss policy and funding opportunities.
- **Public Meetings and Testimonies:** Ensure freshwater health is part of broader climate resiliency and land use discussions.

Municipal Staff

Municipal staff are responsible for implementing freshwater protection and restoration strategies by conducting technical assessments, managing local water quality programs, and ensuring compliance with environmental regulations. They also play a key role in educating the public, coordinating with regional and state agencies, and providing data-driven recommendations to municipal officials to support informed decision-making and effective policy implementation.

KEY MESSAGES

- **Actionable Data for Local Implementation:** Tools such as the Water Quality Data Portal and Pond Strategies Database provide guidance for pond management.
- **Stormwater and Land Use Best practices:** Nutrient pollution from runoff and septic systems is a significant challenge; buffer zones and improved wastewater and stormwater management can help.
- **Monitoring and Enforcement Support:** Town staff play a key role in monitoring efforts, issuing advisories, and implementing conservation regulations.

COMMUNICATION METHODS

- **Technical Trainings and Workshops:** Guidance on strategies to protect, manage, and restore ponds, wastewater and stormwater mitigation techniques, and pond monitoring methodologies.
- **Staff communications:** Incorporate pond health updates into routine municipal staff communications.
- **Demonstrations:** Showcase successful restoration projects through site visits and utilize the [Pond Restoration Projects Viewer](#).
- **Online Resources and Tools:** Ensure easy access to online resources including the Cape Cod Commission's [Water Quality Data Portal](#), [Pond Atlas](#) and [Viewer](#), [Restoration Projects Viewer](#), [Pond Strategies Database](#), and [Pond Buffer Guidance](#), all available by visiting www.capecodcommission.org/freshwater.

Environmental Advocates

Local environmental advocacy organizations work to raise public awareness, mobilize community support, and advocate for policies that protect and restore freshwater resources. They engage in research, public

education, and grassroots organizing while collaborating with municipalities, scientists, and policymakers to promote sustainable water management practices and secure funding for restoration initiatives.

KEY MESSAGES

- **Advocacy and Public Engagement are Critical:** Stronger public support will drive policy changes and funding allocations.
- **Policy and Science-Based Solutions Exist:** The Cape Cod Freshwater Strategy provides clear frameworks for addressing pond health.

COMMUNICATION METHODS

- **Press Releases and Social Media Campaigns:** Share success stories, ongoing threats, and policy updates.
- **Public Forums and Town Hall Meetings:** Engage stakeholders and policymakers in discussions about freshwater management.
- **Collaborative Grant Applications:** Work with municipalities to seek funding for monitoring and restoration projects.

Local Pond Stewards

Local pond stewards and pond groups play a hands-on role in monitoring water quality, restoring habitats, and engaging the community in stewardship activities such as clean-ups and invasive species management. They serve as vital advocates for their local water bodies by collaborating with municipalities, scientists, and environmental organizations to promote sustainable management practices and raise awareness about freshwater resource protection.

KEY MESSAGES

- **Everyday Actions can Improve Pond Health:** Residents can prevent nutrient runoff by installing native buffer plantings, reducing fertilizer use, managing stormwater, and properly maintaining septic systems.
- **Recreational Users can Help Protect Ponds:** Boaters, anglers, and swimmers should follow best practices to avoid spreading contaminants and/or introducing invasive species.

COMMUNICATION METHODS

- **Pond-Side Signage and Brochures:** Place educational materials at public pond access points.
- **Community Workshops and Demonstration Projects:** Hands-on events showing best practices for shoreline buffer planting and pollution reduction.

- **Neighborhood Outreach Campaigns:** Work with local associations to distribute guides on septic maintenance, pond buffer guidance, and pollution reduction.
- **Social Media and Newsletters:** Provide seasonal updates on pond conditions and conservation efforts.

Year-Round Residents

Residents play a crucial role in maintaining and improving freshwater quality through their daily actions, advocacy, and community engagement. They can help protect pond health by adopting sustainable practices, supporting local policies, and participating in community-led conservation efforts.

