

# Maine Nonpoint Source Management Program Plan 2025 - 2029

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North Pond, Smithfield  
Photo Credit: Jodie Mosher-Towle

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Contact: Alex Wong, Bureau of Water Quality  
Phone: (207) 694-9533  
[alex.wong@maine.gov](mailto:alex.wong@maine.gov)



MAINE DEPARTMENT OF ENVIRONMENTAL PROTECTION

17 State House Station Augusta, Maine 04333-0017

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### NPS Plan Lead Agencies

Maine Department of Environmental Protection  
Bureau of Agriculture - Department of Agriculture, Conservation and Forestry  
Maine Forest Service - Department of Agriculture, Conservation, and Forestry  
Maine Coastal Program, Department of Marine Resources  
Maine Department of Marine Resources  
Maine Department of Transportation  
Maine Department of Health and Human Services, Health Engineering

### NPS Plan Contributors

#### **Maine Department of Agriculture, Conservation and Forestry**

Matt Boucher, Agriculture  
Tom Gilbert, Forest Service  
Tom Gordon, Soil and Water Conservation  
Mark Hedrich, Agriculture  
Kristen Puryear, Natural Areas Program  
Matt Randall, Agriculture  
Joan Walton, Municipal Planning Assistance Program

#### **Maine Department of Environmental Protection**

Linda Bacon	Brandy Piers
Greg Beane	Nathan Robbins
Angie Brewer	Mark Stebbins
Alaina Chormann	Meagan Sims
Colin Clark	Kirsten Thompson
Jeff Dennis	David Waddell
Jeanne DiFranco	Alex Wong
Kristin Feindel	
Wendy Garland	
Kerem Gungor	
Addie Halligan	
Robert Hartley	
Holliday Keen	
John MacLaine	

**Maine Department of Health and Human Services**

Brent Lawson, Subsurface Wastewater Program

Alex Pugh, Health Engineering

**Maine Department of Marine Resources**

Kohl Kanwit, DMR

Kathleen Leyden, Coastal Program

David Miller, DMR

Geoff Shook, DMR

**Maine Department of Transportation**

Peter Coughlin

Cindy Dionne

Taylor LaBreque

**US Environmental Protection Agency**

Sandra Fancieullo, EPA Region 1

Mary Jo Feuerbach, EPA Region 1

**Other Contributing Partners**

Curtis Bohlen, Casco Bay Estuary Partnership

Soil and Water Conservation Districts

**Prepared by:**

Watershed Management Unit, Division of Environmental Assessment

Maine Department of Environmental Protection



Cross Lake, Cross Lake TWP

Photo Credit: Friends of Cross Lake

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# Contents

Acknowledgements.....	i
NPS Plan Lead Agencies .....	i
NPS Plan Contributors.....	i
Acronyms Used .....	v
I. Introduction .....	1
II. Maine NPS Program Mission, Goals and Guiding Principles.....	2
III. Maine NPS Management Program Framework.....	4
A. Key State and Federal Laws .....	4
B. Statewide and Watershed-based Approaches .....	5
C. Restoring Impaired Waters and Protecting Unimpaired Waters Threatened by NPS .....	7
D. Environmental Justice.....	8
E. Climate Change .....	11
IV. Maine’s Water Resources .....	14
A. Summary of Waters Impaired by NPS Pollution.....	15
B. Water Quality Standards and Classification .....	18
C. TMDL Assessment Reports and TMDL Implementation.....	19
V. Statewide Watershed Prioritization .....	21
A. NPS Priority Watersheds List .....	21
B. DEP Targeted Watersheds .....	23
VI. Maine Watershed-based Approach.....	25
A. Targeted Assessment and Stressor Analysis .....	26
B. Watershed-based Plan Development.....	27
C. Watershed-based Plan Implementation.....	32
D. Measuring Success and Monitoring Environmental Results .....	34
VII. Statewide NPS Control Strategies by NPS Category .....	37
A. Developed Areas.....	38
B. Agriculture .....	43
C. Transportation .....	47
D. Forestry.....	52
E. Onsite Wastewater Disposal Systems.....	56
F. Hydrologic and Habitat Modification.....	59
G. Climate Change Adaptation.....	62
H. Emerging NPS Issues.....	67
I. Other NPS Sources .....	78
VIII. NPS Programs and Partnerships .....	81
A. DEP NPS Programs .....	81
B. Integration with Other Government Programs that Protect Water Quality.....	85
C. Partnerships with Non-Governmental Organizations .....	92
IX. Funding .....	96
X. NPS Program Five-year Objectives, Actions, and Annual Milestones .....	104
XI. Measuring Progress and Evaluating Maine’s NPS Program .....	126

A. Measuring Environmental Success .....	126
Protecting Waters .....	127
B. NPS Program Evaluation .....	129
References .....	131
Appendix 1. EPA’s Key Components of an Effective State NPS Management Program .....	133
Appendix 2. NPS Watershed Prioritization and NPS Priority Lists.....	134
Appendix 3. Water Resource Monitoring and Assessment Strategies and Partners .....	158
Appendix 4. Targeted Assessment and Stressor Analysis.....	164

## List of Figures

Figure 1. Maine’s NPS Program Goals and Guiding Principles.....	3
Figure 2. Statewide and Watershed Approaches - Maine NPS Management Program.....	6
Figure 3. Health of Maine’s Assessed Waters (Maine DEP, 2018/2020/2022 Integrated Report)	8
Figure 4. Number of Projects and Project Funds in DACs.....	10
Figure 5. Overview of the Indicators of Watershed Drivers and Pressures.....	12
Figure 6. Total Annual Precipitation, 1895-2019.....	13
Figure 7. Maine’s Landscape (Maine DEP, 2022).....	14
Figure 8. Total Number and Area of Impaired Lakes by Source Category (Maine DEP, 2022) <sup>6</sup> ..	16
Figure 9. Total Miles of Impaired Rivers and Streams by Source Category (Maine DEP, 2022) <sup>6</sup> .	17
Figure 10. Total Square Miles of Impaired Estuarine and Marine Waters and Coastal Designated Beaches, by Source Category (Maine DEP, 2022).....	17
Figure 11. Total Acres of Impaired Wetlands by Source Category (Maine DEP, 2022).....	18
Figure 12. Maine’s Integrated Report Listing Categories (Maine DEP, 2022). .....	19
Figure 13. Maine DEP’s Watershed-based Approach Steps. ....	25
Figure 14. Watershed Planning Process (EPA, 2008).....	35
Figure 15. No Discharge Zones in Maine .....	78

## List of Tables

Table 1. Environmental Justice Objectives/Actions in Maine’s NPS Management Plan.....	11
Table 2 Maine’s Population and Land Area (Maine DEP, 2022) .....	15
Table 3. Maine’s Waters (Maine DEP, 2022) .....	15
Table 4. Active Nine-Element Watershed-based Plans as of July 1, 2024.....	30
Table 5. Active Lake Watershed-based Protection Plans as of July 1, 2024.....	31
Table 6. Major NPS Categories, Emerging NPS Issues and Other NPS Issues.....	37
Table 7. Climate Change Adaptation Objectives/Actions in Maine’s NPS Management Plan .....	65
Table 8. Key NPS Target Audiences and Current BMP Promotional Efforts.....	84

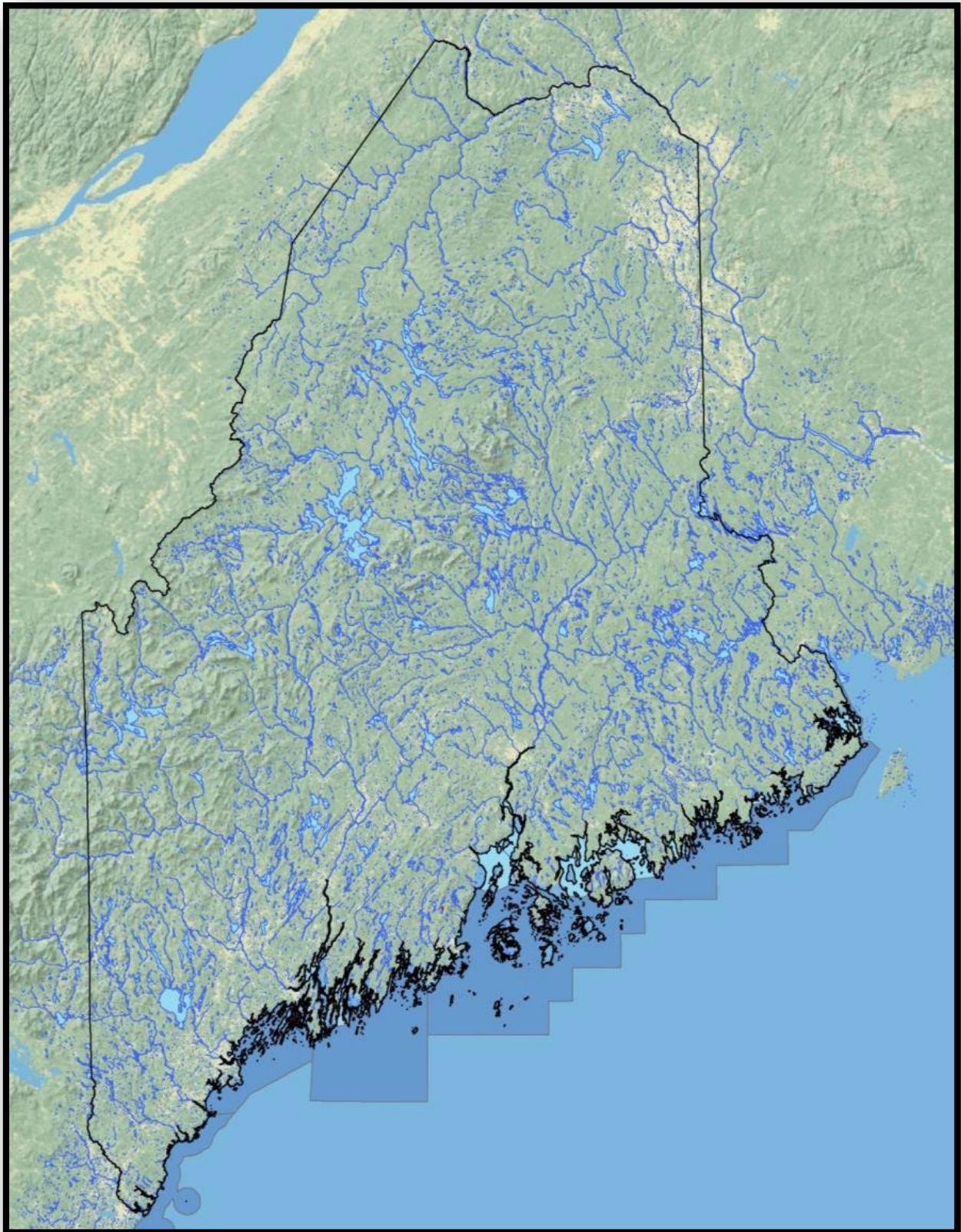
Table 9. Programs, Partners, and Roles.....	91
Table 10. Partner Organizations and Roles.....	94
Table 11. Watershed Approach .....	104
Table 12. Developed Areas .....	110
Table 13. Statewide Approach - Agriculture.....	113
Table 14 Statewide Approach - Transportation.....	116
Table 15. Statewide Approach - Forestry .....	118
Table 16. Statewide Approach – Subsurface Wastewater Disposal .....	120
Table 17. Statewide Approach – Hydrologic and Habitat Modification .....	121
Table 18. Statewide Approach – NPS Program Coordination .....	122
Table 19. NPS Priority Watershed Selection Criteria Summary. ....	134
Table 20. Impaired Lakes Priority List (22 lakes).....	136
Table 21. Threatened Lakes Priority List (172 lakes) .....	139
Table 22. Impaired Streams Priority List (92 streams) .....	146
Table 23. Threatened Streams Priority List (76 streams) .....	150
Table 24. Impaired Marine Waters Priority List (28 marine waters).....	155
Table 25. Threatened Marine Waters Priority List (12 marine waters).....	156
Table 26. Monitoring and Assessment Activities.....	158

## Acronyms Used

Acronym	Definition
ACOE	Army Corps of Engineers
AO	Agricultural Operation
AST	Aboveground Storage Tank
BMP	Best Management Practice
CAFO	Concentrated Animal Feeding Operation
CBEP	Casco Bay Estuary Partnership
CEO	Code Enforcement Officer
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act
CRP	Conservation Reserve Program
CSO	Combined Sewer Overflow
CVA	Clean Vessel Act
CWA	Clean Water Act
CWD	Coarse Woody Debris
CWSRF	Clean Water State Revolving Fund
CZARA	Coastal Zone Act Reauthorization Amendments
DAC	Disadvantaged Community
DACF	Maine Department of Agriculture, Conservation and Forestry
DEP	Maine Department of Environmental Protection
DHHS	Maine Department of Health and Human Services
DIFW	Department of Inland Fish and Wildlife
DMR	Maine Department of Marine Resources
DO	Dissolved oxygen
EJ	Environmental Justice
EGAD	Environmental and Geographic Analysis Database
EQIP	Environmental Quality Incentives Program
ESC	Erosion and Sediment Control
EPA	Environmental Protection Agency
FAME	Finance Authority of Maine
FERC	Federal Energy Regulatory Commission
FSA	Farm Service Agency, USDA
GRTS	Grant Reporting and Tracking System
IR	Integrated Report
LSM	Lake Stewards of Maine
LOP	Livestock Operation Permit
LUPC	Land Use Planning Commission
MaineDOT	Maine Department of Transportation
MEMA	Maine Emergency Management Agency
MFS	Maine Forest Service
MHB	Maine Healthy Beaches

Acronym	Definition
MLRC	Maine Local Roads Center
MLS	Maine Lakes Society
MMBB	Maine Municipal Bond Bank
MNRCP	Maine Natural Resource Conservation Program
MOA	Memorandum of Agreement
MOCA	Maine Ocean and Coastal Acidification
MRS	Maine Revised Statutes
MST	Microbial Source Testing
MTA	Maine Turnpike Authority
MERI	Marine and Environmental Research Institute
MS4	Municipal Separate Storm Sewer System
MSZA	Mandatory Shoreland Zoning Act
NEMO	Nonpoint Education for Municipal Officials
NMP	Nutrient Management Plan
NMRB	Nutrient Management Review Board
NOAA	National Oceanic and Atmospheric Administration
NPS	Nonpoint Source
NPSTRC	Nonpoint Source Training and Resource Center
NRPA	Natural Resources Protection Act
NRCS	Natural Resource Conservation Service, USDA
NWQI	National Water Quality Initiative
OSDS	Onsite Sewage Disposal System
PFAS	Perfluoroalkyl and Polyfluoroalkyl Substances
PPA	Performance Partnership Agreement
PREP	Piscataqua Region Estuaries Partnership
RFP	Request for Proposals
SFI	Sustainable Forestry Initiative
SHMP	State Hazard Mitigation Plan
SIC	State Implementation Committee
SSI	Sustainability Solutions Initiative
SSWD	Subsurface Wastewater Disposal
SWAT	Surface Water Ambient Toxics
SWCD	Soil and Water Conservation District
TMDL	Total Maximum Daily Load
UNH	University of New Hampshire
USDA	United State Department of Agriculture
UST	Underground Storage Tank
VRMP	Volunteer River Monitoring Program
WBP	Watershed-based Plan
WRF	Water Resources Forester
YCC	Youth Conservation Corps





# I. Introduction

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Nonpoint source pollution (NPS) has a major impact on Maine's lakes, rivers, streams and marine waters. Unlike pollution from point sources, such as industrial and sewage treatment plants, NPS pollution comes from many diffuse sources. It is caused by rainfall or snowmelt moving over and through the ground and picking up natural and human-made pollutants, such as fertilizer, road salt, sediment, oil and bacteria, along the way. Eventually these contaminants end up in waterbodies, where they can threaten drinking water supplies, cause nuisance algal blooms, diminish recreational activities, and endanger aquatic life and habitat.

The Maine Department of Environmental Protection (DEP) coordinates the State of Maine Nonpoint Source Pollution Program (38 M.R.S. § 410) to restore and protect waters impaired and threatened<sup>1</sup> by nonpoint source pollution. In this NPS Program Plan, DEP establishes the overall strategy that Maine will use over the next five years (2025-2029) to control and prevent NPS pollution to the state's waters. The Plan identifies:

- Programs, strategies and resources state agencies use to address Maine's most pressing NPS water pollution control problems;
- DEP's approach to strategically focus watershed protection and restoration work in NPS Priority watersheds;
- Funding opportunities and partnerships critical to protecting and improving Maine's lakes, streams, rivers, and marine waters; and
- Five-year objectives, actions, and milestones to make progress achieving the long-term goals of Maine's NPS management program.

The U.S. Environmental Protection Agency (EPA) requires states to have an updated NPS Management Plan in place to qualify for federal Section 319 grant awards under the Clean Water Act (CWA). In 2024, EPA issued 319 program guidelines describing key components to be included in an effective state NPS management program. Appendix 1 summarizes how these key elements have been incorporated into Maine's Plan.

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<sup>1</sup> The use of the term 'threatened' in this document refers to unimpaired waters that are subject to potential impacts from NPS pollution. The term is not intended to be used as described in Maine's Integrated Report, where waters are listed as 'threatened' for Clean Water Act §303(d) listing purposes if those waters are anticipated to fall into non-attainment with the next listing cycle of two years.

## II. Maine NPS Program Mission, Goals and Guiding Principles

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Maine's NPS Program is guided by the following mission, goals and guiding principles. Section X of this Plan lists objectives, actions and milestones that will be used to achieve program goals to address Maine's priority NPS problems.

### Maine's NPS Program Mission:

Maine's lead NPS agencies administer programs to help prevent, control, or abate water pollution caused by nonpoint sources so that waters attain or exceed their classification standards and beneficial uses of water resources are maintained or restored.

### Maine's NPS Program Lead Agencies:

Department of Environmental Protection (DEP)  
Department of Agriculture, Conservation and Forestry (DACF)  
Department of Marine Resources (DMR)  
Department of Transportation (DOT)  
Department of Health and Human Services (DHHS)

## Long-term Goals

The long-term goals of Maine's NPS program are:

- **Restoration of Waters** - To restore waterbodies that are impaired by nonpoint sources so that they meet water quality standards.
- **Protection of Waters** - To prevent NPS-related impairments of threatened water bodies.

## Guiding Principles

Maine's lead NPS agencies will use the following six guiding principles to help implement strategies to achieve NPS management program goals and objectives (Figure 1):

1. Promote the use of state-agency defined "best management practice guidelines" (BMPs) throughout the entire state to control nonpoint sources and encourage the adoption of innovative strategies to address new challenges;
2. Promote voluntary, locally led, incentive-based strategies to address NPS issues
3. Ensure informed compliance with applicable regulatory requirements;
4. Establish and strengthen partnerships among stakeholders at local, state, and federal levels in the management of NPS pollution sources;

5. Encourage proper management of wetlands, riparian corridors, floodplains, natural areas, and other green infrastructure resources in urban and rural watersheds to help restore or maintain healthy watersheds; and
6. Use a watershed-based management approach as a coordinating framework to organize public and private sector efforts to identify, prioritize, and implement activities to address NPS problems to restore NPS impaired waters or protect waters threatened by NPS pollution.

**Figure 1. Maine's NPS Program Goals and Guiding Principles.**





### **III. Maine NPS Management Program Framework**

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As Maine's lead water quality agency, DEP is responsible for developing and implementing water quality protection and improvement programs required under state and federal laws. DEP manages both regulatory and voluntary programs and collaborates with local, state, and federal agencies to plan and implement strategies to protect Maine's water quality. The following section summarizes key State and Federal laws that guide Maine's NPS program and Maine's overall approach to controlling NPS pollution.

#### **A. Key State and Federal Laws**

Three laws helped prompt the establishment and formalization of Maine's NPS program. These laws provide ongoing structure and guidance for the program and identify the agencies involved in program implementation.

##### **Maine's NPS Pollution Program Statute**

In 1991, Maine's Nonpoint Source Pollution Program was codified under State statute (38 M.R.S. Chapter 3, Subchapter 1, Article 1-F). The statute directs State agencies to promote the use of State agency-defined "best management practice guidelines" (BMPs) to prevent or reduce water pollution from nonpoint sources. DEP administers the State of Maine NPS program and coordinates their efforts with other state agencies. Under Maine's statute, DEP, the Department of Agriculture, Conservation, and Forestry, and the Department of Transportation (MaineDOT) are responsible for developing and promoting the use of BMPs in order to reduce and prevent NPS pollution from their associated pollution categories: Development (DEP); Transportation (MaineDOT); Agriculture (DACF) and Forestry (DACF).

##### **Sections 319 and 604(b) of the Federal Clean Water Act**

Congress enacted Section 319 of the Clean Water Act in 1987 and thereby established a national program to control nonpoint sources of water pollution. Funding appropriated under Section 319 can be used to implement state NPS programs including, as appropriate, non-regulatory or regulatory programs for enforcement, technical assistance, financial assistance, education, training, technology transfer, and demonstration projects to achieve implementation of best management practices and to meet water quality goals. EPA provides grants to states, tribes, and territories to implement programs that control and prevent nonpoint source pollution to waters. To be eligible for Section 319 funding, states must implement updated NPS Management Programs and follow other program guidelines (EPA, 2024).

Section 604(b) of the Clean Water Act provides approximately 1% of Clean Water State Revolving Fund allotments (or \$100,000 if greater) to support State water quality planning activities under 205(j) and 303(e) of the Act. The Bilateral Infrastructure Law (BIL, 20221) supplemented these funds. Pursuant to the Act, grant funds are used to determine the nature and extent of point and nonpoint source pollution and to develop management plans. DEP

administers the program and awards and monitors sub-grants for projects to determine the nature and extent of NPS and to develop management plan

### **Section 6217 of the Federal Coastal Zone Act Reauthorization Amendments (CZARA)**

EPA and the National Oceanic and Atmospheric Administration (NOAA) jointly administer a program that establishes management measures designed to control runoff from six main sources: forestry, agriculture, urban areas, marinas, hydrologic modification and riparian areas. These measures are backed by enforceable state policies and actions (“state authorities”) that will ensure implementation of the program. All coastal and Great Lakes states and territories that participate in the Coastal Zone Management Act Program (CZMA) are required to develop coastal nonpoint pollution control programs (CNPCPs). In 2003 EPA and NOAA fully approved the Maine Coastal NPS Pollution Control Program, which defines the coastal nonpoint boundary as the entire state. The measures and milestones included in Maine’s Nonpoint Source Management Program Plan (see Section VII and Tables 11-18) are aligned with Maine’s CNPCP.

## **B. Statewide and Watershed-based Approaches**

Maine’s NPS program uses a combination of statewide programs and targeted watershed projects to achieve its long-term goals of restoring and protecting waters.