KEY MESSAGES

- **Healthy Ponds Benefit Everyone:** Clean water supports recreation, property values, and community well-being.
- **Everyday Actions Matter:** Simple changes like reducing fertilizer use, maintaining septic systems, and planting native vegetation can significantly improve pond health.
- **Get Involved:** Residents can contribute through volunteer water monitoring programs, local advocacy, and community initiatives.
- **Responsible Recreation Preserves Ponds:** Minimize pollution by properly disposing of waste, taking steps to avoid invasive species spread, and reducing chemical use near water bodies.
- **Leave No Trace:** Follow best practices for waste disposal, pet waste management, and minimizing disturbances to natural habitats.

COMMUNICATION METHODS

- **Community Events and Workshops:** Engage residents through local forums, nature walks, and pond clean-up days.
- **Educational Materials:** Distribute easy-to-follow guides on best practices for pond-friendly landscaping, septic system maintenance, and stormwater management.
- **Neighborhood Networks and Social Media:** Use local online groups and newsletters to share updates, promote engagement opportunities, and celebrate success stories.

Seasonal Residents and Visitors

Seasonal residents and visitors contribute to the local economy and experience Cape Cod's freshwater resources through recreation. Their actions can help preserve pond ecosystems by reducing pollution, following sustainable tourism practices, and supporting local conservation efforts.

KEY MESSAGES

- **Responsible Recreation Preserves Ponds:** Minimize pollution by properly disposing of waste, taking steps to avoid invasive species spread, and reducing chemical use near water bodies.
- **Leave No Trace:** Follow best practices for waste disposal, pet waste management, and minimizing disturbances to natural habitats.
- **Be a Steward, Even as a Visitor:** Support local conservation efforts, learn about Cape Cod's freshwater challenges, and contribute to initiatives that protect water quality.

COMMUNICATION METHODS

- **Signage and On-Site Outreach:** Use clear messaging at beaches, boat launches, and recreational areas to educate visitors on freshwater conservation.
- **Tourism and Hospitality Partnerships:** Work with rental agencies, hotels, and visitor centers to distribute information on pond-friendly practices.
- **Interactive Online Resources:** Provide easy-to-access maps, guides, and tips for seasonal residents and visitors on how they can help protect freshwater resources.
- **Eco-Tourism and Stewardship Programs:** Encourage participation in guided nature tours, citizen science projects, and conservation activities.

Communication Resources

Resources developed by the Cape Cod Commission and its partners are available to support education and outreach. These resources provide simple, straightforward language and answers to questions that can be used to communicate with a broad range of stakeholders and audience members.

Why Ponds Matter

The Why Ponds Matter summary explains the ecological, cultural, and economic significance of Cape Cod's ponds while highlighting the threats they face. Municipal officials and residents can use this information to advocate for better pond management, raise public awareness, and support policy decisions that protect these vital freshwater resources. By understanding the role ponds play in groundwater recharge, nutrient filtration, and biodiversity, communities can take proactive steps to monitor, restore, and preserve these essential ecosystems for future generations.

Freshwater FAQ

Essential information about the importance, challenges, and strategies for protecting Cape Cod's freshwater resources. Municipal officials and residents can use this resource to educate the public, inform policy decisions, and promote best practices for freshwater management. By highlighting threats such as nutrient pollution and climate change, as well as solutions like monitoring, regulation, and community engagement, this FAQ serves as a key communication tool for fostering stewardship and ensuring the long-term health of the region's freshwater resources.

Tools and Resources

Tools and resources created by the Cape Cod Commission that provide comprehensive data, interactive maps, and practical strategies to support freshwater pond management across Cape Cod. These resources, including the Cape Cod Pond and Lake Atlas, interactive Pond Atlas Viewer, Water Quality Data Portal, Pond Restoration Projects Viewer, Pond Strategies Database, and Freshwater Pond Buffer Guidance, help communities monitor water quality, explore restoration efforts, and implement best practices for pond conservation. These tools are designed to enhance public engagement and inform decision-making to protect and restore the region's freshwater ecosystems.

Why Ponds Matter

WHY PONDS MATTER

Cape Cod's ponds result from geological processes dating back thousands of years. They formed when glacial depressions filled with groundwater after glaciers retreated. While they formed similarly, each is unique, with widely varying characteristics and uses.

Cape Cod's ponds are linked to the region's sole-source aquifer, which is highly permeable and vulnerable to pollutants due to the sandy, gravelly subsurface.

Ponds filter nitrogen and contribute to water quality management. The Section 208 Water Quality Management Plan highlights ponds' role in filtering nitrogen and connection to groundwater and coastal systems.

Ponds are important parts of the Cape Cod ecosystem, providing habitat for a diversity of aquatic flora and fauna, including many rare species. They support complex food webs and rare natural communities.

Cape Cod's ponds are microcosms of the region's broader environmental challenges. Protecting them preserves local beauty and sustains the life, culture, and economy on Cape Cod. They are essential to the Cape's identity and future resilience.

Cape Cod's ponds are vital for several ecological, cultural, and economic reasons.

ECOLOGICAL IMPORTANCE

- Cape Cod's ponds support vital ecosystems, providing habitat for a biodiverse assemblage of aquatic plants and animals.
- Ponds play a crucial role in groundwater recharge, maintaining the health of the Cape Cod aquifer, which is the sole source of drinking water for the region.
- Ponds help regulate local air temperatures and mitigate the impacts of droughts and floods, boosting the region's resilience to the impacts of climate change.

CULTURAL, RECREATIONAL, AND AESTHETIC SIGNIFICANCE

- Ponds are valued for swimming, fishing, boating, aesthetic and cultural experiences, fostering community connections for both residents and visitors.
- Many ponds have historical significance, often tied to indigenous uses or early settlement activities.

Why Ponds Matter

ECONOMIC CONTRIBUTIONS

- Cape Cod's ponds attract visitors, supporting local businesses and the broader tourism economy.
- Homes near healthy, clean ponds often enjoy higher property values.

ENVIRONMENTAL HEALTH INDICATORS

- Ponds act as early warning systems for water quality issues, reflecting the health of surrounding ecosystems.
- Properly functioning ponds help manage nutrients, reducing the impacts of runoff and pollution on larger water bodies like bays and estuaries. Ponds that are not properly functioning could lead to declining water quality in ponds and lakes themselves.

CURRENT CHALLENGES AND THREATS

Many ponds are impaired, with nearly one-third graded as having “unacceptable” water quality in recent years (APCC State of the Waters 2019–2024).

- **Human Impacts:**
 - **Shoreline Development:** Increases impervious surfaces, leading to more stormwater runoff, erosion, and nutrient loading.
 - **Septic Systems:** Discharge wastewater which contains phosphorus and nitrogen into the ground and subsequently into ponds via sandy soils and groundwater.
 - **Agricultural and Horticultural Practices:** Fertilizer and pesticide runoff add pollutants and nutrients to ponds.
 - **Nutrient Overloading:** Excess phosphorus leads to algal blooms and degraded water quality.
 - **Invasive Species:** Can outcompete native species and impede recreational activities.
- **Climate Change:**
 - **Storm Intensity:** Drives nutrient and pollutant flow into ponds.
 - **Prolonged Droughts:** Lowers water levels and exposes nearshore habitats.
 - **Warmer Temperatures:** Exacerbates algal blooms and primary productivity.

Why Ponds Matter

MONITORING AND RESTORATION EFFORTS:

- **Collaborative Programs:** Local, county, and state groups monitor water quality through volunteer networks, like the Pond and Lake Stewardship (PALS) Program.
- **Historical and Recent Data:** Over 1,800 water samples collected from 232 ponds since 2001, with efforts evolving to assess restoration and watershed management effectiveness.
- **Public Health:** Regular monitoring of swimming beaches for bacteria and algal blooms highlights health risks.

REGIONAL NEEDS AND PUBLIC INVOLVEMENT:

- **Increasing Concerns:** Public awareness of declining pond health is growing, alongside the desire for solutions.
- **Call for Consistency:** Reliable, long-term water quality monitoring is essential to support restoration and public health.

OVERARCHING MESSAGE

Cape Cod's ponds are vital natural, recreational, and cultural resources. However, they face significant threats from human activities, climate change, and pollution. Proactive monitoring, public engagement, and restoration are critical to preserving these fragile ecosystems.