### **Statewide Approach**

Maine’s statewide approach targets six major categories of NPS pollution identified in the state. These NPS pollution categories include developed areas, agriculture, transportation, forestry, onsite wastewater disposal systems and hydrologic and habitat modification. The State’s lead NPS agencies and other cooperating agencies and partners implement an array of regulatory and non-regulatory programs to control pollution from these major NPS categories.

Regulatory programs (e.g., permitting, compliance assistance and enforcement) are administered under several core State of Maine environmental laws including but not limited to the Storm Water Management Law; the Site Location of Development Law; the Erosion and Sedimentation Control Law; the Natural Resources Protection Act (NRPA); the Mandatory Shoreland Zoning Act (MSZA); the Subsurface Wastewater Disposal Rules; Pesticide Control laws; the Nutrient Management Act; and the Forest Practices Act. These laws limit specific activities (e.g., soil disturbance, timber cutting and pesticide application) and require the use of BMPs to limit pollution transport to waterbodies. A number of these laws, including the Stormwater Management Law and NRPA, also provide enforceable policies of the Maine Coastal Program and are applicable to federal agency actions under the CZMA’s consistency provision. Section VII in the Plan outlines how these core state environmental laws may apply to various NPS categories.

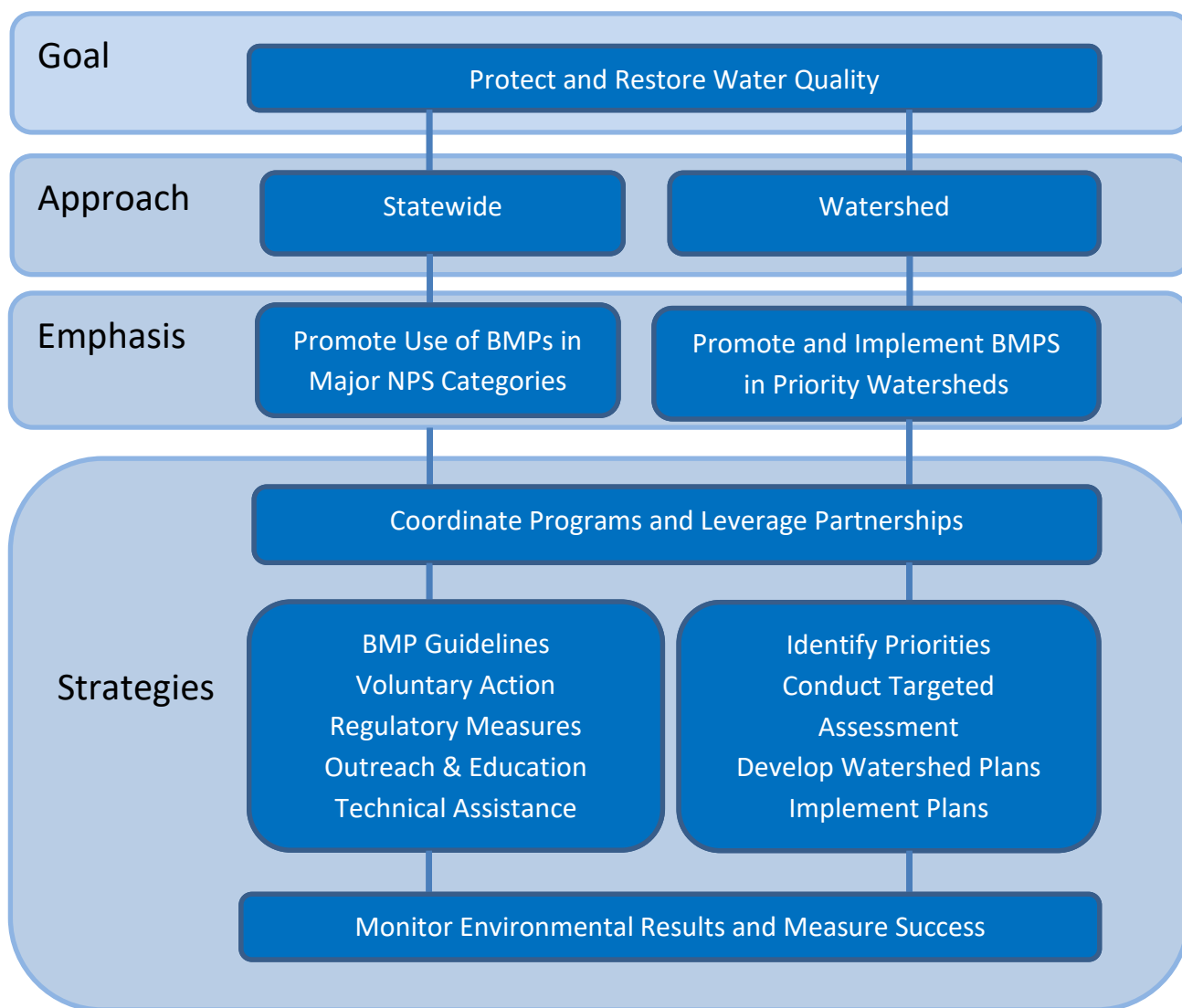
NPS pollution is oftentimes not adequately addressed by existing laws. As such, efforts to encourage more widespread voluntary use of BMPs are a vital component of Maine’s NPS Program. Non-regulatory programs often involve providing technical assistance, BMP training, and outreach to municipalities, individuals, businesses, and non-governmental organizations.

Recognition programs and demonstration projects are also used to recognize individuals and businesses and highlight projects that implement BMPs to prevent or reduce NPS pollution.

### Watershed-based Approach

In addition to statewide programs, Maine also uses a targeted watershed approach to restore and protect waters. Through a priority-setting process, DEP identifies watersheds that are impaired or threatened by NPS pollution. Projects in these NPS Priority Watersheds typically follow four steps as they move towards the restoration or protection goals. Steps include conducting targeted assessment and stressor analysis; developing locally supported watershed-based management plans (WBP); implementing watershed-based plans; and measuring success and environmental results. Refer to Section VI for a description of Maine's watershed approach.

**Figure 2. Statewide and Watershed Approaches - Maine NPS Management Program.**



## **Partnerships and Integration with Other Programs**

Success of the NPS program depends on maintaining existing and forging new partnerships from diverse sources such as:

- Local, regional, state, interstate, Tribal, and federal agencies
- Public interest groups
- Industry representatives
- Municipalities and public water systems
- Academic institutions
- Private landowners and producers

These partners and their affiliated programs have goals that align or overlap with the goals of the NPS Program, thus providing mutual benefits. Partnerships strengthen the program by bringing new ideas and resources, increasing understanding of NPS problems, and building commitment to implementing solutions. Engaging with a wide range of stakeholders ensures that environmental objectives are well integrated with economic stability and other social and cultural objectives. Maine's lead NPS agencies use a variety of formal and informal means to develop and maintain these partnerships. Refer to Section VIII for information about partnerships.

## **C. Restoring Impaired Waters and Protecting Unimpaired Waters Threatened by NPS**

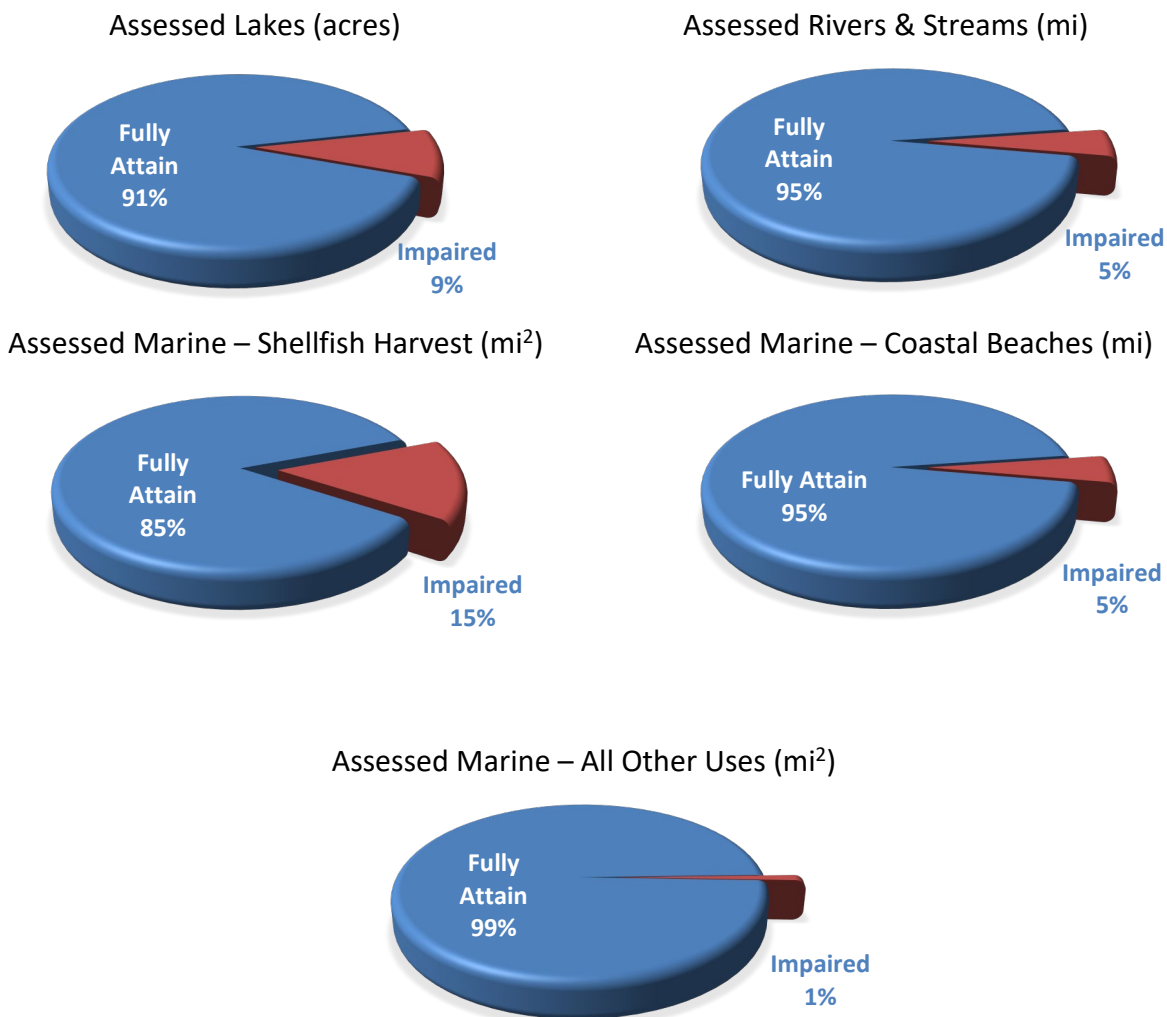
This plan outlines approaches to restore the relatively small number of waters impaired by NPS pollution and protect the many unimpaired waters threatened by NPS pollution. Aside from statewide advisories for fish and lobster tomalley consumption, Maine's 2018/2020/2022 Integrated Report (IR) indicates that state's waters are very clean with 95% of assessed river and stream miles, 85% of marine waters designated for shellfish harvest, 99% of marine waters designated for all other uses, 95% of coastal designated beaches, and 91% of lake acres fully attaining water quality standards (Figure 3). Only 4% of assessed river and stream miles, 15% of marine waters designated for shellfish harvest, 1% of marine waters designated for all other uses, 5% of coastal designated beaches, and 9% of lake acres were listed as impaired. That said, many of Maine's clean waters that attain standards are threatened due to NPS sources. For example, 244 lakes are threatened by excess nutrients associated with existing and future watershed development and are designated "Most at Risk" under Maine's Stormwater Law.

Given the relatively high proportion of unimpaired waters and relatively low number of impaired waters in Maine, DEP prioritizes and balances the use of available NPS resources to protect and restore lakes, streams and marine waters. Prevention of water pollution is a daunting challenge for watersheds facing increased development pressures. Since prevention is far more feasible and less expensive than restoration of an already impaired waterbody, DEP allocates significant program resources for projects that help communities protect waters



considered threatened or most at risk. The NPS Priority Watersheds list (Appendix 2) identifies impaired waters and unimpaired waters threatened by NPS pollution.

**Figure 3. Health of Maine's Assessed Waters (Maine DEP, 2018/2020/2022 Integrated Report)**



## D. Environmental Justice

Environmental justice is the fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income, with respect to the development, implementation,

and enforcement of environmental laws, regulations, and policies. Water quality and climate change can disproportionately impact communities that are predominately of color, indigenous, linguistically isolated, low-income and/or impacted by other stressors. Community and stakeholder engagement are cornerstones of watershed-based planning and are key opportunities to expand engagement and investment in disadvantaged communities.

The Department is also guided by the Maine Constitution which provides for the fair treatment of all Maine citizens. Article 1. of the Constitution of the State of Maine - [Section 1. Natural rights.] states that "All people are born equally free and independent, and have certain natural, inherent and unalienable rights, among which are those of enjoying and defending life and liberty, acquiring, possessing and protecting property, and of pursuing and obtaining safety and happiness."

Together these principles compel the Department to provide fair and equitable treatment to all Maine citizens in the implementation of federal and state environmental laws, rules, programs, and policies, and in the management of the agency. It is the policy of the Department to, "treat its employees and the public with courtesy, respect and consideration and to be fair and honest in its dealings, and to be mindful of the special qualities that make Maine a unique place to live and work."

The Department strives to address the needs of small, underserved, and disadvantaged communities through various programs.

Approximately 37% of the area of the State of Maine is categorized as a Disadvantaged Community (DAC) by the Climate and Economic Justice Screening Tool (CEJST)<sup>2</sup>, while NPS Priority Watersheds cover approximately 14% of the state. Approximately 30% of NPS Priority Watersheds are located within DACs, and of those, 34% are impaired.

Maine's NPS Program is committed to equitable funding throughout the state. Between FFY2020 and FFY2023, CWA 319 and 604b funds were awarded to 39 projects, 20 of which benefited DACs. Total project funds awarded during this period were \$3,122,652, with \$1,630,665 (52%) benefiting DACs.

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<sup>2</sup> <https://screeningtool.geoplatform.gov/en/#3/33.47/-97.5>

**Figure 4. Number of Projects and Project Funds in DACs**



In 2022 the Maine NPS Program has established a Request For Applications scoring criteria that includes that uses data from the Climate & Economic Justice Screening Tool (CEJST, <https://screeningtool.geoplatform.gov/en/#3/33.47/-97.5>) to provide a maximum of 5 points out of 100 possible points based on the percentage of the watershed that is designated a Disadvantaged Community. We will continue to explore other tools to increase investments over the next 5 years.

The NPS Program also participates in the “J40 Staff Work Group” convened by the Governor’s Office on Policy, Innovation, and the Future (GOPIF), where diversity, equity, inclusion, and justice efforts across State Agencies are shared and coordinated.

The plan’s proposed actions and milestones related to Environmental Justice are summarized in Table 1 below.

**Table 1. Environmental Justice Objectives/Actions in Maine’s NPS Management Plan**

Objective/Action	Action Plan Table
Revise NPS Priority List criteria to reflect Environmental Justice concerns	Table 11. Watershed Approach, Objective 2
Explore funding avenues for match reduction or elimination for projects benefitting DACs	Table 11. Watershed Approach, Objective 10
Develop outreach program targeting DACs in Aroostook Co. to assist agricultural producers to implement appropriate BMPs to increase soil health and reduce NPS pollution.	Table 11. Watershed Approach, Objective 10
Explore inclusion of Environmental Justice focused outreach actions in all work plans.	Table 11. Watershed Approach, Objective 10
Meet with Tribes and Nations regarding leveraging CWA s. 319 funded projects.	Table 17, Objective 4

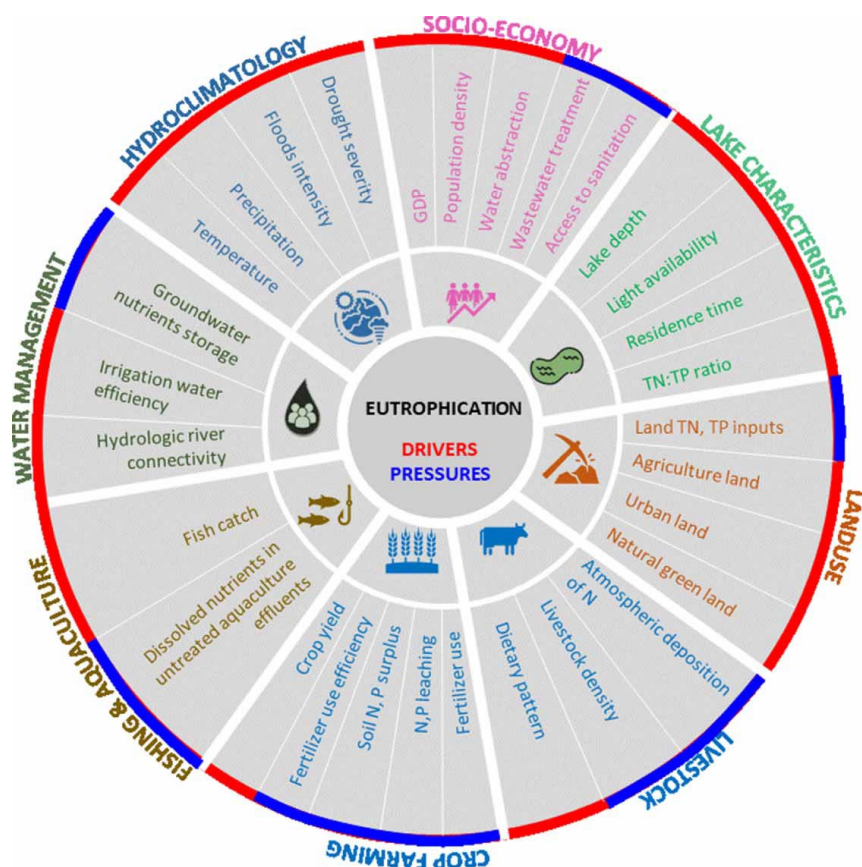
## E. Climate Change

Maine’s climate is getting warmer and wetter. The past four years in Maine (2020-2023) have ranked among the ten warmest on record, with projections for a 2-4°F increase by 2050 and up to 10 °F by 2100. The state receives 1-2 additional days per year with 2+ inches of precipitation, and 2-3 more days per year with 1 inch of precipitation than it did 100 years ago (Figure 6). Despite more rain, daily, monthly and seasonal climate is more extreme. As the temperature rises, the warm season expands and the cold season contracts. The average warm season for the period between 2010-2023 is about 2 weeks longer and winters 2 weeks shorter, in comparison to a 1901-2000 historical climate baseline. Winter, in particular, has warmed 5 °F compared to the last century. Shorter winters yield less snow, more rain, later lake ice-in and earlier ice-out. These changes impact plants, soils, surface water, all aquatic ecosystems, and ground water supplies. Climate change effects the entire biosphere, including human health and behavior. Thus, human response to climate change can also become an environmental stressor for biologic and hydrologic systems.

Freshwater systems are integral components of their watershed, which includes physical, biological, and cultural inputs. Freshwater resources can be supported with planning that encompasses climate, human activities, and lake characteristics.

The 2024 Update to the Scientific Assessment of Climate Change and Its Effects in Maine<sup>3</sup> highlights a literature review by Suresh, et al.<sup>4</sup> that identifies 7 categories of biological and sociological drivers that effect lake trophic states: Hydroclimatic, socio-economic, land use, lake characteristics, crop farming/livestock, hydrology/water management, and fishing/aquaculture. Within these 7 categories are an additional 30 relevant indicators (Figure 5).

**Figure 5. Overview of the Indicators of Watershed Drivers and Pressures<sup>5</sup>**



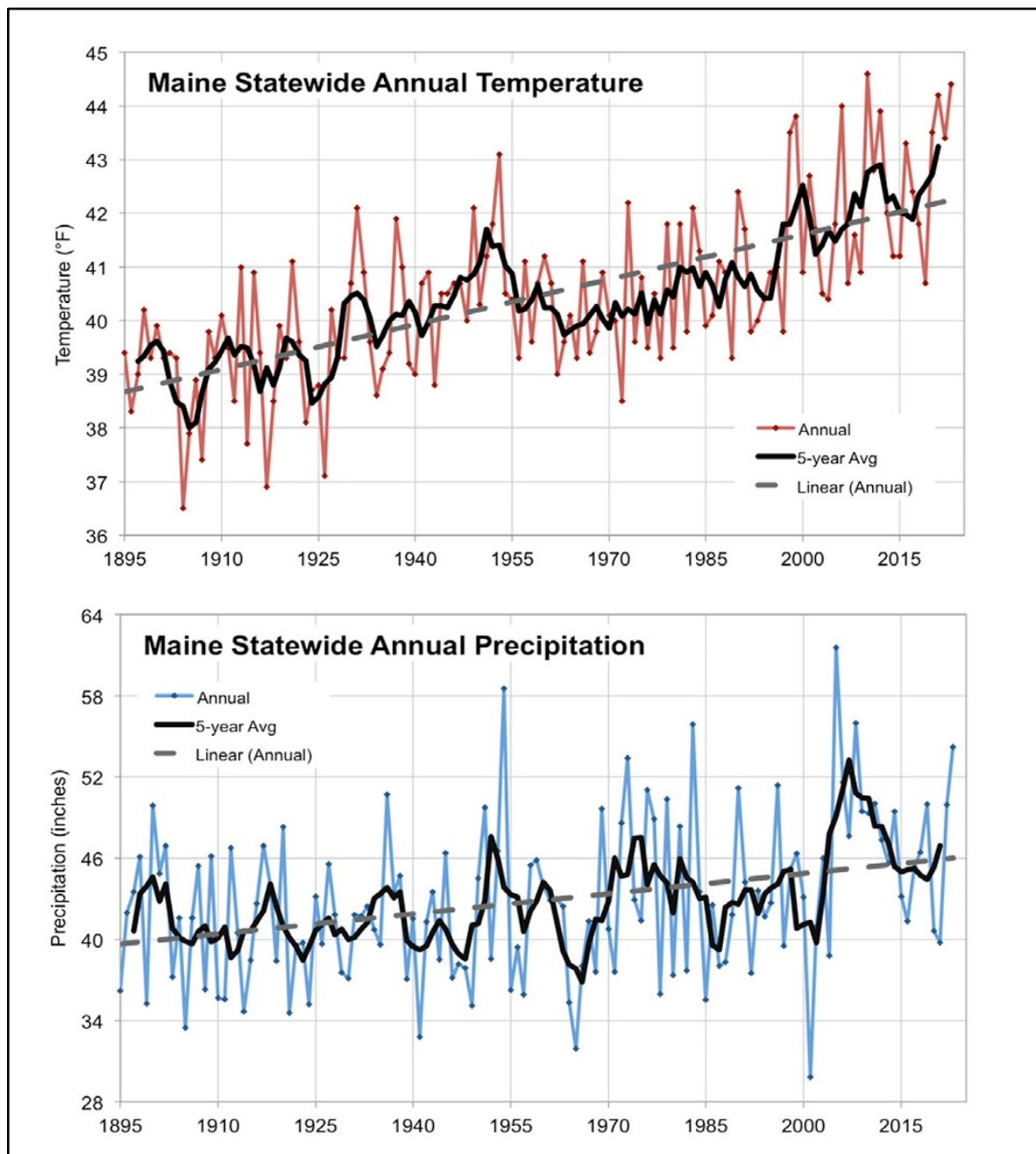
This approach reflects the watershed approach taken by the DEPs NPS Management Program. Because of the intricacy and complexity of addressing climate issues, the Maine NPS Program will directly address climate change when possible and will continue to collaborate with partner agencies and programs to create a holistic statewide approach beyond NPS solutions. Specific management strategies and a crosswalk to the milestones in Tables 11-18 are listed in Table 7.

<sup>3</sup> MCC STS. 2024. Scientific Assessment of Climate Change and Its Effects in Maine - 2024 Update. A Report by the Scientific and Technical Subcommittee (STS) of the Maine Climate Council (MCC). Augusta, Maine. 268 pp

<sup>4</sup> Suresh et al 2023 Environ. Res. Lett. 18 063004

<sup>5</sup> From Suresh et al 2023 Environ. Res. Lett. 18 063004

Figure 6. Total Annual Precipitation, 1895-2019<sup>6</sup>.



<sup>6</sup>Maine's annual mean temperature (top) and cumulative precipitation (bottom) 1895–2023 based on data from the National Centers for Environmental Information (NCEI, 2024a). The dashed linear trendlines show temperature and precipitation increases of 3.5°F and 6 inches (1.9°C and 15 cm), respectively, across the record period. Bold black lines represent five-year averages. MCC STS. 2024. Scientific Assessment of Climate Change and Its Effects in Maine - 2024 Update. A Report by the Scientific and Technical Subcommittee (STS) of the Maine Climate Council (MCC). Augusta, Maine. 268 pp

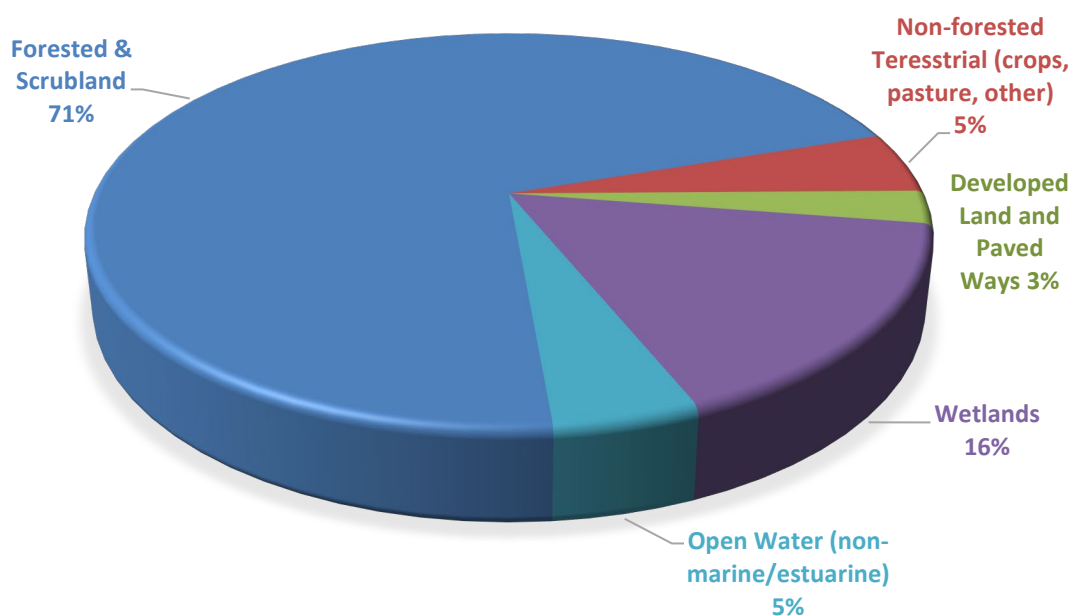
## IV. Maine's Water Resources

Maine is the largest state in New England with a total surface area of over 35,000 square miles (Table 2). The state has an abundance of freshwater resources with the larger surface waters occupying nearly 4,500 square miles (Table 3). Maine's 5,780 lakes and ponds cover 1,503 square miles, an area larger than the State of Rhode Island. There are over 7,000 perennial brooks, streams, and rivers that extend nearly 55,000 miles. Fresh and saltwater wetlands cover an additional 5,196 square miles. Groundwater is considered plentiful with three basic types of aquifers (stratified drift deposits, till, and fractured bedrock). Stratified drift deposits, which provide large-volume water supply wells cover about 10% of the state, and bedrock aquifers underlie the entire state. Maine's coastline is 2,757 miles long, and its marine waters cover 2,846 square miles, including near shore waters, tidal rivers and the area to the "three mile" limit.



Mouth of Kennebunk River, Kennebunk  
Photo Credit: A. Jensen Wells NEER

**Figure 7. Maine's Landscape (Maine DEP, 2022).**





**Table 2 Maine’s Population and Land Area (Maine DEP, 2022)**

<b>State Population (2020 National Census data)</b>	<b>1,362,359</b>	<b>people</b>
Rural population	836,050	people
Urban population	526,309	people
<b>Land Area</b>	<b>32,423</b>	<b>sq. miles</b>

**Table 3. Maine’s Waters (Maine DEP, 2022)**

<b>Description</b>	<b>Square Miles</b>
<b>Total lake, pond &amp; reservoir features in Maine DEP’s GIS data layer</b>	<b>1,603</b>
Lakes, ponds & reservoirs assigned a MIDAS number in DEPs GIS	1,544
<b>Total Miles of Rivers and Streams (non-estuarine portion)</b>	<b>45,008</b>
Miles of perennial rivers/ streams	31,608
Miles of intermittent streams	13,400
<b>Total Miles of Coastline (including tidal rivers &amp; shorelines of islands)</b>	<b>2,756</b>
<b>Total Wetlands</b>	<b>3,350</b>
Estuarine intertidal	128
Marine intertidal	108
Freshwater wetlands	3,144

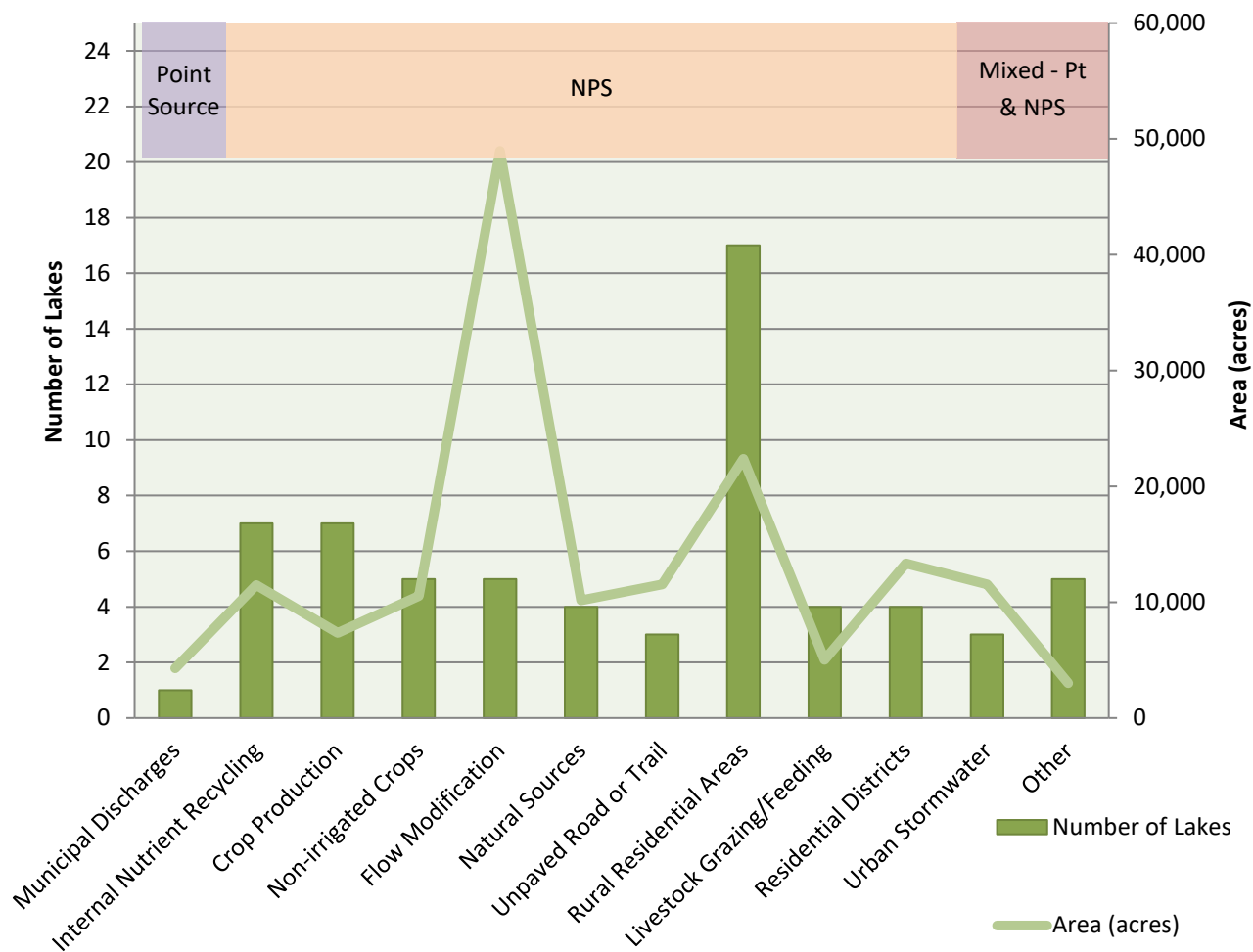
## A. Summary of Waters Impaired by NPS Pollution

Maine’s 2018/2020/2022 Integrated Water Quality Monitoring and Assessment Report (IR) lists lakes, rivers, streams, freshwater wetlands, and marine waters, including coastal beaches, impaired by point and/or nonpoint pollution sources. The cause of impairment is variable and site specific. All freshwaters in Maine are under a fish consumption advisory due to impairment caused by atmospheric deposition of mercury. Atmospheric deposition is the largest single source of mercury pollution. All marine waters are impaired by polychlorinated biphenyls (PCBs) and dioxins and fall under a statewide lobster tomalley consumption advisory.

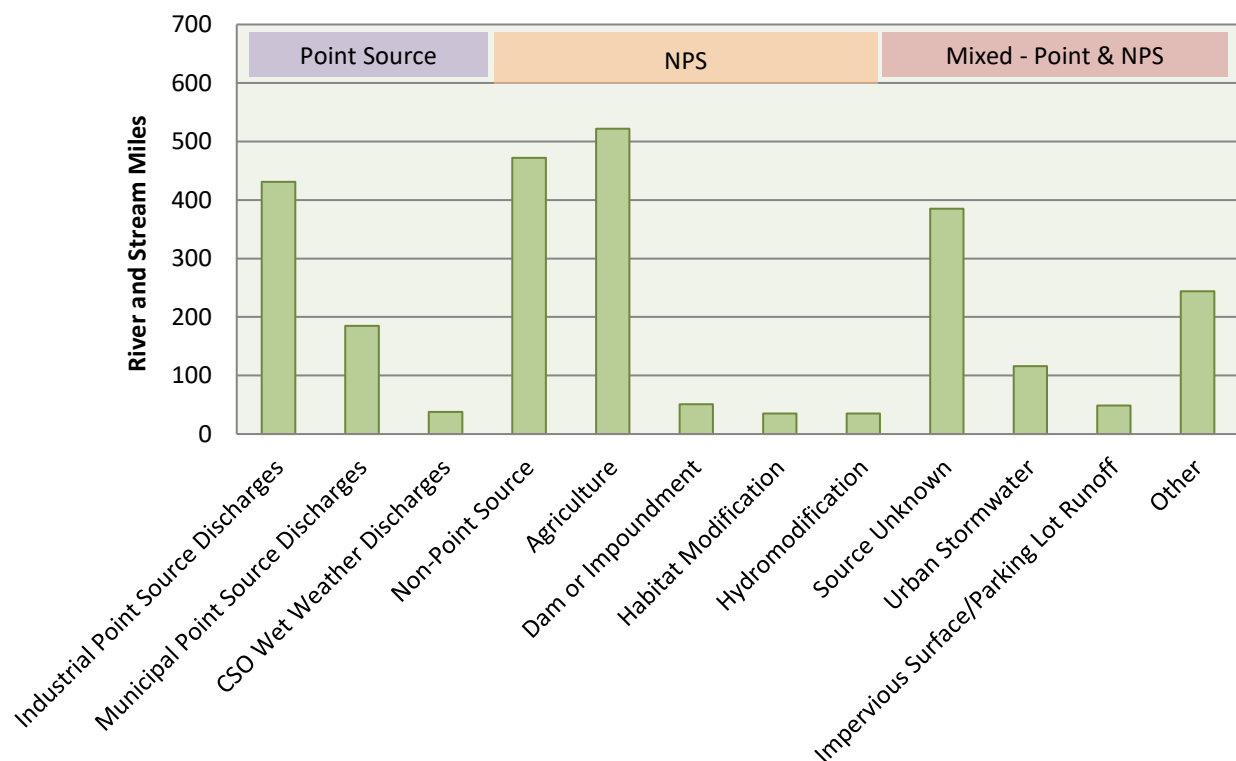
The relative importance of pollution sources in different types of impaired waters varies considerably. Only one lake is impaired by a point source (Figure 5). Most lakes are affected by a mix of rural residential development, agriculture, internal recycling and urban stormwater. In streams, industrial point source discharges, unknown sources and NPS are of almost equal importance, each affecting approximately 400 river miles, and general agricultural NPS sources affect 522 miles (Figure 6). Municipal point source discharges, combined sewer overflows, overboard discharges and NPS are the primary sources causing impairment of marine waters (Figure 7). NPS contributes to bacterial impairments of marine waters. Nonpoint Sources and Agriculture, both affect approximately 300 acres of wetlands, with Unknown Sources affecting 246 acres.



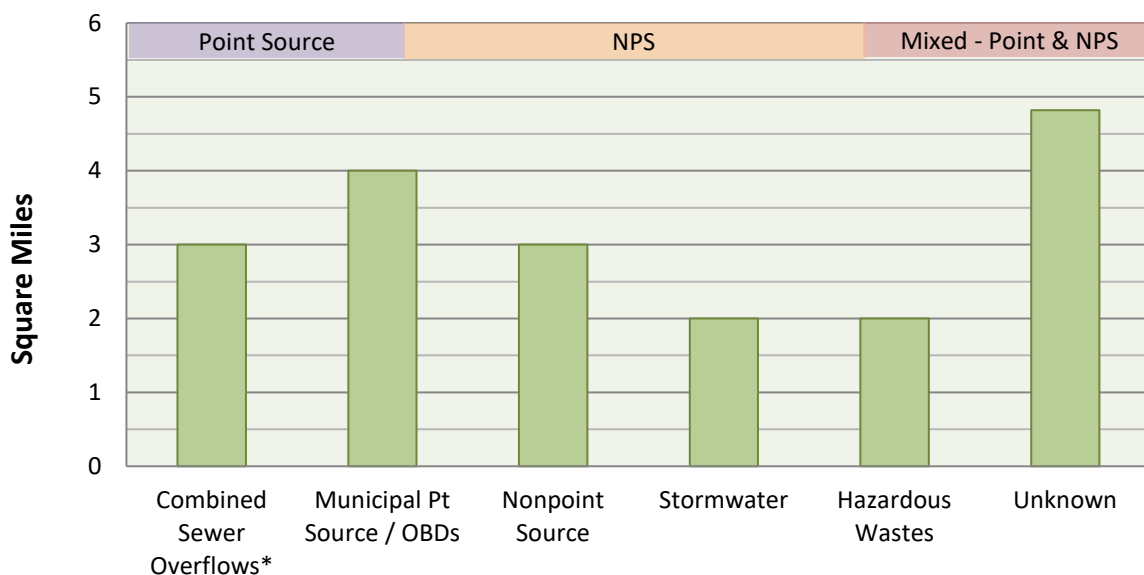
**Figure 8. Total Number and Area of Impaired Lakes by Source Category (Maine DEP, 2022)<sup>6.A</sup>**



**Figure 9. Total Miles of Impaired Rivers and Streams by Source Category (Maine DEP, 2022)<sup>6</sup>.**

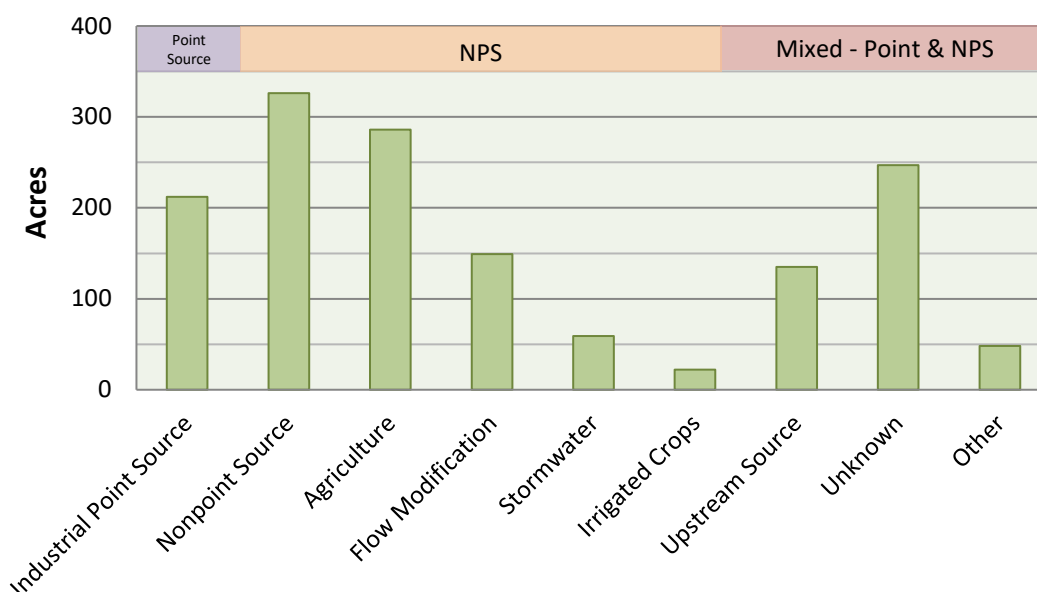


**Figure 10. Total Square Miles of Impaired Estuarine and Marine Waters and Coastal Designated Beaches, by Source Category (Maine DEP, 2022).<sup>7</sup>**



<sup>7</sup>The square miles, miles, or acreage attributed to causes and sources in these figures may be listed more than once if a waterbody is subjected to several different types of disturbance. For example, if a waterbody has both agricultural and NPS sources of impairment, the impaired acreage or miles will be listed in both the Agriculture and NPS categories. For more information on source categories, see the Maine Integrated Report.

**Figure 11. Total Acres of Impaired Wetlands by Source Category (Maine DEP, 2022)**



## B. Water Quality Standards and Classification

The quality of Maine's waters is described in terms of physical, chemical, and biological characteristics associated with the state's water classification program. As established in Maine statute (38 M.R.S. § 464-470), the classification program consists of three components: designated uses (e.g., drinking water supply, recreation in and on the water, habitat for fish and other aquatic life); criteria (e.g., bacteria, dissolved oxygen, and biological criteria); and an anti-degradation statement (e.g., natural, free flowing) that specify levels of water quality necessary to maintain the designated uses.

All State waters have a classification assignment (Lakes: GPA. Rivers and streams: AA, A, B, C. Marine and estuarine: SA, SB, SC). Wetlands are classified the same as their associated surface waters. Wetlands that are part of great ponds or natural lakes and ponds less than 10 acres in size are GPA waters. All freshwater wetlands not classified as GPA waters are class AA, A, B or C under Sections 467 and 468 according to the watershed in which they occur. Coastal wetlands are classified SA, SB or SC according to the provisions of Section 469 (Classification of Estuarine and Marine Waters).

Groundwater is classified by its suitability for drinking water purposes. Under the Maine Water Classification Program Section 465-B, groundwater is classified as either potable (GW-A) or unpotable (GW-B). Water is unpotable when the concentrations of chemical compounds detected exceed either the Maximum Contaminant Levels (MCL) or the Maximum Exposure Guidelines (MEG) as defined in the Rules Relating to Drinking Water administered by the Maine Department of Health and Human Services (DHHS). Although there are localities where groundwater is unpotable and contaminated, no groundwater is currently classified GW-B.

The DEP is responsible for overall assessment of the State’s waters. With support from partners, DEP biennially produces the IR that fulfills Clean Water Act reporting requirements under Section 305(b), Section 303(d) (list of impaired waters). This Integrated Report provides a summary of the status of the State’s waters and identifies impaired waters that are not meeting one or more of their designated uses. The IR lists waters in one of five categories of attainment (Figure 9).

**Figure 12. Maine’s Integrated Report Listing Categories (Maine DEP, 2022).**

Category 1	<ul style="list-style-type: none"> <li>• Attaining all designated uses and water quality standards, and no use is threatened.</li> </ul>
Category 2	<ul style="list-style-type: none"> <li>• Attains some of the designated uses; no use is threatened; and insufficient data and information is available to determine if the remaining uses are attained or threatened.</li> </ul>
Category 3	<ul style="list-style-type: none"> <li>• Insufficient data and information to determine if designated uses are attained.</li> </ul>
Category 4	<ul style="list-style-type: none"> <li>• Impaired or threatened for one or more designated uses, but does not require development of a TMDL (because TMDL is completed, other pollution controls are expected to result in attainment of standards, or impairment not caused by a pollutant).</li> </ul>
Category 5	<ul style="list-style-type: none"> <li>• Waters impaired or threatened for one or more designated uses by a pollutant(s) and a TMDL is required.</li> </ul>

For more information, go to <https://www.maine.gov/dep/water/monitoring/305b/>.

## C. TMDL Assessment Reports and TMDL Implementation

DEP monitors the water quality conditions of Maine's rivers, lakes, and marine waters to determine if they meet designated uses for recreation, swimming, fishing, shellfish harvesting, and drinking water supply, and if the waters support healthy habitats for fish and wildlife. DEP places degraded waters (i.e., not attaining water quality standards needed to support designated uses) on the Section 303(d) list of impaired waters. A Total Maximum Daily Load (TMDL) assessment is required for nonattainment waters under state and federal water quality laws to determine the reductions needed from point and nonpoint pollution sources to meet standards. The fundamental goal of a TMDL assessment is to establish water pollution control targets and recommend actions needed for planning and implementation work.