Freshwater FAQ

FRESHWATER FAQ

WHY ARE PONDS AND LAKES IMPORTANT?

Ponds and lakes contribute to Cape Cod's unique character. The region's high-quality natural systems, including freshwater resources, are part of what attracts both year-round and seasonal residents. Cape Cod's quality of life and vibrant regional economy depend on its environmental quality.

Ponds and lakes provide invaluable ecosystem services to the Cape. Pond value extends below the water's surface and beyond the pond's shoreline. Ponds provide habitat for fish, wildlife, aquatic vegetation, and other organisms, including many rare species. They support complex food webs and rare natural communities. Ground and surface water connect ponds to estuarine and marine ecosystems.

Cape Cod's ponds are connected to the groundwater aquifer, unlike ponds in other areas that are connected by surface water, like streams. Pond water level is maintained by groundwater as it flows into the pond on the upgradient side and out of the pond on the downgradient side. Through this connection, ponds are directly linked to the drinking water aquifer and other ponds and are therefore at risk from anything that enters or interacts with groundwater and vice versa.

People use ponds and lakes for recreational activities such as swimming, boating, and fishing. Ponds provide ecological, economic, and aesthetic benefits. These contributions to the greater regional environment and community's well-being motivate the need to protect and restore them.

Cape Cod's ponds are vital for ecological, economic, and cultural reasons. Nutrient pollution, climate change, and human activity threaten our ponds, leading to water quality declines, habitat changes, and increased algal blooms.

WHY ARE WE CONCERNED ABOUT POND HEALTH?

Cape Cod's ponds and lakes are fragile. While improvements in air quality have had positive impacts on ponds in the Northeast, increases in the Cape's population and the effects of climate change have led to direct and indirect adverse impacts on the region's ponds.

Threats from increased human uses and activities on and around ponds and lakes include inputs of chemical contaminants such as herbicides and pesticides, excessive inputs of nutrients such as nitrogen and phosphorus, and introduction of biological contaminants such as invasive plants and animals.

Freshwater FAQ

We are seeing increased instances of harmful algal blooms, eutrophication, and higher phosphorus levels in our ponds and lakes. Cyanobacteria bloom advisories issued by local health departments are happening more frequently.

Many ponds are still available for recreational uses, but the changing water quality evidenced by harmful algal blooms, increased nutrients and eutrophication, low dissolved oxygen, and high phosphorus levels may impact their ecological functions and recreational value.

Properly functioning ponds play an important role in preserving and restoring coastal water quality. We know from our work on the 2015 Update to the Cape Cod Area Wide Water Quality Management Plan, or 208 Plan, completed pursuant to Section 208 of the Clean Water Act, that ponds may be credited with reducing up to 50% of the nitrogen that passes through them on its way to coastal embayments.

HOW DO WE KNOW PONDS ARE IMPAIRED?

Data from ponds monitored by towns, local pond organizations through the Pond and Lake Stewardship (PALS) program, and the Regional Pond Monitoring Program has documented impairments including harmful algal blooms, increased nutrients, and low dissolved oxygen levels.

Water quality data is now available online through the Water Quality Data Portal.

WHY ARE WE FOCUSING ON POND HEALTH NOW?

There has been a longstanding need for more focus on freshwater ponds.

The 208 Plan addresses degradation of Cape Cod's water resources from excessive nutrients. The focus of that update was primarily the impact of nitrogen on coastal water quality, but the plan highlights the importance of considering ponds in watershed-based planning.

As a region, we are seeing progress toward addressing marine water quality. While the progress on improving embayments is moving forward, there has been clear interest from stakeholders across the Cape in also focusing on the health of freshwater.

During development of the 2018 Cape Cod Regional Policy Plan (RPP), the health of the region's freshwater resources was identified as a key challenge. The RPP recognizes that surface water quality in the region's ponds is significantly impacted by surrounding development and uses in pond watersheds.

The RPP identified the need to update and expand understanding of freshwater resources information by compiling available data into a regional database and updating the Cape Cod Pond and Lake Atlas.

Freshwater FAQ

WHAT HAS ALREADY BEEN DONE TO ASSESS POND HEALTH ON CAPE COD?

Key Cape Cod Commission efforts include the 208 Water Quality Management Plan (2015), which highlighted nutrient impacts on water quality, and the updated Cape Cod Pond and Lake Atlas (2021), which included new information on freshwater systems.

The **Massachusetts Division of Fisheries and Wildlife (MassWildlife)** manages fisheries in Cape Cod ponds, focusing on trout stocking, pond temperature and dissolved oxygen profiles. MassWildlife also conducts periodic fish surveys and updates pond bathymetry data to improve mapping.

The **Cape Cod National Seashore** has monitored ponds within the Seashore since the 1970s with the goal of assessing trends in water quality, trophic status, and vegetation to better understand pond processes in a changing environment.

In 2001, a coalition of groups interested in protecting ponds received a \$30,000 grant from the Massachusetts Watershed Initiative to develop a Cape Cod pond stewardship strategy, known as the **Ponds and Lakes Stewardship (PALS)** project. The Cape Cod Pond and Lake Atlas, published by the Cape Cod Commission in 2003 and updated in 2021, provided a status report on the program and is the most recent region-wide look at pond water quality. Since the Atlas was published, groups of citizen volunteers, town staff, and research scientists have continued to collect pond water quality data on an annual snapshot basis from a subset of the ponds sampled in the early 2000's.

The **Association to Preserve Cape Cod (APCC)** monitors freshwater ponds through two main programs. APCC's Cyanobacteria Monitoring Program partners with officials at the town, county, state, and federal levels as well as local pond associations and residents to conduct cyanobacteria monitoring in Cape Cod ponds. Each season, data is collected biweekly and shared with local officials and the public through reports, emails, and an interactive map of monitoring results. As part of the Freshwater Initiative, APCC was contracted by Barnstable County and the Cape Cod Commission to conduct pond monitoring of 50 representative ponds Cape-wide from 2023 through 2025. Ponds are monitored seven times per year from April through October. Monitoring data gathered includes measurement of pond depth, Secchi disk depth, water temperature, pH, dissolved oxygen, conductivity, salinity, and collection of water samples for lab analyses of nutrients, chlorophyll, and alkalinity.

Barnstable County has been monitoring Cape Cod's beach water quality for over 30 years. The County conducts sampling and bacteriological analyses of public and semi-public beach water. Water is tested for E. coli, a type of fecal bacteria. Its presence in recreational waters suggests that other harmful pathogens might be present. Samples exceeding the limit for bacteria in bathing water result in notification to the local health agent and closure of the beach to swimming until subsequent tests show acceptable bacteria levels.

Freshwater FAQ

WHAT IS THE FRESHWATER INITIATIVE?

The Cape Cod Freshwater Initiative is an effort to enable action to protect and restore Cape Cod's freshwater ponds. Recognizing the importance of Cape Cod's ponds and lakes, and the threats they face, the Cape Cod Commission created the Initiative as a science-based, information driven planning process, with robust stakeholder engagement.

HOW DID THE COMMISSION DEVELOP THE FRESHWATER STRATEGY?

With broad stakeholder engagement and feedback, the Commission identified tasks and studies to better understand the status of ponds throughout the region, their impact on the local and regional economy, how pond health is changing over time, threats to pond ecosystems, and strategies to protect, mitigate, and restore freshwater resources.

In collaboration with partners and stakeholders, efforts were made to establish a stable, long-term volunteer pond monitoring program. This aspect of the initiative will allow for further tracking of pond health trends, evaluation of protection and restoration strategies, and exploration of new methods for monitoring water quality, such as remote sensing.

An analysis of available monitoring data was completed to assess the overall health of Cape Cod's ponds and lakes. This study identified regional trends in water quality and evaluated the economic impact of these valuable freshwater resources.

To further understand the economic significance of freshwater resources, the county contracted with Eastern Research Group to develop an assessment of the value of ponds and lakes on Cape Cod. The economic analysis examined the benefits ponds provide—such as tourism, real estate, fishing, and recreation—while also identifying the potential costs of inaction.

As part of the Freshwater Initiative, resources and tools were developed for freshwater planning across the region, ensuring accessibility for both the public and decision-makers.