In May 2016, Maine issued a “Vision for Assessment, Restoration and Protection of Maine’s Water Resources” that included a list of 35 NPS-impaired waters for which a TMDL is required but had not yet been developed. In 2016, DEP received EPA approval for the *Maine Statewide*

*TMDL for Nonpoint Source Pollution*, which included 21 streams on this list. DEP submitted an Addendum to the Statewide NPS TMDL for an additional 13 streams, that was approved by EPA in September 2021. Maine has also developed a Prioritization Framework for EPA's 2022-2032 *Vision for the Clean Water Act (CWA) Section 303(d) Program*. This Framework includes methods for addressing waters impaired or in need of protection due to NPS pollution. Maine's 303(d) Prioritization Framework is available at:

[www.maine.gov/dep/water/monitoring/tmdl/2022/Vision%20Prioritization%20Framework%20040124%20Final.pdf](http://www.maine.gov/dep/water/monitoring/tmdl/2022/Vision%20Prioritization%20Framework%20040124%20Final.pdf).

Communities, agencies, and individuals are invited to provide input on the development of TMDLs. After TMDL assessments are completed, local stakeholders often consult TMDLs as they take action to eliminate or reduce NPS pollution sources. DEP staff involved with TMDLs provide limited technical assistance to assist communities to further scope out and identify problems.

Stormwater runoff from both point and nonpoint sources have long been recognized as a significant source of pollutants to surface waters. Historically, individual programs have been developed to address specific aspects of stormwater control. One such aspect is TMDL development. TMDLs typically cover one pollutant at a time and do not consider the other various programs that may impact stormwater runoff. While there may be several programs focusing on a specific location/waterbody, often coordination of activities is limited.

DEP will apply the watershed-based approach, described in Section IV, when it is appropriate to help ensure effective coordination of stormwater runoff control activities to restore impaired waters.

## V. Statewide Watershed Prioritization

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Given Maine's extensive water resources, statewide watershed prioritization is an important part of Maine's NPS program. Maine's first NPS priority watersheds list was developed in 1989 and substantially revised in 1998 and 2014 as part of a major update of the NPS management plan. Since 2015, DEP has reviewed and updated the NPS Priority Watersheds list on an annual basis. DEP plans to continue to review and update the list on a regular basis through a biennial update process or more often as new information becomes available.

In addition to this listing process, DEP staff also conduct an annual review of NPS priority watersheds and identify a small subset of highest priority waters. This annual review helps DEP direct NPS program funds and services to address compelling needs and opportunities to make progress restoring or protecting waters.

An overview of selection criteria and some of the tools available for targeted actions are described in this section. A full description of the selection criteria and current list are included in Appendix 2. Refer to the NPS Priority Watersheds webpage at [https://www.maine.gov/dep/land/watershed/nps\\_priority\\_list/index.html](https://www.maine.gov/dep/land/watershed/nps_priority_list/index.html) for the most up to date criteria and list.

### A. NPS Priority Watersheds List

The purpose of the NPS priority watersheds list is to encourage NPS abatement work in watersheds most vulnerable to NPS pollution. The list is used to help prioritize DEP NPS water pollution control efforts and encourage local communities to take action to restore or protect waters impaired or threatened<sup>8</sup> by NPS pollution. Watersheds are evaluated using several guiding principles. The first principle is NPS priority waters must have NPS pollution as the primary source of impairment or threat. Watersheds with point sources or legacy pollutants as the primary source of pollution are not selected as priorities since the point source or legacy pollutant would have to be addressed for water quality to significantly improve. Second, watersheds are evaluated for the likelihood that NPS grant funds and support could make a difference in the water quality. Third, the number of NPS priority watersheds is kept reasonably focused so that resources can be invested where they are most needed and there is opportunity to effectively restore or protect waters vulnerable to NPS pollution.

Prioritization criteria have been developed to make selections as objective as possible, using monitoring data, analysis, and reports. To determine the waterbody-specific prioritization

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<sup>8</sup> The use of the term 'threatened' in this document refers to unimpaired waters that are subject to potential impacts from NPS pollution. The term is not intended to be used as described in Maine's Integrated Report, where waters are listed as 'threatened' for Clean Water Act §303(d) listing purposes if those waters are anticipated to fall into non-attainment with the next listing cycle of two years.

criteria, work groups consisting of DEP water resource professional staff knowledgeable in statewide lake, stream, or marine water quality and management issues review available waterbody data and information. Priority lists and knowledge from partner agencies and regional monitoring organizations are also consulted. Waterbody-specific prioritization criteria are summarized below and described in detail in Appendix 2 and online at [https://www.maine.gov/dep/land/watershed/nps\\_priority\\_list/index.html](https://www.maine.gov/dep/land/watershed/nps_priority_list/index.html).

In addition to the NPS Priority Watersheds List, there are several other lists that help guide DEP efforts and regulatory programs. This includes impaired waters, waters with approved TMDLs, Chapter 502 Lakes Most at Risk from New Development, and Urban Impaired Streams. These lists were used to help develop prioritization criteria for NPS Priority Watersheds List.

### Lake Watersheds

Impaired lakes are assessed as to whether reducing nonpoint sources would be likely to improve water quality over the long term. For lakes meeting water quality standards, threats to water quality and value of the resource are assessed. Threatened lakes include lakes with a significant negative trend in water clarity, sensitivity to additional phosphorus inputs, or recent increased threat to the watershed by development or agriculture. Lakes on the DEP Watch List are also considered threatened. High value lakes include public drinking water supplies, designated priorities by a partner agency, or lakes with outstanding water quality in need of protection. Over 2600 lakes have been considered in the evaluation process. As of the writing of this plan, **22 impaired lakes and 178 unimpaired lakes were included on the priority list.**



Algae bloom on Georges Pond, Franklin  
Photo Credit: GPA

### Stream Watersheds

An NPS impaired stream watershed is added to the priority list if it has a TMDL, is identified as a priority watershed by a partner agency or organization, is assessed as having a high risk of future development due to its proximity to a highway exit, or is identified as critical salmon habitat. A watershed is added to the threatened list if it is identified as a priority watershed by partners, is on the DEP Watch List, if recent increased impacts or significant potential threats from agriculture or development are evident, or if it has been identified as critical salmon habitat. As of the writing of this plan, **92 impaired streams and 76 threatened streams were on the priority list.**



Headwater of Mare Brook, Brunswick  
Photo credit: David Page

## Marine Watersheds

Impaired and threatened marine waters are assessed by the same criteria. A watershed is added to the impaired list if likely NPS sources are known and a TMDL is required. Watersheds are also added to the threatened list if they are a priority NPS impacted watershed of partner organizations, have documented water quality indicators linked to NPS pollution, are associated with a Maine Municipal Separate Storm Sewer Program (MS4) priority watershed, or are a coastal designated beach with insufficient data to determine if designated uses are attained. As of the writing of this plan, **28 impaired and 12 threatened marine waters were on the priority list.**



Spruce Creek, Kittery  
Photo credit: Rachel Bell

## B. DEP Targeted Watersheds

DEP conducts an annual evaluation that assigns elevated priority to a small subset of waters on the NPS Priority Watersheds List. DEP then identifies ways to focus staff or financial resources on restoration or protection efforts in these watersheds.

Criteria used to select DEP's targeted watersheds include those used to generate the NPS Priority Watersheds List as well as more strategic factors. Targeted watersheds have typically included impaired waters that DEP sees as having a high restoration potential based on water quality monitoring data and watershed needs. Targeted efforts also capitalize on strong local interest and support, leverage other available funding sources, jump-start new watershed efforts, prompt continued momentum on established projects and/or protect against an imminent NPS threat.

After a subset of priority waters is established, DEP considers and selects appropriate tools, such as NPS grants or staff services to prompt and complete additional protection or restoration work in these targeted watersheds. DEP may use a request for proposals (RFP) process to provide grants for projects in targeted watersheds. In addition, DEP may provide extra staff support in targeted watersheds. For example, DEP staff can conduct water quality monitoring and stormwater catchment mapping in an urban impaired stream to supplement an upcoming watershed-based planning effort in a targeted watershed. This investment of staff time leads to a better understanding of watershed stressors and needs and sets the stage for more effective watershed restoration efforts.

This internal prioritization process has been used on an informal basis for many years. DEP has provided direct funding and conducted water quality monitoring and catchment mapping in numerous watersheds. In the current plan, DEP also plans to identify a subset of most vulnerable lakes from the NPS Priority Watersheds list. Criteria for this listing will likely include



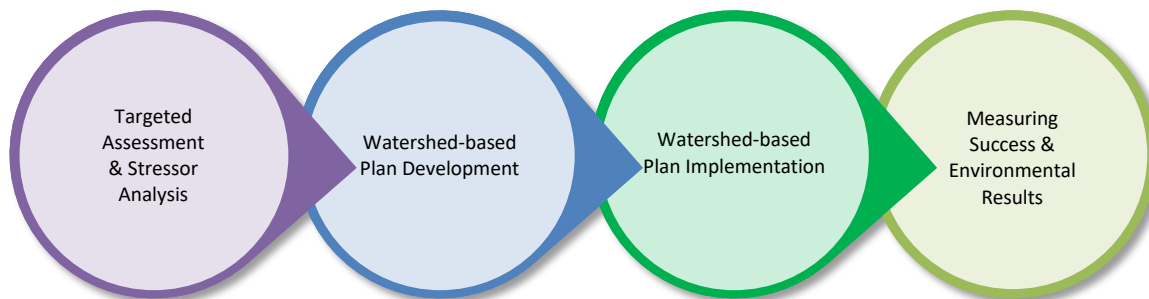
sediment chemistry, land use and sensitivity to climate impacts. Once developed, DEP will evaluate ways to prevent future impairments in these waters.

## VI. Maine Watershed-based Approach

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The watershed-based approach is a coordinating framework for identifying, prioritizing, and fixing water quality problems. This approach seeks to organize both public and private sector efforts within a specified geographic area. The watershed-based approach allows DEP to focus resources on the waterbodies and watersheds most in need and to follow a systematic approach to meet water quality and habitat goals. There are four steps to this approach:

**Figure 13. Maine DEP's Watershed-based Approach Steps.**



- **Targeted Assessment and Stressor Analysis** - Once DEP or local groups focus attention on a priority water, it is critical to gather the information necessary to accurately characterize the NPS impairments and/or threats. Water quality monitoring, watershed surveys and other watershed information should be evaluated to determine the principal stressors and NPS sources that contribute to the impairment or threat.
- **Watershed-based Plan Development** – Stakeholders produce a locally-supported watershed-based plan that describes actions needed for NPS mitigation and water quality protection or restoration. To be eligible for Section 319 funding, plans must include specific elements required by EPA and DEP.
- **Watershed-based Plan Implementation** - Plan implementation is usually coordinated by a local entity such as a municipality, Soil and Water Conservation District (SWCD), or a local watershed group. Implementation typically involves several phased projects with funding from a mix of grants and local sources.
- **Measuring Success and Monitoring Environmental Results** - In addition to implementing the NPS pollution reduction measures identified in the plan, implementation includes ongoing or periodic evaluation to assess whether the plan is meeting its goals and objectives.

## Abbreviated Watershed Approaches

Some watershed restoration and protection efforts may not incorporate all the steps outlined in this section. There is usually some element of assessment involved, but the planning process may be largely skipped, often because solutions are straight-forward and local groups plan to implement BMPs independently. Some examples follow:

- The source identification and fixes required to address a localized bacteria impairment may be quite simple, and elimination of the impairment may be accomplished without the development of a plan. Simply bringing the problem to the attention of the local sewer district or code enforcement officer would likely result in fixing the problem.
- Lake watershed surveys are often done informally and funded locally. They provide information to guide local efforts to address sources.
- BMP implementation work is also often done without formal planning. Municipalities may use local revenues or mitigation funds to address obvious pollutant sources. Locally supported Youth Conservation Corps (YCC) often provide labor to implement BMPs in lake watersheds. Sometimes this is part of watershed-based plan implementation, but often it proceeds independently due to local interest in water quality protection.



Documenting erosion during a watershed survey

## A. Targeted Assessment and Stressor Analysis

The success of restoration and protection efforts hinges on understanding the principal environmental stressors connected to the water quality impairment or potential impairment and the watershed conditions associated with those stressors. The types and extent of assessment and stressor identification needed for a given watershed varies depending on the type of waterbody and available existing information. See Appendix 4 for more detailed information about this step.

For most lakes on the NPS Priority Watersheds list, there is a long record of water quality data and an understanding that phosphorus loading is the primary environmental stressor. As a result, this step primarily involves identifying phosphorus sources to the lake and opportunities to reduce these sources. Watershed surveys are the most common tools used to meet these needs. Over 250 surveys have been completed over the past 35 years, and the methodology is documented in the DEP's *Citizen's Guide to Volunteer Lake Watershed Surveys* (2012). During a watershed survey, DEP and other partners train local volunteers to document phosphorus sources (primarily in the form of soil erosion problems), develop recommendations to mitigate the sources, and rate the cost and priority of the sites. The resulting survey report and list of

watershed problems can then be used to develop watershed-based plans and guide implementation efforts.

As tools are developed to assess development impact on littoral habitat and to identify measures to effectively address that impact, DEP will incorporate these tools into the watershed management program.

Environmental stressors are often more challenging to identify in stream watersheds. The goal for streams is to support a diverse aquatic community that is as close as feasible to the community that would be present in the absence of significant anthropogenic disturbance. There are many stressors that can contribute to failure to meet this goal. This is particularly true in urban streams where stressors can vary throughout the stream network. Stressors in a stream could include chloride and other types of toxicity, altered or frequently disturbed habitat, loss of habitat diversity, diurnal dissolved oxygen depression, temperature and very high or low stream flow. Once the most important stressor(s) are pinpointed, the specific causes or sources that result in each stressor (e.g., excessive storm flow, channel alteration, loss of floodplain or riparian cover, nutrient loading, polluted runoff) must be identified to guide efforts to mitigate the impacts of the stressors. Targeted assessment usually includes a combination of water quality screening, biological assessments, stream habitat and corridor assessments and watershed assessments. The DEP's Stream Stressor Guidance (2019) helps lead watershed managers through the stressor identification process for streams with aquatic life impairments.

Bacteria are often the primary concern and stressor in marine waters. However, identification of bacteria sources is often quite challenging. There are several tools available to identify and prioritize potential bacteria sources including water quality monitoring, microbial source tracking (MST), DMR sanitary surveys, smoke and dye testing, and canine detection of human bacteria sources. In hydrologically sensitive marine waters excessive nitrogen loading, some of which may come from land based nonpoint sources, can support excessive production of phytoplankton and/or epiphytic algal growth which may shade or weaken important benthic habitats, particularly eel grass beds, and may contribute to planktonic blooms of toxic algae.

## **B. Watershed-based Plan Development**

Effective planning is needed to guide successful watershed restoration and protection efforts. In general, a watershed plan describes actions needed to restore a waterbody that is impaired by NPS pollution or to protect unimpaired waters threatened by NPS pollution. An effective plan identifies and prioritizes the structural and non-structural practices necessary to address the environmental stressors and sources of NPS pollution that contribute to or threaten impairment of the water body. It identifies stakeholders and partners who can work on projects; pollutant reduction goals; cost estimates and strategies for funding plan implementation; and ways to measure results and water quality improvements. WBPs in Maine are typically written for a ten-year period.

## Key Components of Successful Plans

Plans should be developed for a geographically-appropriate scale so that the planned implementation efforts can lead to measurable reductions in pollution and the achievement of water quality goals. Plans should reference an area large enough to address all the major sources and causes of impairments and threats to the water body of concern. However, the area should not be so large that chances of successful implementation are not feasible or practical. Several parts of the planning process are particularly important in the development of effective watershed-based plans.

- **Stakeholder Involvement** - To ensure support for implementation of a watershed-based plan, the planning process should include as many individuals and organizations that will have a role in plan implementation as possible. Every effort should be made to involve key landowners, municipal officials, representatives from relevant state agencies (e.g., Transportation, Agriculture), local resource and conservation groups, and local experts (e.g., engineering consultants, planners, realtors). An effective way to enhance involvement is by recruiting these people for the project steering committee and, in watersheds with complex issues, for any subcommittees (e.g., technical advisory, education and outreach, ordinance development) where plan decisions are made. Strong local participation leads to local buy-in, which is essential for successful plan implementation.
- **Clear Definition of Plan Objectives** - Early in the plan development process, the steering committee should come to agreement on the water quality, ecological and community-related objectives that the plan will seek to achieve. In some instances, these will be dictated by state water quality standards, but other objectives may also be identified. Failure to come to agreement on the goals of the plan will make the process of plan development inefficient and unnecessarily difficult.
- **Financing** - For some watersheds the pollutant loading and other plan goals might be achieved with installation of a modest number of low-cost BMPs. In these watersheds, existing local resources and available grants might be able to achieve the plan goals in a ten-year period. More commonly, plans for impaired waterbodies (e.g., urban streams, highly agricultural watersheds, or lakes needing alum treatments) involve numerous and expensive BMPs that exceed existing funding resources. In such cases, planning projects need to consider other possible funding mechanisms (e.g., stormwater utilities, local bonds). Local involvement in this financial discussion is critical to ensure future public support of selected funding avenues.

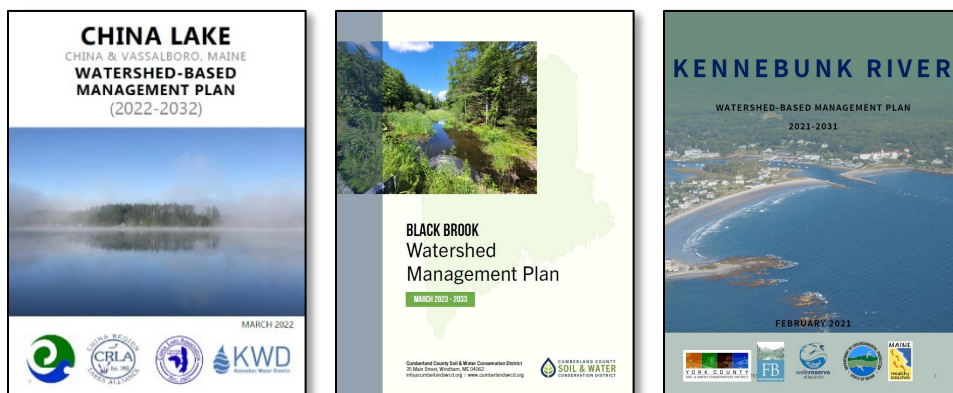
## EPA Nine-Element Plans

EPA requires a specific type of plan to guide Section 319-funded implementation work in impaired, but these more rigorous plans may also be appropriate for other watersheds with

complex issues that require a high level of assessment. These EPA plans are referred to as watershed-based plans or ‘*nine-element*’ plans because they must address nine key elements:

- An **identification of the causes and sources** that will need to be controlled to achieve the load reductions and goals in the plan;
- An **estimate of the load reductions expected** for the management measures in the plan;
- A **description of the NPS management measures** that will need to be implemented to achieve the load reductions estimated and an identification of the critical areas where those measures need to be implemented;
- An estimate of the **amounts of technical and financial assistance needed**, associated costs, and/or the sources and authorities that will be relied upon to implement the plan;
- An **information and education component** that will be used to enhance public understanding of the project;
- A **schedule** for implementing the NPS management measures;
- A description of interim, **measurable milestones** for determining whether NPS management measures or other control actions are being implemented;
- A **set of criteria** that can be used to determine whether loading reductions are being achieved over time and that substantial progress is being made towards water quality standards; and
- A **monitoring component** to evaluate the effectiveness of the implementation efforts

As of July 2024, there are **28 nine-element plans** accepted by the DEP (Table 4). Twenty-three of these plans are for impaired watersheds. Additionally, there are nine new plans being developed and four expiring plans that are being updated, all of which should be completed in FFY2024 or FFY2026. Of 28 plans, 12 are for freshwater streams; 14 plans are for lakes; and 2 plans principally address impacts to tidal waters.



**Table 4. Active Nine-Element Watershed-based Plans as of July 1, 2024**

Annabessacook Lake (2019)	Highland Lake (2020)
Arctic Brook (2016)	Kennebunk River (2021)
Black Brook (2023)	Kennedy Brook (2018)
Capehart Brook (2015)	Long Pond, Belgrade (2022)
China Lake (2022)	Long Pond, Parsonsfield (2022)
Cochnewagon Lake (2016)	Mare Brook (2022)
Concord Gully Brook (2015)	Medomak River (2020)
Cross Lake (2021)	Meduxnekeag River, Lower (2015)
East Pond (2018)	North Pond, Smithfield ((2015)
Georges Pond (2020)	Phillips Brook (2018)
Goodall Brook (2014)	Thatcher Brook (2015)
Goosefare Brook (2016)	Togus Pond (2022)
Great Pond (2021)	Unity Pond (2022)
Hart Brook (2019)	Wilson Pond (2023)

### Lake Watershed-based Protection Plans

EPA NPS Program Guidelines (2024) recognized cases where alternatives to nine-element plans may provide an effective approach toward achieving the water quality goals of Section 319-funded restoration or protection efforts. EPA outlined the elements required in alternative plans and the circumstances under which alternative plans may be accepted, including those pertaining to the protection of “priority healthy waters,” which includes high quality and/or other unimpaired waters.

DEP detailed the alternative planning approach for unimpaired lakes in the document, *Guidance for Maine Lake Watershed-based Protection Plans* (2013). Most, if not all, watershed plans for unimpaired waters are expected to follow this guidance, instead of the more intensive nine-element planning guidelines required for impaired waters. A recent NPS watershed survey or equivalent assessment is a major component of lake watershed-based protection plans. As such, lakes with surveys over five years old should not complete alternative plans until the survey data are validated or updated. As of July 1, 2024, the DEP has accepted **37 watershed-based protection plans** that will still be active in FFY2025 (Table 5).

### Other Types of Alternative Plans

In addition to alternative plans for protecting priority healthy waters, EPA (2024) listed six other situations where alternative plans may be warranted. Details on each of the situations are included in EPA NPS Guidelines (2024). DEP will work with partners and EPA to help guide development of any alternative watershed-based plans.

- When the impairment is caused by a change in physical conditions or is otherwise not pollutant-specific



- When responding to an NPS pollution emergency or urgent NPS public health risk.
- When addressing an isolated, small-scale water quality problem resulting from one or a few sources of pollution.
- When addressing only agricultural NPS sources in an NRCS NWQI watershed.
- When implementing an EPA-approved Tribal NPS management plan.
- Other circumstances.

**Table 5. Active Lake Watershed-based Protection Plans as of July 1, 2024.**

Abrams Pond (2017)	Messalonskee Lake (2022)
Adams & Knickerbocker Lake (2015)	Mousam Lake (2018)
Alamoosook Lake (2015)	North Pond, Buckfield (2016)
Androscoggin Lake (2023)	North Pond, Norway (2017)
Bauneg Beg Lake (2019)	North Pond, Smithfield (2017)
Beech Hill Pond (2024)	Panther Pond (2015)
Branch Lake and Harriman Pond (2022)	Parker Pond (2018)
Cobbossee Lake (2015)	Penneseewassee Lake (2020)
Cold Stream Pond (2016)	Sebago Lake & Crooked River (2015)
Damariscotta Lake (2015)	Square Pond (2020)
Ellis Pond (2015)	Taylor Pond (2024)
Forest Lake (2018)	Thompson Lake (2024)
Georges Pond (2018)	Torsey Pond (2020)
Great East Lake (2022)	Trickey Pond (2021)
Great Pond, Franklin (2016)	Varnum Pond (2018)
Hogan & Whitney Ponds (2018)	Watchic Lake (2020)
Lake Anasagunticook (2020)	Whetstone Pond (2018)
Long Pond Parsonsfield (2020)	Wilson Lake (2017)
McGrath Pond & Salmon Lake (2018)	



### Protection of Sensitive Streams Threatened by Urbanization

Recent improvements in GIS land cover and impervious layers as well as delineation of headwater catchment boundaries have made it possible to relatively accurately estimate the rate of increase in impervious cover in head water stream watersheds. This provides an opportunity to screen a large number of watersheds in order to identify the ones that are currently most threatened by urbanization. Follow up assessment of the streams identified in this process can determine, to a limited degree, the specific nature of the threat, the streams current condition and apparent sensitivity to the threat, and the most likely stressors associated with the threat. This information can then: inform decisions about application of the State's Stormwater Management Law; support watershed specific outreach programs to the associated municipalities (planning boards, conservation commissions, etc.) to encourage and support adoption of ordinances and practices that will address the relevant stressors; and, potentially, support development of development of watershed-based protection plans for the selected watersheds.

## C. Watershed-based Plan Implementation

The next step of the watershed-based approach is to implement the WBP and actions that ultimately protect and/or restore the waterbody. WBPs are implemented by local entities such as municipalities, SWCDs or local associations. Plan implementation consists of a suite of actions described in the watershed-based plans. Actions may include getting ordinances passed, having the public works department install BMPs, retrofitting or installing structural stormwater BMPs, restoring riparian and aquatic habitat and implementing public outreach programs. Plan implementation usually takes place through a series of phased projects over a period of ten or more years.



Implementing a watershed-based plan:  
Living shoreline stabilization on Sebago Lake

Typical funding sources for implementation is from municipalities, CWA s. 319 grants from EPA and other federal funds, private grants, lake associations, and in certain cases stormwater utilities. In instances where the source reduction and prevention measures are relatively simple, and the cost is low, plans may be substantially implemented with financial support from grant programs (e.g., EPA s. 319 grants) and local match. Plans aimed at protecting threatened lakes often fall into this category. When the measures identified in the plan are more complex

and expensive (e.g., restoration of an impaired urban stream, alum treatment of an impaired lake), funding mechanisms will likely need to be more diverse and may include some level of local financial support such as a stormwater utility or mitigation fund. In either case, plan implementation is likely to involve several phased projects. It may also involve the establishment of a local authority such as a watershed management district or a stormwater utility district to implement the plan over an extended period.

## Streams

In recent years, most of the NPS implementation work in stream watersheds has focused on impaired streams. This includes rural streams impaired by agricultural sources and urban impaired streams. Restoration work in rural stream watersheds usually includes strong involvement from local farmers, the SWCD and US Department of Agriculture (USDA)'s Natural Resource Conservation Service (NRCS) and includes construction or adoption of agricultural BMPs on a small number of farms. NRCS funding is also often leveraged to stretch resources and get more work done on the ground. Since 2013, the National Water Quality Initiative (NWQI) partnership between DEP, EPA and NRCS has also helped focus resources on five watersheds in Maine. This includes the watersheds of Cross Lake, Sebasticook Lake, Unity Pond, Meduxnekeag River, and Sheepscot River.

Restoration work in urban streams tends to include a diverse set of actions and partners. Municipalities typically start plan implementation with the 'low hanging fruit,' such as easy fixes on municipal properties and on outreach efforts. Larger more expensive aspects of the plan (e.g., major structural retrofits, ordinance implementation, and creation of stormwater utilities) are often phased in over time as funding sources and political support are secured. This has been done by reaching out to the planning board and elected officials and incorporating relevant portions of WBP into the municipality's comprehensive plan. Restoration of urban streams may take decades and millions of dollars due to the complexities of multiple pollution sources and fixes.

## Lakes

Lake WBP implementation is usually less complex than urban stream implementation because phosphorus is often the only pollutant of concern. Implementation usually consists of BMP installations at eroding sites and/or agricultural properties, changes in ordinances, creation of or continued support of a Youth Conservation Corps, and outreach. Although municipalities are also involved in lake watershed-based plan implementation, often the local lake association takes a leadership role and provides fuel for political support and action. The duration of implementation can range from a few years to decades, depending on the size of the watershed and amount and types of phosphorus sources.

For lakes that support intense cyanobacteria blooms, internal phosphorus loading from lake sediments is likely a significant or even dominant NPS source. For these lakes the WBP will include an evaluation of relative contribution of external and internal sources to the lake's annual phosphorus load. If internal sources account for a substantial portion of the load the WBP will likely recommend actions to address them. For some lakes with internal loading (e.g.,

Sabattus Pond and Sebec Lake), water levels may be lowered during late summer algal blooms to help export sediment derived phosphorus and prevent its return to the bottom sediments, thus gradually reducing internal loading over time. In some circumstances, treatment of the lake sediments with aluminum compounds (also known as an alum treatment), may be appropriate. In-lake treatments should always be preceded and accompanied with widespread installation and maintenance of BMPs to address external watershed sources of phosphorus in order to sustain the benefit of the treatment. In instances where the external load is particularly high and from sources that can be substantially reduced (e.g., a watershed with significant amounts of active agriculture), it is important to aggressively address these sources before implementing an alum treatment. The lake's water chemistry, sediment chemistry and physical characteristics need to be carefully considered to evaluate whether an alum treatment would be effective and provide lasting benefits (typically targeted for 15-20 years). Even when these considerations are met, alum treatments can be prohibitively expensive depending on the dosing and the size of the area needing treatment and will depend largely on local funding or contributions from a State fund if available.

### **Marine Waters**

Compared to lake and stream watersheds, watershed-based implementation efforts in marine and tidal waters have been limited and focused principally on pathogen pollution. In recent years, some coastal watershed projects have also tried to address land-based sources of nitrogen loading that are suspected as a driver for blooms of the macroalgae *Ulva* on tidal mudflats (e.g., Biddeford Pool, Spruce Creek). DEP's NPS program supports many urban impaired stream implementation projects in coastal watersheds. While the principal emphasis of these projects is to address aquatic life impairments in the nontidal portions of the streams they often include measures that will address nutrient and pathogen loading to downstream tidal waters and embayments.

The DEP's Maine Healthy Beaches (MHB) program works with communities to monitor bacteria levels at 65 beaches. NPS has been identified as a probable pollution source in many of the beaches with high bacteria levels. Several coastal communities regulated through the Municipal Separate Storm Sewers Systems (MS4) program have also targeted coastal stream watersheds for the stormwater abatement work required through their MS4 permits. Although implementation work funded through 319 grants cannot be used to complete MS4 permit requirements it can complement their efforts to address stormwater and bacteria impacts.

The Division of Environmental Assessment's Marine Unit is developing aquatic life criteria for coastal and marine waters and is also working with partners to develop and refine our ability to identify coastal embayments and estuaries where land-based nitrogen sources are significant contributors to current or possible future eutrophication. Both of these efforts will likely result in significant increases in more coastal watershed specific NPS projects.

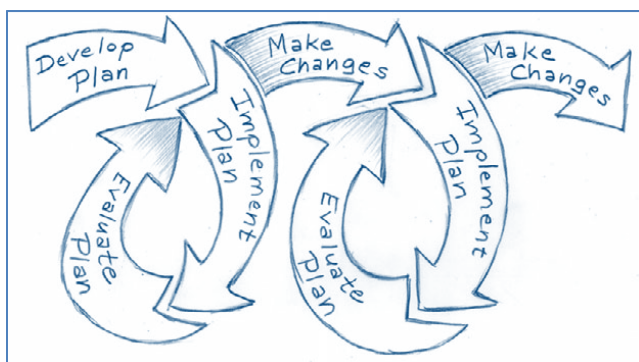
## **D. Measuring Success and Monitoring Environmental Results**

### **Updating Watershed Plans**

Restoration and protection of Maine’s waters is an ongoing process (Figure 13). Restoration of impaired waters can take several decades, and protection work is never done. As such, watershed plans all become outdated over time. Plans should be periodically evaluated and updated so they remain relevant and useful. New issues may be identified, and alternative strategies may become available. In addition, as a plan is implemented the timeline, milestones and costs may need to be adjusted to be more realistic.

Local groups may choose to update their plans at any time. However, watershed plans in Maine are typically written to be implemented over a ten-year period. DEP’s *Guidance for Updating Maine Watershed-based Plans* (2017) provides direction for groups as they update their aging or expired plans. In many cases, the update process is not overly involved, especially if the groups have been actively using and updating their NPS Site Tracker. Otherwise, the update process may include a watershed survey or other assessments to identify current NPS sources. Twelve of the 28 nine-element plans and 23 of the 37 protection plans listed in Tables 4 and 5 will need to be updated between 2025-2029.

**Figure 14. Watershed Planning Process (EPA, 2008)**



### Environmental Monitoring

Watershed-based plans include a monitoring component to assess progress toward the plan’s restoration or protection goals. This monitoring component typically involves estimating pollutant loading reductions and conducting water quality monitoring to track progress over time. Some of this work can be conducted by local stakeholders, and the resulting information can be used to assess incremental progress over time. For example, Trout Brook’s monitoring efforts include water quality monitoring to look for improvements following the mitigation of a chloride source to the stream. In addition, biomonitoring using kicknet methods is being conducted by local volunteers to determine if the stream’s macroinvertebrate population is improving as BMPs are installed in the watershed. Local groups also rely on DEP’s monitoring programs to assess water quality conditions and report on the official attainment status. See Section XI for more detailed information on monitoring environmental success.



Water quality monitoring on Mare Brook

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## VII. Statewide NPS Control Strategies by NPS Category

Clean Water Act section 319(b) requires states to implement measures and practices to control the states' specific NPS pollution categories and sub-categories in order to attain and maintain water quality standards. Maine's NPS Management Program has identified six major NPS categories in the State: Agriculture, Developed Areas, Transportation, Forestry, Onsite Wastewater Disposal Systems and Hydrologic and Habitat Modification (Table 6).

This section describes these six major NPS categories and provides descriptions of the associated management strategies, core law/regulatory authority, NPS pollution sources, BMP guidelines, and programs and projects. Refer to Section X for tables listing NPS Program five-year objectives, actions and milestones for each major NPS category.

In addition to these major NPS sources, the plan identifies also describes three other categories of issues important to Maine's NPS Program: climate change adaptation; emerging NPS issues that may be further explored and addressed over the next five years; and other NPS categories that are addressed primarily through regulatory and nonregulatory programs.

**Table 6. Major NPS Categories, Emerging NPS Issues and Other NPS Issues**

Major Nonpoint Source Category	State of Maine Lead Agency
<b>Developed Areas</b>	Department of Environmental Protection
<b>Agriculture</b>	Department of Agriculture, Conservation & Forestry
<b>Transportation</b>	Department of Transportation
<b>Forestry</b>	Department of Agriculture, Conservation & Forestry
<b>Onsite Wastewater Disposal Systems</b>	Department of Health & Human Services
<b>Hydrologic and Habitat Modification</b>	Department of Environmental Protection

### Emerging Nonpoint Source Issues

6PPD-quinone

Perfluoroalkyl and Polyfluoroalkyl Substances (PFAS)

Aboveground and Underground Storage Tanks

Brownfields

Marine Debris, Microplastics, Trash

### Other Nonpoint Source Issues

Boatyards, Marinas and Recreational Boating

Landfills



## A. Developed Areas

### Lead Agency: Maine Department of Environmental Protection (DEP)

#### Management Strategies

Encourage use of erosion and sediment controls and urban and rural runoff BMPs that address priority pollutants (e.g., bacteria, nutrients, and sediments) through administration of land use laws and promotion of voluntary measures. Strategies include continuing to administer the Storm Water Management Law and Site Location of Development Laws; ensuring stormwater and ESC BMPs are in place and being maintained on permitted development sites; continuing to update the Stormwater BMP Manual to include latest technology options for stormwater treatment (including green infrastructure and low impact development); developing and implementing strategies to reduce the use of deicing salts and prevent its contamination of groundwater and stream baseflow; continuing to train town officials, engineers, developers on ways to reduce NPS impacts; and limiting the sale and use of certain products (e.g., fertilizer, pesticides, coal tar sealants, and non-biodegradable plastics used in erosion and sediment controls) that can impact water quality. Urban runoff activities and practices not specifically required under a National Pollutant Discharge Elimination System (NPDES) program permit will be considered as needed.

#### Core Law / Regulatory Authority

DEP is responsible for regulating point sources through the wastewater discharge law (38 M.R.S. Chapter 3, §413), which requires that a license be obtained for the discharge of pollutants to a stream, river, wetland, or lake of the state, or to the ocean. DEP also regulates nonpoint sources associated with development activity through administration of the Erosion & Sedimentation Control Law (38 M.R.S. Chapter 3, §420-C), the Storm Water Management Law (38 M.R.S. §420-D), the Site Location of Development Act (38 M.R.S. Chapter 3, §§481-490), and the Natural Resources Protection Act (38 M.R.S. Article 5-A). A major purpose of these laws is to protect Maine's water resources. This is accomplished by requiring developers to use proper erosion and sedimentation control and storm water treatment measures. In addition, DEP promotes voluntary use of best management practices for safe lawn care practices through signage (required under 38 M.R.S. §419) and other outreach. In 2019, the Maine legislature passed 38 M.R.S. §419E, which prohibits the sale and application of coal tar sealant products on driveways and parking lots starting in 2023. Maine is also a delegated state and administers the permit requirements under the NPDES program. Maine's NPDES Stormwater Program requires effective E & S control during construction via the Construction General Permit; pollution prevention measures for certain activities under the Multi-Sector Industrial Permit program; and a variety of stormwater management and treatment requirements for densely populated areas under the Municipal Separated Storm Sewer System (MS4) General Permit. Maine's Land Use Planning Commission requires stormwater management and phosphorus controls in lake watersheds in unorganized townships via its zoning and development review authorities. In addition to these State and Federal laws, most municipalities require at least some management of stormwater via municipal subdivision ordinances and many municipalities

regulate stormwater via Site Review, Land Use, Phosphorus Control and/or Zoning ordinances.

#### **Developed Areas & NPS Pollution Sources**

The Maine Stormwater Law's Chapter 502 rules list 35 urban impaired streams that fail to meet water quality standards because of stormwater runoff impacts from developed land, as well as the habitat impairments resulting from the channelization, loss of flood plain and inadequate stream crossings often associated with that development. Phosphorus in stormwater runoff from less intensively developed areas also threatens the trophic state of many lakes. Development impacts threaten water quality in many more waters throughout the State. Pervious natural landscapes like forests trap rainwater and snowmelt and allow water to slowly filter into the ground. Impervious landscapes like roads, parking lots, and buildings prevent rain and snowmelt from slowly percolating into the ground. Water instead flows across the land, and the runoff carries sediment, nutrients, pet waste, fertilizer and other pollutants. Large volumes of fast-moving runoff erode stream banks, widen stream channels, increase sediment loads, and thereby impact fish and other aquatic life. Removal or alteration of the natural composition of riparian buffers can result in unstable streambanks, compromise filtering of stormwater runoff and degrade habitat and food sources required by aquatic organisms. Chloride toxicity from application of deicing salts, particularly in groundwater and urban/urbanizing streams but to some degree in nearly all freshwaters, presents an increasingly critical and difficult challenge.

#### **BMP Guidelines**

For erosion and sedimentation control:

[www.maine.gov/dep/land/erosion/escbmeps/index.html](http://www.maine.gov/dep/land/erosion/escbmeps/index.html)

For stormwater management:

<http://www.maine.gov/dep/land/stormwater/stormwaterbmeps/index.html>

For pesticide and fertilizer use on turf:

[https://www.maine.gov/dacf/php/pesticides/documents2/bmeps/turf\\_bmeps\\_Spring\\_2009.pdf](https://www.maine.gov/dacf/php/pesticides/documents2/bmeps/turf_bmeps_Spring_2009.pdf)

BMP Types	Areas Addressed by BMPs
<b>Non-Structural (site planning)</b>	<p>Site specific erosion and sedimentation control plans, including temporary and permanent erosion control measures; Low Impact Development (maintain natural hydrology and drainage patterns, limit areas of clearing and grading, minimize impervious area, minimize directly-connected impervious area, manage stormwater at its source); Site design that reduces the need for application of deicing salts; Use contractors certified in ESC; Inspection and maintenance including 5-year certification; Good housekeeping practices, including sweeping, Yardscaping program (lawn care practices and lawn alternatives, <a href="https://www.cumberlandswcd.org/yardscap">https://www.cumberlandswcd.org/yardscap</a>), turf</p>



	BMPs for fertilizer and pesticides, and pet waste removal.
<b>Structural (groundwork)</b> Provide treatment measures to mitigate increased frequency and duration of channel erosive flows; allow for infiltration; provide treatment of pollutants in stormwater and/or mitigate potential temporary impacts; stabilize exposed soil.	Vegetated buffers; Infiltration BMPs; Gravel Wetlands; Under-drained soil filters; Wet Ponds; Detention storage for channel protection and flood control; Infiltration of roof runoff; Stormwater control measures that minimize or mitigate the impacts of chloride on receiving water biota; Proprietary treatment systems; Sediment barriers, seed/mulch and other erosion control BMPs.

Program/Project	Description
<b>Administration of laws</b>  <b>Erosion &amp; Sedimentation Control Law</b>  <b>Site Location of Development Law</b>  <b>Storm Water Management Law</b>	<p>Maine DEP has regulatory authority over land use activities through five main statutes:</p> <p>The Erosion and Sedimentation Control Law is a non-reporting program that applies to all development activity. DEP provides training to developers, consultants and contractors on how to conduct activities in a way that complies with the law's requirement of preventing erosion and sedimentation at property boundaries.</p> <p>The Site Location of Development Law applies to larger projects that may have a substantial effect on the environment and include projects that occupy more than 20 acres or create three acres or more of structure (impervious areas).</p> <p>The Storm Water Management Law regulates development activity that disturbs one acre or more of land both during and after construction. Stormwater treatment BMPs are required for projects that involve more than 5 acres disturbance; 20,000 square feet of impervious area in watersheds of most at risk lakes or urban impaired streams; or 1 acre of impervious area in any other watershed.</p> <p>DEP adopted Stormwater Rules (Chapter 500) that apply to projects under both the Storm Water and Site Location Laws. These rules specify what types of BMPs must be utilized. The rules require inspection and maintenance of BMPs, including a provision that developers must certify every five years that the required BMPs are in place and being properly maintained. The DEP is in the process of a major revision of Chapter 500. The</p>

<p><b>Mandatory Shoreland Zoning Act</b></p> <p><b>Natural Resources Protection Act</b></p>	<p>revised rule will not go into effect until the fall of 2025 at the earliest.</p> <p>The Mandatory Shoreland Zoning Act (MSZA), administered by municipalities with DEP oversight, requires municipalities to adopt, administer, and enforce local ordinances that regulate land use activities in the shoreland zone. The shoreland zone is comprised of all land areas within 250 feet of the normal high-water line of any great pond or river; upland edge of a coastal wetland; the upland edge of defined freshwater wetlands; and all land areas within 75 feet of the normal high-water line of certain streams. The purposes of MSZA are: to prevent and control water pollution; to protect fish spawning grounds, bird and wildlife habitat; to protect buildings and lands from flooding and erosion; to protect archeological and historic resources; to protect fishing and maritime industries; to protect freshwater and coastal wetlands; to control building sites, placement of structures and land uses; to conserve shore cover, and visual as well as actual points of access to inland and marine waters; to conserve natural beauty and open space; and to anticipate &amp; respond to impacts of development in shoreland areas.</p> <p>NRPA requires a permit for any activity that is in, on, over, or adjacent to protected natural resources, which include wetlands, rivers, streams, brooks, ponds, significant wildlife habitat, and sand dune systems. Activities regulated under NRPA include dredging, bulldozing, removing or displacing soil, sand, vegetation or other materials; draining or otherwise dewatering; filling, including adding sand or other material to a sand dune; or any construction, repair or alteration of any permanent structure. Protected natural resources include streams, lakes, freshwater and marine wetlands, sand dunes and significant wildlife habitats.</p>
<p><b>Contractor Certification Program</b></p>	<p>DEP has had a voluntary certification program for contractors on proper erosion and sedimentation control since 1997. In 2013, the program became mandatory for any contractor doing earth-moving work within 75 feet of streams and within 250 feet of other water bodies. As a result, the number of certified contractors in the state has risen from approximately 600 to nearly 3,000.</p>
<p><b>Promotion of safe products and practices for homeowners</b></p>	<p>In an effort to reduce the use of fertilizer containing phosphorus in lake watersheds, Maine enacted a law in 2008 that restricts the sale of fertilizer with phosphorus to locations where signs are placed promoting the use of phosphorus-free fertilizer except for</p>

	<p>new lawns, or where a soil test indicates a phosphorus deficiency (38 M.R.S. §419).</p> <p>The Maine Yardscaping Partnership, overseen by the Maine Board of Pesticides Control at DACE, promotes healthier lawn care practices and less reliance on water, fertilizer and pesticides. <a href="https://www.maine.gov/dacf/php/pesticides/yardscaping/index.html">https://www.maine.gov/dacf/php/pesticides/yardscaping/index.html</a></p> <p>In 2019, Maine banned the sale and application of coal-tar sealants on driveways and parking areas due to the toxic nature of the product's polycyclic aromatic hydrocarbons (38 M.R.S. §419-E). Beginning in October 2023, wholesale and retail sales of coal-tar sealant products were prohibited, and application of coal-tar sealant products will be prohibited beginning in October 2024. <a href="https://www.maine.gov/dep/land/watershed/coal-tar/index.html">https://www.maine.gov/dep/land/watershed/coal-tar/index.html</a></p>
<b>Training for municipal officials, engineers and developers</b>	<p>Communication with towns and the regulated community is vital to ensure compliance with regulatory requirements for erosion control, shoreland zoning, and stormwater management. The DEP provides training for the affected groups through the Nonpoint Source Training and Resource Center (NPSTRC), which conducts spring and fall training classes on erosion control, and periodic conferences and workshops on stormwater management, as well as other related topics. In addition, DEP works with municipal officials, including town engineers, on latest guidance on the regulatory program. This includes providing information on BMP manual updates to towns delegated to administer the state stormwater program.</p>

## B. Agriculture

### Lead Agency: Department of Agriculture, Conservation and Forestry (DACF)

#### Management Strategies

Promote widespread use of agricultural BMPs for all agricultural operations through administration of the Nutrient Management Act and the Agricultural Compliance Program. Reduce the impact of agricultural operations on water bodies by promoting the continued implementation of site-specific BMPs. Focus efforts to help ensure that agricultural operations: have Nutrient Management Plans, if required; achieve updates to these Plans prior to expiration; and, obtain or maintain a Livestock Operations Permit, as required by statute. Continue to provide technical assistance to farms when needed, and continue to promote and conduct farmer educational programs related to BMPs and protecting water quality.