Learn more: www.capecodcommission.org/freshwater

WHO ARE THE COMMISSION'S PARTNERS IN THIS INITIATIVE?

The Commission has partnered with **APCC** to establish and maintain a long-term monitoring program. The **Cape and Islands Water Protection Fund Management Board** has dedicated funds to regional pond water quality monitoring.

The Commission has been collaborating with the **National Oceanic and Atmospheric Administration (NOAA)**, **University of Rhode Island Watershed Watch**, and **University of Minnesota** to identify means to utilize remote sensing to track changes in pond health.

Freshwater FAQ

Together with **APCC** the Commission has engaged directly with existing ponds organizations through the **Cape Cod Ponds Network**. APCC has been a key partner throughout the initiative, helping to develop and share content, and communicating with stakeholders.

The Commission contracted with **Woods Hole Oceanographic Institution** to facilitate an updated regional analysis of pond data, develop code and scripts to support data analyses, summarize existing monitoring data, and provide visualizations and analyses of summarized data.

WHAT IS THE ROLE OF THE COMMUNITY?

Broad stakeholder engagement has been a key component of the Freshwater Initiative – Commission staff engaged town staff and elected officials, pond organizations, the business community, non-profit organizations, and interested citizens to help inform the tools, recommendations, and resources developed as part of the Freshwater Initiative, and will continue to support pond associations, land trusts, and private landowners in implementing local conservation efforts.

Residents and visitors will be encouraged to engage in pond stewardship, adopt buffer zone best practices, and minimize pollution through responsible land and water use. Citizens can join a local pond association and participate in the Cape Cod Ponds Network.

HOW CAN INTERESTED CITIZENS OR POLICYMAKERS FIND MORE INFORMATION ABOUT THE FRESHWATER INITIATIVE?

Find details by visiting www.capecodcommission.org/freshwater.

WHAT ARE THE MAIN THREATS TO POND HEALTH?

Threats include nutrient and pollutant inputs, algal blooms, invasive species, erosion, and the impacts of climate change, such as rising water temperatures which alters pond thermal stratification.

HOW DOES HUMAN ACTIVITY CONTRIBUTE TO POND DEGRADATION?

Activities like septic system discharges, fertilizer use, stormwater runoff, and development near pond shores introduce excess nutrients and pollutants, degrading water quality and aquatic ecosystems.

WHAT ARE THE GAPS IN CURRENT DATA?

Many ponds lack consistent data on water depth, nutrient loads, and seasonal changes. This hinders understanding and prioritization of management actions.

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WHAT ARE THE KEY RECOMMENDATIONS FOR ADDRESSING POND HEALTH?

The Cape Cod Freshwater Strategy includes thirteen key recommendations, outlining necessary and impactful approaches to advance freshwater priorities throughout the region. The recommendations focus on data collection, funding, best practices, and communications.

The recommendations are:

- **Maintain and expand funding for the Regional Pond Monitoring Program**
Expanded water quality monitoring helps address data gaps. Towns should reinforce the value of freshwater monitoring by incorporating appropriate language into water resource planning documents or local comprehensive plans.
- **Develop a regional funding program for town projects**
A dedicated regional funding program could facilitate access to, and distribution of, funds to municipal projects across the Cape.
- **Improve access to state and federal grant funds**
Explore the opportunities, requirements, limitations, and benefits of establishing a regional coordinator position to help take advantage of MassDEP administered grants.
- **Prioritize ponds for action**
Employing a prioritization framework may help town staff prioritize ponds for action, present rationales for those choices to the public, and support funding requests before town meeting, town council, and/or in grant proposals.
- **Promote best practices and universally beneficial strategies**
Certain “universally beneficial” strategies can be implemented to improve water quality, even in instances where limited data or information is available. Towns and others can help promote these best practices through their development regulations and guidelines.
- **Integrate freshwater ponds into municipal water resource planning documents**
To the extent that existing plans do not currently incorporate consideration of freshwater resources, towns should ensure they are incorporated into future updates of plans intended to address management of coastal waters in tidal rivers and estuaries and drinking water supplies.
- **Utilize pond buffer guidance**
Towns, pond organizations, and private property owners should maintain and enhance vegetated buffers to ponds, which can promote community acceptance of restored and naturalized pond buffers by example. Pond buffers maintained or restored with native vegetation help support natural plant and wildlife communities and improve pond ecosystem health.
- **Develop model wetland bylaws and orders of conditions**
Review existing bylaws and regulations governing pond shore activities, identify best practices, and

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develop a coordinated set of model wetlands bylaws, regulations, and orders of conditions for different pond shore activities.