#### Core Law / Regulatory Authority

The NPS Management Program statute (38 MRS §410 (J)) charged DACF with responsibility to develop and promote use of agricultural BMPs to prevent nonpoint source pollution. DACF has developed voluntary and regulatory programs and provided services that help farmers use BMPs. DACF has responsibility to regulate agricultural activity to control nonpoint source pollution through administration of the Right-To-Farm Law (7 MRS §151 et. seq.), the Nutrient Management Law (7 MRS §4201 et. seq.), the Healthy Soils Program (12 MRS §352 et. seq.), the Farmers Drought Relief Grant Program (7 MRS §220-A et. seq.) and other statutes.

#### Agriculture & NPS Pollution Sources

DEP's 2018/2020/2022 Integrated Report lists agriculture as a source of impaired water quality for 16 lakes (22,900 acres) and 522 miles of rivers and streams. NPS pollutants of concern associated with agriculture include bacteria, soil, fertilizers and pesticides. According to the 2022 USDA Census of Agriculture, the reported number of Maine farms decreased by 7 percent to 7,036 from 2017 to 2022. However, the number of farms with sales of over \$ 10,000 has increased by 11 percent. The average farm size increased slightly from 172 to 174 acres. Over half of reported farmland is forested. Total cropland decreased from 472,508 acres to 445,379 acres. Maine leads the world in harvest of wild blueberries and is a significant producer of potatoes and maple syrup. While the number of dairy farms have declined, milk production is still a leading component of Maine's agricultural economy.

#### BMP Guidelines

Manual of Best Management Practices for Maine Agriculture (January 2007)

[https://www.maine.gov/dacf/php/nutrient\\_management/documents/BMP-Manual-Final-January-2007.pdf](https://www.maine.gov/dacf/php/nutrient_management/documents/BMP-Manual-Final-January-2007.pdf)

BMP Types	Areas Addressed by BMPs
<b>Sediment and Erosion Control BMPs</b>	Contour plowing; row/strip/rotated/cover crops; buffer strips, crop residue, water diversions and stabilization; sediment basins; livestock access and stream crossings; farm equipment crossings.
<b>Manure Management</b>	Application rates/timing; buffers/setbacks; value; non-application areas; restrictions; storage, composting, cover crops and crop rotations, soil erosion; pest control, bedrock outcrops, shallow soils; barnyard and feedlot runoff; water access, soil infiltration capacity.
<b>Pest Management</b>	Field selection, disease-free seeds; crop disease resistance; natural pest controls; biological controls; cultural controls; pest scouting; weed control; pesticide application plan; calibrate pesticide equipment; pesticide label directions/safety data; federal/state laws; certified pesticide applicator; mixing/loading/storing/disposing of pesticides; spray drift; crop rotation and pesticides; crops and weeds; mechanical weed control; determining application levels; pesticide application techniques; weather conditions.
<b>Nutrient Management</b>	Application levels and uniformity; background nutrient/organic matter/soil amendment levels; determining yield; split fertilizer application; fertilizer release rate; soil characteristics; equipment calibration; accurate records; irrigation; crop rotation; cover crops; fertilization; plant tissue testing; leachable nutrients; soils to avoid applications; soil erosion; buffer strips; organic matter content; compost excess or spoiled crops. A seven-member Nutrient Management Review Board (NMRB) reviews and approves all proposed amendments to the Nutrient Management Rules and hears appeals of the commissioner's decisions regarding site-specific BMPs prescribed for a farm, livestock operations permits, and the issuance of variances to nutrient management planning and the winter manure spreading ban. <a href="http://www.maine.gov/dacf/php/nutrient_management/index.shtml">www.maine.gov/dacf/php/nutrient_management/index.shtml</a>
<b>Irrigation Management</b>	Irrigation water management plan for irrigation from streams and rivers.
<b>Livestock Management</b>	Housing facilities, waste management structures; environmental factors; livestock fencing; pasture and forage crop management.
<b>Odor Control</b>	Manure storage structures; coordinating with neighbors; cover field-stacked manure; incorporate manure; sod crop applications; weather conditions; injection; spreading activity & rates; minimize spillage; even application; solid manure; composting.
<b>Insect Management</b>	Proper sanitation; spilled feed and spoil piles; dead animals; feed bunks; waterers; animal diet; ventilation; poultry house manure removal; empty poultry houses; droppings boards; natural insect

	enemies; utilize physical fly removal methods; use pesticides sparingly and properly; use proper pesticide application techniques; pesticide feed additives; cover manure piles; compost; transporting manure; controlling barnyard exercise lots.
<b>Noise Control</b>	Irrigation pumps; farm equipment.
<b>Farm Management</b>	Animal carcass disposal, equipment exiting farm fields; watering livestock, livestock waterway crossings, insect and disease infestations; aesthetics; vermin control; wild animal damage; residual usage; feed storage; milk room waste; silage management; management of spoiled or excess crops; dust control; financial record keeping; soil health management; crop production guides.

Program/Project	Description
<b>Administration of Nutrient Management Law</b>	The law requires that all farms with 50 animal units or more develop and implement a nutrient management plan (NMP). Also, an NMP must be developed for farms that use over 100 tons of manure not generated on the farm, farms that have a manure-related complaint, and farms that utilize sludge. The law requires new or existing livestock operations with greater than 300 animal units, that meet the EPA definition of a Concentrated Animal Feeding Operation (CAFO), or that plan on expanding beyond their land base or manure storage capacity, to obtain Livestock Operation Permits (LOP). The law prohibits the spreading of manure between December 1 <sup>st</sup> and March 15 <sup>th</sup> . Nutrient Management Rules establish standards for NMPs, the process for certifying persons to write and approve NMPs; requirements for obtaining a livestock operations permit; and procedures for implementing the law. <a href="http://www.maine.gov/dacf/php/nutrient_management/index.shtml">www.maine.gov/dacf/php/nutrient_management/index.shtml</a>
<b>Agricultural Compliance Program</b>	This program handles complaints concerning agricultural activities and assists with inspections required for issuance of LOP and CAFO permits. Staff conduct investigations to determine whether BMPs are being used, work with farmers to develop site specific BMPs, if necessary, to correct the situation, and take enforcement action as needed. Site visit reports are shared with DEP and compiled into annual summary reports. The Compliance Program also provides technical assistance to local communities or DEP related to agricultural problems and BMPs called for in watershed-based management plans.
<b>Soil &amp; Water Conservation Districts</b>	SWCDs are agencies of the state that help farmers, landowners, municipal officials, and others conserve and utilize their soil, water, forestry and wildlife resources by providing local solutions

	<p>to local natural resource problems. SWCDs are non-regulatory entities well-known for their ability to resolve issues efficiently at low cost. Districts reach out to local stakeholders in the community to determine priorities and set a course of action to solve natural resource problems. This is done by offering technical assistance and educational programs to these groups. These actions help prevent and reduce polluted runoff to waterbodies from agricultural and urban sites and protect drinking water sources. Districts collaborate with DEP on many NPS pollution prevention projects to achieve these positive outcomes.</p>
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## C. Transportation

### Lead Agency: Maine Department of Transportation (MaineDOT)

#### Management Strategies

Continue to implement and promote use of erosion and sedimentation control (ESC) plans and the installation of effective ESC measures with the goal of water quality protection at all transportation projects with soil disturbance through the administration of the Stormwater Management Memorandum of Agreement (MOA) under Stormwater Management Rules and Chapter 500. Continue to apply post-construction best management practices through the Stormwater MOA in compliance with the Stormwater Law and the MS4 permit for new and re-development projects. Implement good housekeeping practices and manage hazardous materials and winter road sand/salt to reduce contamination of ground and surface waters. Promote and assist in training for the DEP Erosion Control Contractors Certification Program for all state, town, and contracted construction and maintenance crews.

The Maine Local Roads Center (MLRC) provides training, technical assistance and information to municipal and county staff responsible for constructing, maintaining, and managing local roads and bridges. The DEP's NPS Training Center (NPSTC) provides training and information for maintaining private gravel roads.

#### Core Law / Regulatory Authority

The NPS Program statute (38 M.R.S. §§ 410-J) charged MaineDOT with responsibility to develop BMP guidelines for transportation-related activities, encourage all state and federally funded projects to use BMPs, and provide technical assistance to municipalities. Chapter 574 governs the siting and operation of road salt and sand-salt storage areas. The program is a cooperative effort of MaineDOT and DEP. The Storm Water Management Law (38 M.R.S. §420-D) also includes provisions to manage runoff from some new roads.

#### Transportation & NPS Pollution Sources

MaineDOT has capital oversight of 8,818 miles of roadways (Interstate highway, principal arterials, and collector roads) and is responsible for maintaining 7,821 miles of those roadways. Erosion during and after construction of roads, highways, and bridges, can contribute sediment to waterbodies, which can adversely impact water quality. Contaminants including heavy metals, oils, other toxic substances, and debris from construction traffic and spillage can be absorbed by the construction site soils and carried with runoff water offsite to lakes, rivers, and marine waters. Inadequate road stream crossings can disrupt stream channel morphology, cause streambank erosion, and prevent natural passage of fish and other aquatic organisms. Winter road maintenance (salting and sanding, salt storage) is a significant source of chloride and sediment loading to fresh waters.

There are over 8,000 miles of private roads in Maine. Improper construction and maintenance of these 'camp roads' has long been recognized as a significant issue, particularly in lake watersheds. In DEP's Integrated Report, two lakes are listed with impairments associated with unpaved roads and trails, and camp roads typically account for many of the high impact sites identified in volunteer lake watershed surveys. Camp roads



contribute a disproportionate amount to lake water quality problems due to their proximity to the water and their sub-standard construction, which is largely because most camp roads were originally intended to only provide seasonal access. Typical problems identified on camp roads through DEP-supported watershed surveys include erosion of the road surface, road shoulders and ditches; unstable and undersized culverts; poor road surface material; and inadequate ditch size or lack of ditches. Many of these camp road problems can also be found on state and municipal roads, but there are fewer resources available to property owners on private roads.

#### **BMP Guidelines**

MaineDOT Best Management Practices for Erosion and Sedimentation Control

<https://www.maine.gov/mdot/env/documents/bmp/BMP2008full.pdf>

Maine Environmental Best Management Practices Manual for Snow and Ice Control

<https://www.maine.gov/mdot/mlrc/docs/technical/2015-08-17-June2015FINALversion.pdf>

Gravel Road Maintenance Manual

[https://www.maine.gov/dep/land/watershed/camp/road/gravel\\_road\\_manual.pdf](https://www.maine.gov/dep/land/watershed/camp/road/gravel_road_manual.pdf)

BMP Types	Areas Addressed by BMPs
<b>Non-Structural (planning)</b>	<p>Clearly define transportation objectives and responsibilities; use sound construction planning and techniques; anticipate general and seasonal site conditions; plan to minimize and stabilize exposed soils during construction and for the long term; factor in and protect the integrity of nearby waterbodies; develop and implement a plan to safely handle on-site hazardous materials.</p> <p>Good Housekeeping: Annual street and Park and Ride sweeping and catch basin cleaning. Implement hazardous and universal waste management practices on all maintenance facilities.</p> <p>Handling of Hazardous Materials: Provide guidance and training. Provide containment for oil/gas/coolants to avoid leaks &amp; spills.</p> <p>Salt Reduction: Provide training and equipment to reduce the use of sand and salt use. Cover sand/salt piles.</p>
<b>Structural (groundwork)</b>	<p>Minimize erosion during construction by protecting exposed soil, diverting or detaining runoff, stabilizing all water conveyances and install sedimentation control practices; install post-construction BMPs; and reduce sand/salt use.</p> <p>Bridges and Culverts: Replace deficient structures with those that are sized appropriately for long-term flows and stability of the crossing, and in keeping with new science (e.g., revising BMP standards and specifications to accommodate extreme weather events).</p> <p>Wetland Crossings: Protect existing water movement.</p> <p>Park and Rides: Provide stormwater management for quantity and quality of the runoff.</p>

Program/Project	Description
<b>Program Management &amp; Partnerships</b>	The MaineDOT Environmental Office maintains one full-time environmental engineering position and one environmental planner to coordinate all surface water quality efforts. Seven environmental specialists work in the field to ensure ESC compliance and ground delivery of the program.
<b>MaineDOT Erosion and Sedimentation Control Manual</b>	MaineDOT revised its Best Management Practices for Erosion and Sedimentation Control manual in 2016. The manual serves as the basis to ensure on-the-ground use of erosion and sedimentation control BMPs during design, construction, and maintenance activities.
<b>Stormwater Management Memorandum of Agreement</b>	MaineDOT has a stormwater MOA with DEP whereby an erosion and sedimentation control plan is implemented for all projects, regardless of acreage disturbed and post construction stormwater management measures are installed when applicable (Storm Water Management Law, Chapter 500, MS4 Permit). MaineDOT provides an annual report to the DEP summarizing activities and projects.
<b>Compliance with Erosion &amp; Sedimentation Control Law</b>	Since 1997, MaineDOT has emphasized the importance of erosion prevention, exposed soil stabilization, and compliance with the Erosion and Sedimentation Control Law that directs "adequate and timely temporary and permanent stabilization measures will be used to prevent unreasonable erosion and sedimentation", to department workers and contractors. MaineDOT Standard Specification 656 - Temporary Soil Erosion and Water Pollution Control requires all MaineDOT contractors to include an ESC plan for projects with fill or soil disturbance. MaineDOT also partners with the DEP NPS Training Center to promote the Erosion Control Contractor Certification Program and deliver erosion and sedimentation control training.
<b>Maine Local Road Center</b>	The Maine Local Roads Center provides training, technical assistance, and information to municipal and county staff who are responsible for constructing, maintaining, and managing local roads and bridges. Through MLRC newsletters and workshops, town officials and road maintenance crews receive information about the values (e.g., long term cost avoidance and protection of local water resources) of minimizing erosion and sedimentation from town roads and associated drainage features. MLRC also promotes snow and ice control BMPs to municipal public works staff.

<b>Road winter sand and salt management</b>	<p>MaineDOT management of road sanding practices has exceeded the established goal of 40 percent reduction of sand use since 1999. MaineDOT plans further winter sand reduction while maintaining safe winter driving conditions. Using an anti-icing approach instead of a de-icing approach significantly reduced the use of winter sand. The anti-icing approach uses mostly rock salt, but also includes salt brine, and “Ice-B-Gone” which DEP recognized under its Design for the Environment Formulator Program. MaineDOT will continue to research approaches, methods, and products to maintain safe roads and winter driving conditions with the least environmental impact. MaineDOT engaged Margaret Chase Smith Policy Center at the University of Maine to produce forthcoming studies.</p>
<b>Road winter sand and salt storage</b>	<p>The DEP’s Road Salt and Sand-Salt Storage Area Program helps mitigate the impacts of uncovered salt and mixed sand-salt on ground and drinking water. In coordination with MaineDOT, the program includes assistance with the siting of new salt storage areas; an on-going registration program for salt storage areas; implementation of siting and operational rules; and investigation of complaints involving chloride contamination of drinking water wells, as time and resources allow.</p> <p>In 1999, DEP prioritized known uncovered sand-salt piles. Towns with Priority 1-3 piles were required to construct a sand-salt storage building or move the site. With funding assistance from CWSRF and a state grant program (now discontinued), Priority 1, 2 and 3 piles have all been addressed. Approximately 100 Priority 4 and 5 piles remain and are subject to operational standards promulgated in 06-096 Chapter 574, Siting and Operation of Road Salt and Sand-salt Storage Areas.</p> <p>MaineDOT road salt and sand/salt storage systems in all 5 regions comply with DEP regulations to protect ground and surface waters. All outdoor winter sand piles have been eliminated.</p>
<b>Municipal Stream Crossing Program</b>	<p>The Municipal Stream Crossing Grant Program was transferred from DEP to MaineDOT in 2023. With the program, MaineDOT continues to provide competitive grants that help fund the upgrade of municipal culverts at stream crossings with the goal of improving fish and wildlife habitat and community safety. Eligible project sponsors include local and tribal governments, municipal conservation commissions, soil and water conservation districts, and private nonprofit organizations. Eligible projects involve culverts that carry a stream under a local government road, not a state (including state-aid) or private road. The maximum amount of funds an applicant may request is \$200,000 for projects that</p>

	include design and construction (as long as they result in a completed construction project) and must include a minimum of \$5,000 of local match (cash or in-kind).
<b>Watershed Projects</b>	Recognizing the importance of placing stormwater management systems in areas most needed, MaineDOT has implemented several BMPs to help restore urban impaired streams. Examples include pervious pavement in the Long Creek watershed and Compost Amended Vegetative Buffers in the Red Brook watershed.

## D. Forestry

Lead Agency: Maine Forest Service (MFS)	
<b>Management Strategies</b> Promote widespread use of forestry BMPs and BMP-based programs and projects on all timber harvest and forestry-based operations in Maine, with special emphasis on water quality protection. Improve consistency for the regulated community by working with towns to adopt statewide standards for timber harvesting in shoreland areas.	
<b>Core Law / Regulatory Authority</b> Under Maine's Forest Practices Act (12 M.R.S. §§ 8867-A to 8888) landowners are required to notify the Maine Forest Service of planned timber harvest activities (with very limited exemptions for personal use and small acreage). Harvest plans are required for clearcuts over 20 acres. The NPS Management Program statute (38 M.R.S. Article 1-F) charged MFS with responsibility to develop and implement forestry BMPs. Since then, MFS has developed programs and provided services that help landowners and wood harvesters use BMPs in accordance with MFS advisory and regulatory programs.	
<b>Forestry and NPS Pollution Sources</b> About 89 percent of Maine is forested, the highest percentage of any state. Forest products are key to Maine's economy with roughly 200 forest products businesses employing 17,000 people. Approximately 450,000 acres are harvested annually via 5,500 to 6,000 harvest operations. Constructing forest roads, trails, landings, and drainage systems can reduce soil absorbency, divert or concentrate water flows, cause soil erosion, increase sediment and nutrients entering streams, and diminish the benefits of riparian vegetation. Harvesting may also reduce shade on the water's surface, reduce the amount of natural woody debris, or eliminate food sources for aquatic life. Timber harvests that remove a significant percentage of trees can increase the water runoff into streams, in some cases increasing flooding. Forestry BMPs mimic or protect natural forest functions, absorb or disperse runoff, retain soil nutrients, filter sediment, and help maintain natural water temperature.	
<b>BMP Guidelines</b> Best Management Practices for Forestry: Protecting Maine's Water Quality (2017) <a href="http://digitalmaine.com/for_docs/53/">http://digitalmaine.com/for_docs/53/</a>	
BMP Types	Areas Addressed by BMPs
<b>Non-Structural (planning)</b>	Clearly define harvest objectives & responsibilities; provide sound pre-harvest planning; anticipate general and seasonal site conditions; planning to control water flow; planning to minimize and stabilize exposed soil, including maintenance; planning to factor in and protect the integrity of nearby water bodies; planning to safely handle on-site hazardous materials.
<b>Structural (groundwork)</b> Ensure proper sizing/installation of bridges and culverts;	<u>Stream Crossings</u> (bridges, culverts, fords) Key issues include fish passage, crossing size, and crossing installation. <u>Wetland Crossings</u> Key issues include rutting and water movement. <u>Truck Roads</u> The key issue is water control.

control water and divert to filter areas.	<p><u>Log Landings</u> Key issues include safety, site stability, and public perception.</p> <p><u>Trails and Harvesting</u> Key issues are water control, soil exposure and proper closure ('putting sites to bed').</p> <p><u>Handling of Hazardous Materials</u> Key issues are storage and handling of oil/gas/coolants, avoiding leaks &amp; spills, and accident training.</p>
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Programs/Projects	Description
<b>Program Management &amp; Partnerships</b>	The MFS maintains one full time position, a Water Resources Forester (WRF), to coordinate the forestry NPS program. Due to limited staff dedicated to forestry NPS issues, MFS maintains partnerships which are important to program delivery. The Maine Sustainable Forestry Initiative (SFI) State Implementation Committee (SIC) is one such partner. It includes landowners representing roughly 7 million acres of forest land in Maine and promotes mills that procure wood from practically every timber harvest in the state. Maine's WRF serves on the SIC's active education committee, which identifies relevant education topics and develops/delivers approximately 20-30 trainings per year, reaching 400-500 foresters, loggers and landowners. MFS also partners with several logger certification and professional organizations including the Certified Logging Professional Program, Northeast Master Logger, Qualified Logging Professional Program and the Professional Logging Contractors of Maine to deliver BMP training in conjunction with other scheduled trainings and events. These partnerships allow MFS to reach over 1000 loggers per year with BMP-related training.
<b>Forestry BMPs for Water Quality -Manual &amp; Training</b>	The MFS made minor revisions to the state's forestry BMP manual in 2017 to include information on Stream Smart stream crossing designs. The manual is published in English and French language versions and has proven to be a useful program tool. Trainings are based on establishing a strong understanding of BMP principles to promote better in-the-field applications of specific practices detailed in the manual. The standard BMP training program was revised in 2012.
<b>Training Programs</b>	Specific forestry BMP training topic needs are identified via regular BMP monitoring and interaction with partners and other outside sources. Once needs are identified, MFS works with its partners to either develop training in-house or search for outside experts to deliver or assist with training development. MFS has an on-staff Natural Science Educator who assists with all MFS training development. Recent topic-specific training has included

	designing road stream crossings to allow fish passage, and BMP implementation at stream crossings.
<b>Forestry BMPs, use and effectiveness Monitoring</b>	MFS has conducted random statewide monitoring of BMPs on timber harvesting operations since 2000. The objective is to assess the use and effectiveness of forestry BMPs. Currently the MFS conducts BMP monitoring of approximately 120 harvest sites on a biennial basis. This effort has become part of MFS regular operations and is likely to continue as long as resources are available. The BMP protocol project was a cooperative effort of MFS, USDA, and the Northeastern Area Association of State Foresters–Water Resources Committee. Since Maine’s BMPs are voluntary and designed to be outcome-based, the protocol focuses on effectiveness and implementation rather than strict BMP compliance. This is done by recording measurable evidence and assessing a suite of BMPs rather than evaluating the installation of individual practices. The protocol evaluates: stream crossings and approaches; riparian buffers; chemical pollution; wetland crossings and approaches; haul roads, log landings, and rutted mineral soil in buffer/filter strips. Reports and protocol can be found at <a href="http://www.maine.gov/doc/mfs/fpm/water/bmp_monitoring.html">www.maine.gov/doc/mfs/fpm/water/bmp_monitoring.html</a> .
<b>MFS Direct-Link Loan Program</b>	Since 2007 the MFS has partnered with the Maine Municipal Bond Bank, DEP, and several participating banks to provide low-interest incentive financing to loggers who purchase equipment capable of implementing BMPs to reduce NPS impacts on timber harvests. This program requires that participants maintain their certification by one of the state’s third-party logger certification programs. Participants are also subject to follow-up BMP inspections by the MFS. Over 145 loans totaling \$36 million have been issued to help loggers make equipment purchases. Funding for the program is through Maine’s Clean Water State Revolving Fund.
<b>Portable Forestry Bridge Loaner Program</b>	The MFS partners with SWCDs and several mills around the state to provide portable bridges to loggers on a loaner basis, free of charge. The program has five steel bridges and many wooden bridges in circulation around the state. These bridges allow loggers to ‘try out’ this BMP without cost, and several loggers have purchased or constructed their own bridges after using the loaners.
<b>Watershed Projects</b>	The MFS has hired interns in 2017, 2018 and 2019 to survey road-stream crossings for barriers to aquatic organism passage in coordination with The Nature Conservancy. Interns also assisted with the installation of coarse woody debris (CWD) in the



	Narraguagus River to enhance aquatic habitat in coordination with Project SHARE.
<b>Coarse Woody Debris Program</b>	The MFS has developed a program to increase the number of CWD addition projects in Maine. In 2012 it simplified the process for implementing CWD projects by writing rules/standards allowing trained licensed foresters to oversee CWD projects without the need for a permit. The MFS in cooperation with the Department of Inland Fisheries and Wildlife (DIFW) has developed and delivered training to foresters who will oversee these projects.
<b>Timber Harvest Inspection/Water Quality Enforcement</b>	Although Maine BMPs are voluntary, there are state laws prohibiting landowners from allowing sediment to enter water bodies. Landowners must notify the MFS of all commercial harvesting activity, which allows Maine's 55 Forest Rangers to inspect the harvests for compliance with timber harvest regulations. Notifications must indicate whether harvests occur near waterbodies, allowing inspections to be prioritized by potential environmental risk. The MFS uses cooperative agreements with DEP and the Land Use Planning Commission whereby MFS rangers inspect harvests for compliance using environmental laws administered by these agencies. The MFS has also recently assumed regulatory jurisdiction of harvesting and related activities in shoreland areas for many areas of the state. This is part of the transition from a dual set of regulations in the unorganized and organized areas of the state, to a consistent set of statewide regulations and a single regulatory authority.
<b>Demonstration Projects</b>	MFS regularly helps organize technology transfer demonstration projects. Most demonstrate innovative stream crossing installations, particularly those involving designs promoting fish passage, including 'bottomless arch' and box culverts and low-cost bridge installations.
<b>Forest Certification Programs &amp; Initiatives</b>	The MFS supports forest certification by any of the several organizations that certify forest land in Maine. These organizations include the Forest Stewardship Council, the Sustainable Forestry Initiative and the American Tree Farm System. About 9.4 million acres of Maine's forests are certified to one of the three major standards. Use of water quality BMPs is mandatory under all these systems. Lands certified under these systems undergo third-party audits, offering an added level of scrutiny regarding the implementation and effectiveness of BMP practices.

## E. Onsite Wastewater Disposal Systems

**Lead Agency: Subsurface Wastewater Unit, Division of Environmental and Community Health, Department of Health & Human Services**

### **Management Strategies**

Work with municipalities to implement the Subsurface Wastewater Disposal (SSWD) Rules. Improve the certification programs for septic system inspectors by adopting rules that include minimum standards for system inspections and increased knowledge and experience for inspection certification and continue to train and certify system installers (Voluntary Onsite Sewage Disposal System (OSDS) Inspection Program). Continue to encourage and expand point-of-sale septic system inspections. Revise and update the SSWD Rules as needed to address emerging issues and to reflect current technology in subsurface wastewater management and disposal.

### **Core Law / Regulatory Authority**

By Maine statute (22 M.R.S. §42) DHHS is authorized to adopt rules providing for the inspection of plumbing and subsurface wastewater disposal systems. The rules are known as the Subsurface Wastewater Disposal Rules (10-144 CMR 241). Implementation and enforcement of the rules is the responsibility of municipalities. Municipalities are required to appoint plumbing inspectors to implement the rules. Effective January 1, 2020 DHHS adopted new rules (Title 30-A, §4216) that require a person purchasing property on which a subsurface wastewater disposal system is located within a shoreland area, as described in Title 38 section 435, shall prior to purchase have the system inspected by a person certified by the department. and increase the minimum level of knowledge and experience required for certification as a system inspector.

Effective September 23, 2023 DHHS adopted amendments to its Subsurface Wastewater Disposal Rule, 10-144 Chapter 241, that relate to NPS concerns, specifically Sections 15, 16 and 17. Section 15 requires a person purchasing property on which a subsurface wastewater disposal system is located within a shoreland area, as described in Title 38 section 435, shall prior to purchase have the system inspected by a person certified by the department. Section 16 provides the minimum requirements for the Department to certify Third Party Inspectors, which now requires disposal system inspectors to be certified by a nationally recognized organization approved by the Department that trains and certifies individuals to person disposal system inspections. As of July 1, 2023 certification also requires that applicants submit a completed written examination of 25 questions derived from this rule of which 20 much be answered correctly.

### **Onsite Subsurface Wastewater Disposal Systems & NPS Pollution Sources**

Onsite SSWDs are utilized for the treatment and disposal of domestic and commercial wastewater in areas that lack centralized municipal wastewater collection and treatment systems. Onsite SSWD systems, if improperly located, designed, or installed are subject to malfunction, which may cause adverse health effects and detrimental environmental impacts

to land and water resources from untreated wastewater. Malfunctioning disposal systems can cause bacterial contamination and deliver nutrients to surface waters.

#### **BMP Guidelines**

Subsurface wastewater disposal rules govern the siting, design, construction, and inspection of subsurface wastewater disposal systems in order to protect the health, safety, and welfare of the citizens of Maine. Approved procedures, design, and siting requirements, materials, methods, and administrative policies are described in detail. These Rules provide minimum State design criteria for subsurface wastewater disposal to assure environmental sanitation and safety. These Rules are intended to complement municipal planning, zoning, and land use control. <http://www.maine.gov/dhhs/mecdc/environmental-health/plumb/rules.htm>

Program	Description
<b>Subsurface Wastewater Disposal Rules (CMR 241)</b>	Maintain copies of all plumbing and subsurface wastewater permits issued statewide. Approximately 10,500 plumbing permits are processed annually. The Program processes approximately 6,700 subsurface wastewater permits annually. These permits combined generate approximately \$667,400 in dedicated revenue. <sup>9</sup> Provide reviews of engineering plans for compliance with or variance from departmental rules in support of the Division's various program areas. Provide interagency reviews and make recommendations for DEP, Maine Land Use Regulation Commission, Maine Department of Education, and Bureau of Public Improvements, among others. Conduct site inspections to assist site evaluators, local officials, and property owners.
<b>Rules for Appointment and Administration of Local Plumbing Inspectors (CMR 240)</b>	Oversee the appointment and administration of Local Plumbing Inspectors, including the eligibility, application, examination, and re-certification requirements.
<b>Rules for Site Evaluators of Subsurface Wastewater Disposal Systems (CMR 245)</b>	Oversee licensing of site evaluators that perform subsurface wastewater disposal evaluations for the purpose of designing on-site subsurface wastewater disposal systems. This includes the administration, examination and licensing roles.
<b>Voluntary Onsite Sewage Disposal System Inspection Program</b>	The Department oversees a Voluntary Onsite Sewage Disposal System Inspection Program for inspection of existing systems.

<sup>9</sup> Averages were pulled for the 2020-2023 timeframe and rounded to the nearest hundred for the plumbing permits, subsurface wastewater permits and the dedicated revenue.

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<b>Certification of Subsurface Wastewater Disposal System Installers</b>	The Department oversees a voluntary certification program for SWDS installers. The program involves training programs, review of actual performance and on-going 5-year recertification with continuing education and good performance.
<b>Small Community Grants Program</b>	DEP administers the Small Community Grant Program, which provides grants to towns to help replace malfunctioning septic systems that are polluting a waterbody or causing a public nuisance. Grants can be used to fund from 25% to 100% of the design and construction costs, depending upon the income of the owners of the property, and the property's use. An actual pollution problem must be documented to qualify for funding. The highest priority is given to problems that are polluting a public drinking water supply or a shellfishing area.
<b>USDA Rural Development Home Repair Program</b>	Also known as the Section 504 Home Repair program, this provides loans to very-low-income homeowners to repair, improve or modernize their homes or grants to elderly very-low-income homeowners to remove health and safety hazards. <a href="https://www.rd.usda.gov/programs-services/single-family-housing-repair-loans-grants">https://www.rd.usda.gov/programs-services/single-family-housing-repair-loans-grants</a>
<b>Maine Housing's Home Accessibility and Repair Program</b>	To be eligible for a Home Accessibility and Repair grant you must have owned and lived in the home that will be renovated or repaired for at least one (1) year prior to applying and have a household income at or below 80% AMI Income Limits <a href="https://www.mainehousing.org/programs-services/HomeImprovement/homeimprovementdetail/home-repair">https://www.mainehousing.org/programs-services/HomeImprovement/homeimprovementdetail/home-repair</a>

## F. Hydrologic and Habitat Modification

### Lead Agency: Maine Department of Environmental Protection

#### Management Strategies

Control hydrologic modification of rivers, streams, and lakes through administration of regulatory programs. Coordinate review and permitting of channel dredging with the Army Corps of Engineers (ACOE). Control impacts of hydropower dams through certification of Federal Energy Regulatory Commission (FERC) hydropower permits. Regulate impacts of other dams through state review of water level petitions and subsequent DEP water level orders. Encourage use of ESC and stormwater management BMPs through both administration of land use laws and promotion of voluntary measures by continued administration of the Storm Water Management and Site Location of Development Laws. Adopt new standards for stream crossings (new, repair, replacement, rehabilitation) designed to improve fish passage, hydraulic capacity and resiliency to larger storm events.

#### Core Law / Regulatory Authority

DEP regulates channel dredging through the NRPA in conjunction with the ACOE under Section 404 of the Clean Water Act. Licensing of hydropower dams is regulated by the FERC and conditions required by states under Section 401 of the CWA to ensure attainment of State Water Quality Standards. Non-hydropower dams are regulated under the Maine Waterway Development and Conservation Act (38 M.R.S. §§ 630-636, 640), Maine Water Level Act (38 M.R.S. §341-D, §§2), Municipal Regulation of Water Levels and Minimum Flows Act (30-A M.R.S. §4454-4457), and DEP's In-Stream Flows and Lake and Pond Water Levels rule. DEP is responsible for controlling runoff and erosion through the ESC Law, the Storm Water Management Law, the Site Location of Development Act and NRPA. The Aquatic Life Criteria and requirement that habitat should be natural allows for streams to be listed as impaired by habitat.

#### Hydrologic and Habitat Modification and NPS Pollution Sources

DEP's 2018 / 2020 / 2022 Integrated Report lists "Dam or Impoundment" as the source category for 51 miles of impaired rivers and streams, "Habitat Modification – Other than Hydromodification" for 35 miles of impaired rivers and streams and 33 acres of wetlands, and "hydromodification (drawdown)" for five lakes (48,964 acres). Hydrologic modification activities include dams, channelization, channel modification, and streambank and shoreline erosion. Channelization, channel modification, and stream crossings may adversely impact suitability of instream and streamside habitat for fish and wildlife. Several watershed-level surveys of existing Maine stream crossings indicate that as many as 90% are barriers to fish passage and as many as 40% are impassable, causing significant loss of aquatic habitat. Hydrologic modification can alter instream water temperature, oxygen levels and sediment erosion, transport and deposition. The siting, construction and operation of dams can adversely impact the hydraulic regime, water levels, surface water quality and habitat of a lake, stream or river. Erosion caused by hydrologic modification can have adverse impacts on riparian habitat. Excessively high sediment loads can smother submerged aquatic vegetation, cover shellfish beds and tidal flats, fill riffle pools, and

increase levels of turbidity and nutrients. Altered habitat and geomorphology due to historic and current anthropogenic activities can have a major impact to stream health.

#### **BMP Guidelines**

For ESC: <http://www.maine.gov/dep/land/erosion/escbmps/index.html>

For stormwater management:

<http://www.maine.gov/dep/land/stormwater/stormwaterbmps/index.html>.

<b>BMP Types</b>	<b>Areas Addressed by BMPs</b>
<b>Non-Structural (planning)</b>	Conduct planning to avoid adverse impacts on water quality. Site specific erosion and sedimentation control plans, including temporary and permanent erosion control measures. Low Impact Development: Limit areas of clearing and grading; minimize impervious area; minimize directly connected impervious area; and manage stormwater at its source. Use contractors certified in ESC. Inspection and maintenance including five-year certification.
<b>Structural (groundwork)</b> Provide treatment measures to mitigate for the increased frequency and duration of channel erosive flows  Install BMPs and improved culverts to restore resource form and function	Wet ponds; Vegetated buffers; Infiltration; Under-drained soil filters; Detention ponds for flood control; Proprietary treatment systems;  Enlarged and embedded culverts to accommodate aquatic organism passage and accommodate larger storms; culvert and dam removal; installation of Coarse Woody Debris, living shorelines or other habitat enhancement features.

<b>Program/Project</b>	<b>Description</b>
<b>Maine Waterway Development and Conservation Act, 401 CWA Certification of Hydropower Projects</b>	DEP reviews applications for 1) construction, re-construction or alteration of hydropower projects which change water level or flow, 2) maintenance and repair of existing hydropower projects involving dredging or filling below normal high water under the Maine Waterway Development and Conservation Act and 3) hydropower license from the FERC under section 401 of the Clean Water Act to ensure that operation of the project will not result in non-attainment of the state's Water Quality Standards. DEP may certify the project with conditions, which FERC then incorporates into the project permit.

<p><b>Maine Water Level Act Establishment of Water Levels</b></p> <p><b>Municipal Regulation of Water Levels,</b></p> <p><b>Minimum Flows Municipal Regulation</b></p>	<p>The DEP Commissioner may on the Commissioner's own motion and shall at the request of the owner, lessee or person in control of a dam, the Commissioner of Inland Fisheries and Wildlife, or the Commissioner of Marine Resources, or upon receipt of petitions from the lesser of at least 25 percent or 50 of the littoral or riparian proprietors or from a water utility having the right to withdraw water from the body of water for which the water level regime is sought, conduct an adjudicatory hearing for the purpose of establishing a water level regime and, if applicable, minimum flow requirements for the body of water impounded by any dam that does not have a license for hydropower generation from FERC or other water level order from another entity. Municipalities may petition DEP for jurisdiction over water levels and minimum flows pending adoption of an appropriate ordinance.</p>
<p><b>In-stream Flows and Lakes and Ponds Water Levels</b></p> <p><b>DEP Rule 06-096 CMR Ch. 587</b></p>	<p>This Chapter establishes river and stream flows and lake and pond water levels to protect natural aquatic life and other designated uses in Maine's waters. Instream flow requirements for Class AA, A, B, and C waters are based on natural flows that occur in Maine waters, and the uses and characteristics assigned by the water quality classification program (38 M.R.S. Sections 464, 465) with attention given to protecting the outstanding natural resources associated with Class AA waters. Flow is managed to provide natural variation of flow described by seasonal aquatic base flows, or other seasonally variable flows, shown to protect aquatic life resources and water quality standards. Water level requirements for Class GPA waters consider natural variation of water levels that occur in Maine lakes and ponds, and the uses and characteristics assigned by the water quality classification program (38 M.R.S. Sections 464, 465-A). Water level is managed to provide variation that considers expected seasonal levels shown to protect aquatic resources and other water quality standards of Class GPA and downstream waters. Instream flows and water levels may be established by 3 methods: (1) standard allowable alteration, (2) by a site-specific flow designation developed through an Alternative Water Flow or Alternative Water Level, or (3) as part of a new or existing regulatory permit. A water use which fails to comply with the requirements of these rules is subject to penalties pursuant to Title 38, Section 349.</p>



## G. Climate Change Adaptation

Efforts to reduce greenhouse gas emissions and adapt to climate change are being pursued at the national, state and local levels. Many of these strategies are outside the scope of this plan. This section highlights some of the adaptation and resiliency planning efforts that will reduce NPS and water quality impacts from climate change and protect natural carbon storage resources in Maine. The plan's proposed actions and milestones related to climate change adaptation are summarized in Table 6 below.

Lead Agency: Maine DEP
<p><b>Management Strategies</b></p> <p>Collect data and network with external researchers who are developing climate models to identify areas most vulnerable to climate change impacts. Encourage management of forested and agricultural working lands to protect soil health and offset greenhouse emissions. Develop and disseminate tools to support adaptation and mitigation planning. Remove or improve vulnerable infrastructure so that it can reduce impacts from larger storm events and rising sea level.</p>
<p><b>Core Law / Regulatory Authority</b></p> <p>In 2003, Maine established goals for the reduction of Greenhouse Gas (GHG) emissions statewide (38 M.R.S. § 576). The Maine Climate Action Plan was adopted in 2004 to meet the reduction goals specified in Maine law. The action plan contains recommended options that help meet reduction goals through cost-effective strategies and actions, and that allow for sustainably managed forestry, agriculture, and other natural resources to sequester greenhouse gas emissions. In 2019, Maine passed legislation that establishes new goals to reduce emissions to 45% below 1990 levels by 2036 and 80% below 1990 levels by 2050 and creates the Maine Climate Council to update to the Maine Climate Action Plan with both mitigation and adaptation strategies by December 2024 (38 M.R.S. § 574-578).</p>
<p><b>Climate Change and NPS Pollution Sources</b></p> <p>In Maine, the impacts of anthropogenic climate change are already being observed. Both temperature and annual precipitation amounts have increased since 1900, with the rate of increase accelerating in recent decades. As a result, both floods and droughts are expected to be more common in the future. Annual precipitation totals and number of precipitation events have increased in the last two decades, this trend is expected to continue into the future. Increased precipitation means higher runoff volume, which can negatively impact water quality throughout the state and damage important infrastructure. Rising temperatures will melt snow earlier in spring and increase evaporation, thereby drying the soil and lowering ground and surface water levels during summer and fall (EPA, 2016). For lakes, this is already causing winter ice-out to take place earlier in the spring and ice-in to take place later in the fall. As a result, lakes that stratify may have greater oxygen depletion in the cooler bottom waters, which can stress coldwater fish, result in phosphorus being released from bottom sediments, and fuel algal growth. Lakes with sufficient nutrients, warmer surface waters and reduced ice-cover duration are more likely to experience more intense cyanobacteria blooms. In rivers and streams, warmer temperatures can lower</p>

dissolved oxygen levels and impact brook trout and other coldwater species. Larger storms can erode stream channels and impact habitat. Low flow conditions in summer and fall are also more likely to stress organisms, especially in areas where groundwater is contaminated with chloride or other contaminants. Summer drought conditions will also lead to more water withdrawals for agricultural irrigation. The growing season in Maine has increased by two weeks since 1950 and is set to continue to become longer largely due to later frosts in the fall. A longer growing season has the potential to increase fertilizer use and water withdrawals (Fernandez et al., 2020). In coastal areas, rising sea level and storm surge erode wetlands and beaches and damage infrastructure such as roads and wastewater treatment facilities. Rising sea levels may also lead to saltwater intrusion into freshwater surface waters and public and private drinking water systems. Increased freshwater runoff into coastal areas has also been found to contribute to coastal acidification.

Programs/Projects	Description
	<p>There are numerous programs underway related to climate mitigation and adaptation across State agencies. The following list highlights NPS-related efforts from <i>Maine Prepares for Climate Change</i> (2019). FMI - <a href="http://www.maine.gov/dep/sustainability/climate/MainePreparesforClimateChange2019Update.pdf">www.maine.gov/dep/sustainability/climate/MainePreparesforClimateChange2019Update.pdf</a></p>
<b>State Hazard Mitigation Plan</b>	<p>The State of Maine Hazard Mitigation Plan (SHMP) identifies risks and vulnerabilities associated with natural disasters to develop strategies to reduce the long-term effects of natural hazards. The risk assessment is the basis for the strategy, which provides the State's blueprint for reducing the potential losses identified in the risk assessment. SHMPs must be updated every five years. The 2023 SHMP profiled the following natural hazards in the risk assessment process: flood, severe summer weather, tropical cyclone, severe fall/winter weather, wildfire, drought, erosion (coastal), mass wasting (landslide), earthquake, forest pests, harmful algal blooms, and air quality. The Maine Emergency Management Agency (MEMA) will continue to corroborate data with the scientific community to update the plan in 2028</p>
<b>Hazard Mitigation and Pre-Disaster Mitigation Grant Programs</b>	<p>MEMA administers the Hazard Mitigation Grant Program and the Pre-Disaster Grant Program to fund projects identified in local hazard mitigation plans. The Disaster Relief and Recovery Act created a more sustainable and expanded source for hazard mitigation funding.</p>
<b>Maine Ocean and Coastal Acidification Partnership (MOCA) and Ocean Climate Collaborative</b>	<p>The Maine Ocean and Coastal Acidification (MOCA) partnership formed in March 2016 to (1) to implement recommendations of the Ocean Acidification Study Commission authorized by the 126th Legislature, as set forth in the study commission's report and (2) to coordinate the work of governmental agencies and private organizations and citizens who are studying and implementing means to reduce the impacts of or help adapt to ocean and coastal acidification. Since the Maine Climate Council has since incorporated</p>

	ocean acidification issues into Maine Won't Wait, MOCA is not currently active. However, recent work by the <a href="#">Ocean Climate Collaborative</a> , a network of state and local monitoring professionals, has focused on evaluating and standardizing monitoring practices and equipment.
<b>Maine Interagency Stream Temperature Monitoring and Modeling Network</b>	The Maine Water Temperature Working Group was established in 2014 to develop a coordinated stream temperature monitoring network that can be integrated with regional and national efforts. The group is composed of multiple state agencies, academics, NGOs, tribes, and federal agencies. The group has developed standardized monitoring protocols, conducted a comprehensive inventory of existing data for current and past water temperature monitoring efforts, and is monitoring stream temperature in >240 stations statewide. Maine DEP maintains 19 long-term temperature sensors in streams throughout the State.
<b>Brook Trout Conservation and Management</b>	Maine remains the last stronghold for wild Eastern Brook Trout in the United States. As a committed partner to the Eastern Brook Trout Joint Venture, the Maine DIFW collaborates on multiple research and assessment projects, including identifying strategies to mitigate climate change impacts to brook trout habitat by expanding habitats and accessibility to proximal habitats as much as possible by addressing stream/river connectivity issues.
<b>Maine Healthy Forests Program</b>	A healthy forest provides habitat for wildlife, clean water and air, recreational opportunities, and economic vitality to families. This Maine Forest Service program looks at climate-related impacts to forests, and how to manage forests to address and adapt to changing conditions.
<b>Maine Climate Clearinghouse &amp; Adaptation Toolkit</b>	DEP's Climate Program houses the clearinghouse of information on climate change mitigation and adaptation pertinent to Maine communities.
<b>Maine Adaptive Infrastructure Fund</b>	Provides funds for projects to address flooding along ocean and riverfronts, protect stormwater and wastewater systems, and to install culverts to reduce flooding
<b>Community Resilience Partnership (CRP)</b>	Through Community Action Grants and direct support to municipal and tribal governments and unorganized territories the CRP assists communities to become more resilient to climate change effects such as extreme weather, flooding, and rising sea levels. Grant projects (2023) included living shoreline installations, stormwater Infrastructure Resilience Analysis and coastal stabilization engineering.