- **Streamline wetland permitting to facilitate restoration of pond shore buffers**

Towns should consider whether changes are needed to help streamline the permitting process, such as reducing filing requirements, time frames, or costs, in order to create incentives for pond shore restoration at the residential scale.

- **Expand regional monitoring and laboratory capacity**

Expansion of monitoring efforts necessitates additional laboratory capacity to assist with analysis or to reduce travel times to deliver monitoring samples.

- **Address data gaps**

Regional and local actors should continue to coordinate to fill the gaps in existing data to promote better understanding of pond dynamics and facilitate identification of appropriate strategies.

- **Improve consistent communication and outreach for various pond users**

This communications toolkit should help municipal staff, pond groups, and advocates employ consistent messaging, themes, and other content.

- **Foster appreciation and respect for Cape Cod's ponds**

Local, regional, and state governments, non-profit organizations, and the region's chambers of commerce should collaborate to develop and spread positive messaging about the value of healthy freshwater ecosystems.

HOW CAN TOWNS PRIORITIZE PONDS FOR ACTION?

Towns can prioritize ponds by using a prioritization framework that considers factors like public health advisories, ecological value, public access, and severity of impairments to allocate resources effectively. [Model prioritization frameworks](#) can be customized to address individual town interests.

HOW DOES EDUCATION HELP ADDRESS POND WATER QUALITY?

Public outreach and targeted communication are critical to raising awareness about pond health challenges and promoting behaviors that protect water quality, such as reduced fertilizer use, stormwater management, and proper waste management.

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WHO ARE THE KEY STAKEHOLDERS IN POND PROTECTION?

Stakeholders include municipal officials, municipal staff, environmental advocates, the business community, local pond stewards, year-round residents, seasonal residents, and visitors, all of whom play roles in monitoring, stewardship, and education.

WHAT TOOLS ARE AVAILABLE TO ASSIST LOCAL EFFORTS?

Tools include the [Cape Cod Pond and Lake Atlas](#), [Pond Atlas Viewer](#), [Pond Profiles](#), [Water Quality Data Portal](#), the [Regional Pond Monitoring Program](#), [Pond Buffer Guidance](#), [Pond Restoration Projects Viewer](#), and a [database of management strategies](#).

HOW CAN FUNDING BE SECURED FOR MONITORING, ANALYSIS, AND PROJECT IMPLEMENTATION?

Funding can come from state and federal grants, regional programs, and local resources such as the Community Preservation Act. The Cape and Islands Water Protection Fund Board voted in January 2025 to commit funding to regional pond monitoring across the Cape.

HOW DOES THIS INITIATIVE ALIGN WITH REGIONAL GOALS?

The Freshwater Initiative supports broader objectives in the Regional Policy Plan, 208 Plan, Climate Action Plan, and Comprehensive Economic Development Strategy by addressing ecological integrity, water quality, climate resilience, and sustainable development.

WHAT INNOVATIVE APPROACHES ARE BEING EXPLORED?

Satellite remote sensing is being used to monitor water clarity and nutrient changes across a large number of ponds, providing a cost-effective way to identify possible trends in pond water quality change, and inform management decisions. Additionally, the Pond Strategies Database identifies opportunities for innovative treatments.

Tools and Resources

TOOLS AND RESOURCES

The Cape Cod Pond and Lake Atlas

The Pond and Lake Atlas provides a comprehensive look at the ponds across the Cape.

The 2021 Atlas is a comprehensive update to the document first published in 2003. It examines the Cape's freshwater bodies, covering pond ecology, water quality, threats, and strategies to restore pond health.

It provides a current assessment of the role and importance of ponds on Cape Cod, the threats ponds face, and presents the case for taking action to improve and adequately manage these resources. Among many resources, the Atlas defines terms and explains pond ecology and dynamics. It is designed to support renewed and expanded efforts on pond management within the region.

Access the Cape Cod Pond and Lake Atlas at: <https://cccom.link/pond-and-lake-atlas>

Pond Atlas Viewer

A companion resource to the updated Pond and Lake Atlas is the Pond Atlas Viewer, an online map-based tool that allows users to view available information on all the ponds and lakes on Cape Cod. Through an easy-to-use online interface, the user can zoom into the map, view map resource layers, select ponds, and access geographic information about ponds of interest and their surrounding land uses. Geared toward the typical resident or visitor to Cape Cod, the map viewer may also serve as a planning and communication resource as communities consider management actions to address pond health.

Access the Pond Atlas Viewer at: <https://cccom.link/pond-atlas>

- *For pond information, click on a pond.*
- *For pond access information, click on a designated public pond access point.*

Note: Not all ponds have all or any data and not all ponds have public access.

The Cape Cod Water Quality Data Portal

The Cape Cod Water Quality Data Portal is an interactive, map-based online tool that allows users to explore water quality data compiled by the Commission in collaboration with regional partners. Users can view trends and access and download more than 25 years of historic data for monitored ponds across the region.

Tools and Resources

Access the Cape Cod Water Quality Data Portal at: <https://cccom.link/wq-data-portal>

- Under “Freshwater Portal,” click “Explore the Data”
- *Pond Search: Search using the name of a specific pond in the Search bar on the upper right. Results will display alphabetized by pond name with the Town in parentheses; and, if duplicated within the town, the village name will also be displayed.*
- *Find your location: Click the Find My Location button on the left side of the map to locate which ponds are near you currently.*
- *Navigate: Pan and zoom around the map and click on any pond to view details about stations and to access water quality data.*

Note: The Data Portal and the Atlas can be used together to help inform how and where to prioritize management actions.

Pond Restoration Projects Viewer

The Pond Restoration Projects Viewer is an online, interactive map-based tool that highlights pond management strategies being implemented across the region to improve water quality and overall pond health. Explore the map to learn about pond-specific challenges, strategies, results and lessons learned to help inform further action across Cape Cod ponds. This application is updated as information becomes available. Please contact the Cape Cod Commission if you have updated information.

Access the Pond Restoration Projects Viewer at: <https://cccom.link/restoration-viewer>

- *Explore Pond Restoration Projects across Cape Cod by clicking on a point.*
- *Filter projects by management approach from the categories on the lower left, then click on a point to learn more details.*
- *Select “All Management Approaches” to view all projects again.*
- *Click on Stories at the top to learn about restoration approaches and see project examples.*

Pond Strategies Database

To help Cape Cod towns, pond organizations, and pond users understand the range of strategies available to protect, manage, and rehabilitate freshwater ponds, Commission staff, with assistance from a group of technical advisors, developed a pond-specific strategies database that includes a range of technologies, regulatory tools and voluntary options, and management approaches for protecting and restoring pond water quality. The strategies range in scale from approaches applicable in-pond, those appropriate along the pond shore, and those that could be applied watershed-wide. They also vary in the types of pond management challenges they address.

Tools and Resources

Information on freshwater pond strategies have been compiled in a spreadsheet, as well as in a series of two-page fact sheets.

Access the Pond Strategies Database at: www.capecodcommission.org/our-work/pond-strategies

Cape Cod Freshwater Pond Buffer Guidance

The Cape Cod Freshwater Pond Buffer Guidance is a comprehensive document designed to help homeowners and municipalities preserve and protect ponds through responsible landscape management. The guide, developed in collaboration with Jenick Studio and Crawford Land Management and with input from an end-user group of local conservation department representatives, pond association members, and environmental professionals, offers practical strategies for installing or enhancing native pond shore buffers, which are essential for protecting and restoring pond health. It includes best practices, planting plans, and resources to empower homeowners to make environmentally responsible choices.

Access the Cape Cod Freshwater Pond Buffer Guidance at: www.capecodcommission.org/our-work/cape-cod-freshwater-pond-buffer-guidance

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