**Table 7. Climate Change Adaptation Objectives/Actions in Maine's NPS Management Plan**

Objective/Action	Action Plan Table
Incorporate the updated Most Vulnerable Lakes list and associated criteria (considering factors including climate change, sediment chemistry, lake morphometry, anoxia potential and land use) to incorporate the most current information available.	Table 11. Watershed Approach, Objective 2
Investigate ways to protect and restore tidal marshes/eelgrass beds and their high-carbon storage capacity, where negatively impacted or threatened by NPS pollution and habitat modification.	Table 11. Watershed Approach, Objective 3
Explore ways to support and encourage tidal marsh restoration and protection work, specifically in marshes with high carbon storage potential, significant habitat values or floodwater storage potential, or high marsh mitigation potential.	Table 11. Watershed Approach, Objective 3
Work with DEP's Lakes Unit to evaluate historical cyanobacteria bloom occurrences and compare with regional climatological parameters (i.e., precipitation, temperature and ice-out).	Table 11. Watershed Approach, Objective 5
Promote collaboration and planning for projects that mitigate climate-related NPS impacts to coastal waters.	Table 11. NPS Program Coordination, Objective 8
Incorporate climate change and resilience planning into watershed-based planning.	Table 11. Watershed Approach, Objective 9
Incentivize the use of low maintenance and climate resilient BMPs in 319 Grant projects.	Table 11. Watershed Approach, Objective 9
Evaluate stormwater and ESC BMPs and develop guidance about climate change resiliency and adaptation planning.	Table 12. Developed Areas, Objective 3
Increase field crop agriculture's use of soil health practices to reduce soil erosion, improve water quality and offset carbon emissions.	Table 13. Agriculture, Objective 7
Increase intra-departmental climate collaboration.	Table 18. NPS Program Coordination, Objective 6

Explore, promote and pursue FEMA hazard mitigation grants for installation of green infrastructure, stream/floodplain restoration and culvert replacements.

Table 18. NPS Program Coordination, Objective 7

Explore and promote additional funding (e.g., CWSRF and Community Action Grants (under Maine Community Resilience Partnership program (CRP)) to support development of WBPs and watershed implementation projects.

Table 18. NPS Program Coordination, Objective 7

## H. Emerging NPS Issues

This section provides information about five emerging NPS issues that also impact Maine's water resources and efforts to control NPS pollution:

- 6PPD-quinone
- Perfluoroalkyl and Polyfluoroalkyl Substances (PFAS)
- Aboveground and Underground Storage Tanks
- Brownfields; and
- Marine Debris, Microplastics and Trash.

The first four of these emerging NPS issues deal with toxic contaminants. Numerous federal and state regulations and programs are in place to prevent the release of toxic substances to the environment and, when needed, to clean up contaminated areas. However, potential impacts and threats from 6PPD-quinone, PFAS, leaking tanks and contaminated runoff from brownfields are areas of concern that warrant both closer examination and proactive coordination with Maine's NPS Management Program to help further reduce threats to human health, aquatic life and ground and surface water quality. Marine debris, trash and microplastics is another concern with potential toxic and habitat impacts.

### 6PPD-quinone

<b>Lead Agency: Maine DEP</b>
<b>Core Law / Regulatory Authority</b> The Surface Water Ambient Toxics (SWAT) monitoring program was established in 1993 (38 MRSA §420-B) and administered by the DEP to determine the nature, scope, and severity of toxic contamination in the surface waters and fisheries of the State.
<b>Management Strategies</b> 6PPD and 6PPD-quinone have only recently been implicated in urban runoff mortality syndrome seen in Coho Salmon in the Puget Sound. Since the initial study in 2020, other salmonid species, such as brook trout and rainbow trout have been found particularly vulnerable to these chemicals. Proper stormwater management will be important in streams affected by 6PPD and 6PPD-quinone. Biofiltration BMPs with various media mixes have been found effective removing 6PPD and 6PPD-quinone from stormwater.
<b>6PPD-quinone and NPS Pollution Sources</b> 6PPD is an organic chemical that is used to prevent degradation in rubber and is widely used in vehicle tires. It reacts with ozone in the environment to create 6PPD-quinone. Both 6PPD and 6PPD-quinone have been linked to ecotoxic effects, especially for certain salmonids in the Pacific Northwest. Vehicular tires are worn down through pavement contact and tire dust is released into the environment, where it releases 6PPD and 6PPD-quinone. These chemicals can then be washed into streams and other waterbodies during runoff events. Both 6PPD and 6PPD-quinone have been detected in stormwater, airborne particles, sediment, soil, and human urine.

Programs/Projects	Description
<b>Surface Water Testing</b>	The DEP's Surface Water Ambient Toxics (SWAT) monitoring program will perform an initial sampling survey of low order streams that are designated as Critical Atlantic Salmon Rearing Habitat and Urban Impaired Streams in select areas across the state during the 2024 field season. Sampling locations will be chosen based on proximity to heavily trafficked paved roads.

## Perfluoroalkyl and Polyfluoroalkyl Substances (PFAS)

### Lead Agency: Maine DEP

#### Core Law / Regulatory Authority

PFAS are human-made chemical compounds that are stable and persistent in the environment, bioaccumulate, are toxic at low concentrations, and are easily transferred to groundwater and other media. These compounds are found in thousands of consumer products, industrial processes, and in aqueous film forming foam (AFFF), a type of fire suppressant. Because PFAS is so ubiquitous, it concentrates in municipal wastewater and the resultant sludge. The spreading of municipal and industrial wastewater sludge as a soil amendment onto agricultural fields was a common practice in Maine and across the nation for decades. As a result, the presence of PFAS in the environment in Maine has been linked mostly to historic land use from the land application of sludge as well as to unlined landfills and the use of AFFF. Every human has measurable amounts of PFAS in their blood. Consumption advisories are now in place in certain locations in Maine for fish and deer and turkey.

The Maine legislature has enacted several laws specifically relating to PFAS that directly impact the DEP, including the following:

- Public Law 2021, Chapter 478, An Act To Investigate PFAS Substance Contamination of Land and Groundwater, became effective on October 18, 2021. This law required the DEP to develop and implement a program to evaluate soil and groundwater for PFAS at locations licensed to land apply sludge or septage prior to 2019, and to sample leachate for PFAS at landfills with leachate management systems.
- Public Law 2021, Chapter 641, An Act to Prevent the Further Contamination of the Soils and Waters of the State with So-called Forever Chemicals, effective August 8, 2022, directed the DEP to evaluate wastewater effluent and groundwater from certain municipal and private wastewater treatment facilities, and also banned the land application of sludge and sludge derived products in Maine.



- Resolve 2021, Chapter 82, Resolve to Protect Consumers of Public Drinking Water by Establishing Maximum Contaminant Levels for Certain Substances and Contaminants, effective June 21, 2021 established an interim maximum contaminant level for 6 PFAS compounds (PFOA, PFOS, PFNA, PFHxS, PFHpA, PFDA) of 20 ng/L for either individually or in combination.
- Public Law 2021, Chapter 477, An Act to Stop Perfluoroalkyl and Polyfluoroalkyl Substances Pollution, recently amended by Public Law 2023, Chapter 630, An Act to Support Manufacturers Whose Products Contain Perfluoroalkyl Substance (effective August 9, 2024), created a number of new sales prohibitions for products with intentionally added PFAS with varying effective dates, created specific exemptions to the prohibitions, and established a new reporting system for those products categories that receive a Currently Unavoidable Use determination from the department.
- The Surface Water Ambient Toxics (SWAT) monitoring program was established in 1993 (38 M.R.S. § 420-B) and administered by the DEP to determine the nature, scope, and severity of toxic contamination in the surface waters and fisheries of the State.
- Uncontrolled Sites Law (38 M.R.S. § 1362 (1)(H)). In 2021, the Maine legislature changed the definition of hazardous substance to include PFAS. In effect, this law gives the DEP the authority to designate a site as an uncontrolled site for PFAS contamination. This law became effective October 18, 2021.

#### **Management Strategies**

The Final Report of the Maine PFAS Task Force published in 2020 outlined the following 8 recommendations to guide the management of PFAS contamination: Provide safe drinking water; Protect the food supply; Identify and investigate PFAS contaminants in the environment; Identify and reduce the use of PFAS; Manage waste and waste residuals responsibly; Improve public education about PFAS; Promote federal action; and Fund state agencies to investigate, respond to, and reduce exposure of Maine citizens to PFAS. Many of these strategies are outside of the NPS program.

#### **PFAS and NPS Pollution Sources**

The 2018/2020/2022 Integrated Report notes that most groundwater contamination originates from nonpoint source pollution. Testing of private drinking water wells is ongoing as part of a statewide groundwater investigation pursuant to Public Law 2021, Chapter 478 in areas associated with pre-2019 land application of sludge and septage. Additionally, other private drinking water wells are being sampled as part of Maine's contaminated sites programs related to releases from manufacturing facilities that utilized PFAS, unlined and/or closed municipal landfills, and areas where AFFF has been discharged or released.

Programs/Projects	Description
<b>Statewide Soil and Groundwater Investigations for PFAS</b>	<p>Several programs are in place for the evaluation of PFAS in soil and groundwater as follows:</p> <ul style="list-style-type: none"> <li>• In March 2019, DEP required all wastewater treatment sludge material proposed for land application, compost or processing to be sampled for PFAS. Assuming regulatory screening levels and certain loading rates were met, the material could continue to be land applied with approval from DEP. Since the land application ban in August, of 2022, this program is no longer in place.</li> <li>• In October 2021, DEP began its statewide soil and groundwater investigation related to locations associated with the licensed land application of sludge and septage prior to 2019. This investigation is ongoing and is anticipated to extend through 2025. A first report on this investigation was submitted to the legislature in January 2023; another will be submitted to the legislature in January 2025.</li> <li>• Beginning in October 2021, DEP required landfill operators that manage leachate to sample leachate for PFAS. Five sample rounds were collected from each of 25 landfills, and a final report was submitted to the legislature in January 2024.</li> <li>• PFAS contamination is also being investigated at contaminated sites. These include remediation sites, unlined or closed municipal landfills, locations where AFFF has been released into the environment, or other locations where there has been a release of PFAS from manufacturing or other processes. Maine has the authority pursuant to 38 M.R.S. § 1362 (1)(H) to designate a contaminated site as an uncontrolled site specifically for PFAS contamination. To date no sites have been designated as uncontrolled for PFAS.</li> </ul>
<b>PFAS Fish and Surface Water Testing</b>	<p>Since 2014, DEP has collected fish samples for PFAS analysis from lakes, rivers, and streams as part of the Surface Water Ambient Toxics (SWAT) monitoring program. DEP coordinates sampling with the Maine Center for Disease Control and Prevention (Maine CDC) to inform the process of setting fish consumption advisories. DEP typically collects ten fish per sample location and processes the skinless fillets in two composite samples, each with five fish. In certain circumstances, DEP may collect additional samples and samples from more than one species. Currently, perfluorooctane sulfonate (PFOS) is the only kind of PFAS that is considered for fish consumption advisories.</p>

	<p>Maine CDC's current fish tissue action level for PFOS is 3.5 nanograms per gram (ng/g) wet weight, which is equivalent to parts per billion (ppb). The fish tissue action level is the concentration of PFOS in fish tissue above which Maine CDC begins to consider the need for a consumption advisory. In determining whether a PFOS-specific advisory needs to be issued, Maine CDC evaluates whether the concentrations of PFOS in fish tissue warrant an advisory that is more restrictive than the current statewide mercury advisory or any other waterbody-specific advisories. The fish data provided on the PFAS Investigation Map focus on PFOS. SWAT reports are available with data for PFOS and other kinds of PFAS from when the DEP started sampling fish for PFAS in 2014 to the most recent reporting year.</p> <p>Water samples for PFAS analysis have also been collected from lakes, rivers, streams, and other water features as part of the SWAT monitoring program and other site evaluations. The PFAS Investigation Map provides data tables with concentrations of PFOS and other kinds of PFAS in milligrams per liter (mg/L), which is equivalent to parts per million (ppm). Maine has not established any standards for PFAS in surface water.</p>
<b>Safe Drinking Water Standards</b>	<p>Resolve 2021, Chapter 82 Resolve, To Protect Consumers of Public Drinking Water by Establishing Maximum Contaminant Levels for Certain Substances and Contaminants, Emergency, effective June 21, 2021 established the interim standard of 20 ppt for the sum of 6 PFAS chemicals (PFOA, PFOS PFNA, PFHxS, PFHpA, PFDA). As of the writing of this plan, the Maine Department of Health and Human Services is reviewing the National Primary Drinking Water Regulation for six PFAS compounds announced by EPA on April 10, 2024, and will adopt regulations at least as stringent (PFOA 4.0 ppt, PFOS 4.0 ppt, PFHxS 10 ppt, PFNA 10 ppt, HFPO-DA 10 ppt; Mixtures containing two or more of PFHxS, PFNA, HFPO-DA, and PFBS Hazard Index of 1).</p> <p>Although the interim standard is geared toward certain regulated public water systems, for consistency with both regulation and equity, DEP applies the same standards for private drinking water wells as part of its statewide sludge and septage investigation. Currently and so long as funding is available, the DEP pays for the installation and maintenance of filter systems for private residential water supplies where the interim standard has been exceeded and the source of PFAS contamination can be tied to DEP-licensed sludge or septage land application sites or other remediation-type sites.</p>
<b>Wastewater Effluent Testing</b>	<p>DEP has completed a study, pursuant to Public Law 2021, Chapter 641, to evaluate the wastewater effluent and groundwater from certain municipal and private wastewater treatment facilities.</p>

	Municipal discharges included the discharge of treated wastewater from municipal or quasi-municipal public sewer systems, and private discharges included the discharge of treated wastewater from industrial and commercial sources. Samples were generally collected monthly over a period of 10 months.
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## Aboveground and Underground Oil Storage Tanks

<b>Lead Agency: Maine DEP</b>
<p><b>Management Strategies</b></p> <p>Prevent surface and groundwater contamination from leaking aboveground storage tanks (ASTs) and underground storage tanks (USTs) by training and certifying tank installers, inspectors and system operators. Ensure tanks, piping and equipment are maintained and operated properly by requiring Annual Inspection Reports completed by Maine Certified Tank Installers and Inspectors. Replace aging tanks and install new tanks with double-walled tanks and piping, spill prevention and leak detection technologies. Minimize contamination of drinking water supplies by restricting locations for tank installations. Provide rapid spill response and fund cleanup of contaminated sites.</p>
<p><b>Core Law / Regulatory Authority</b></p> <p>The Oil Storage Facilities and Groundwater Protection statute (38 M.R.S. §§ 561-A to 570M) includes numerous provisions to prevent and mitigate impacts associated with the storage and handling of oil and related activities. An Act to Prevent Contamination of Drinking Water Supplies (38 M.R.S. § 1391 through § 1399) provides authority for promulgation of Chapter 692 (Siting of Oil Storage Facilities) and Chapter 700 (Siting of Facilities that Pose a Significant Threat to Drinking Water). These rules establish prohibitions and waiver requirements for the siting of oil storage facilities, including requirements for USTs/ASTs to be at least 300 feet from private wells and at least 1000 feet from public wells and prohibited ASTs/USTs from mapped sand and gravel aquifers or source water protection areas unless a waiver with additional monitoring and/or engineering controls has been granted.</p>
<p><b>ASTs/USTs and NPS Pollution Sources</b></p> <p>DEP's 2018/2020/2022 Integrated Report noted that most groundwater contamination in Maine originates from NPS pollution from six types of contamination sources, including petroleum spill sites and leaking USTs. Since 1994, 2,442 sites associated with spills (typically from ASTs) and leaks from USTs have been placed on the Remediation Priority list. Of these sites, 1,982 sites have been remediated, but the remaining 460 sites have yet to be addressed. The 460 sites have contaminated 129 wells and two public water supplies and threatened 449 wells and six public water supplies.</p>
<p><b>BMP Guidelines</b></p> <p>Chapters 691 and 695 set standards for USTs, including registration requirements; design and installation requirements for tanks and piping; leak detection requirements; monitoring and operating procedures, discharge reporting, removal, investigation, and remediation</p>

procedures; a compliance schedule for existing facilities; and closure requirements. Many of the rules also extend to ASTs that include underground piping. Certain ASTs are also required to have Spill Prevention Containment and Countermeasure (SPCC) plans, which list the containment equipment and structures used to prevent spills from reaching ground water or surface water. Plans also identify the inspection, monitoring and oil transfer procedures to prevent spills and specify steps to contain the spill and minimize environmental impacts.

Programs/Projects	Description
<b>Spill Prevention, Containment and Countermeasure (SPCC) Plans</b>	An oil SPCC plan is a plan prepared in accordance with good engineering practices to prevent and clean up spills from oil storage tanks. In 2002, the Maine Legislature enacted 38 M.R.S. § 570-K(5), giving the DEP authority to oversee compliance with the federal SPCC requirements (40 CFR Part 112) for ASTs that exceed the federal 1,320-gallon aggregate storage capacity threshold and are used to market and distribute oil. DEP provides program oversight and technical assistance with SPCC plans and spill containment structures.
<b>TankSmart Program</b>	Federal regulations and Maine law require USTs to have trained operators. DEP's TankSmart program provides online training and certification for operators. The program is accessed by entering a facility registration number, which directs the trainee to specific training modules containing information specific to the type of system installed at the registered location. A generic registration allows interested persons to train on all 27 modules and certifies an operator to operate any underground oil storage system in Maine. Program staff are creating a new module to train and certify delivery drivers.
<b>Maine Board of Tank Installers</b>	The Board was formed by the Maine Legislature in 1985 to certify underground oil tank installers and subsequently inspectors, to provide continuing education for certified persons and undertake disciplinary action when needed. Currently, there are 125 trained and certified individual tank installers and inspectors that play an integral role in preventing leaks from storage systems. Certified tank inspectors and installers must earn continuing education credits annually to maintain their certification. Underground tanks and piping may only be installed by a Maine Certified Tank Installer. Underground tanks and aboveground tanks with underground piping that store motor fuels are required to have a certified tank inspector or installer submit an annual inspection report and certification that each tank and associated piping have been inspected and any deficiencies have been corrected. DEP can issue Notices of Violation with corrective action schedules at the time of inspection.
<b>Maine Ground and Surface Water</b>	The purpose of the Ground and Surface Waters Clean-up and Response Fund is to provide for the investigation, mitigation and removal of discharges or threats of discharge of oil from underground

<b>Cleanup and Response Fund</b>	and aboveground oil storage tank systems, including the restoration of contaminated water supplies. The Fund is administered by DEP with oversight from the Clean Up and Response Fund Review Board.
<b>Home Heating Oil Tank Replacement Program</b>	Maine averages over one heating oil spill per day from ASTs at single family residences. Approximately 78% of Maine households are heated with oil, and the vast majority of these households have 275-gallon ASTs located in the basement or outside the home. The biggest cause (23%) of spills is internal corrosion of the tank. Since it started in 1998, this program has replaced an average of 250 substandard ASTs annually at no cost for low-income homes.
<b>DEP Spill Response Program</b>	DEP provides emergency oil spill response services. Responders are available on-call and provide advice about cleanup. Spill reports are created and available to the public on the DEP website.
<b>Tank Replacement Loan Program</b>	There are approximately 3,600 registered USTs located at approximately 2,300 underground oil storage facilities in the State of Maine. Most of these tanks were installed in the late 1980s through the mid 1990's. As tanks and equipment age, there is an increased risk of failure resulting in groundwater and surface water contamination. As a result, State law requires that USTs must be removed after 30 years. Currently, there are approximately 256 single walled tanks and 266 double walled tanks that are required to be removed prior to December 31, 2019. Approximately 45% of these USTs are in close proximity to existing and future drinking water supplies. DEP estimates potential replacement needs for smaller facilities to be as much as \$25 million over three years. In 2018, DEP, the Maine Municipal Bond Bank (MMBB) and the Finance Authority of Maine (FAME) established a loan program through the Clean Water State Revolving Fund for small businesses.
<b>Tank Registration Database and Inspections</b>	DEP maintains a database of registered oil storage facilities. The database is available on the DEP website and includes detailed information about each facility, including size, type, method of leak detection, installation date, location, owner, date of last annual inspection report, compliance history etc. An inspection report is required to be submitted annually to DEP for all registered tanks. Only passing inspection reports are accepted for review, and DEP conducts compliance inspections for tanks that do not submit reports.

## Brownfields

**Lead Agency: Maine DEP**



### Management Strategies

Conduct site assessments to evaluate site conditions and, if needed, examine potential cleanup options and costs. Provide technical assistance, loans and grants to help remediate contaminated sites. Enable redevelopment of brownfield sites, which in turn can help reduce urban sprawl, increase efficiency of existing infrastructure (e.g., road, rail, water and sewer), create new jobs, provide increased tax revenues, and revitalize declining commercial/industrial-based communities.

### Core Law / Regulatory Authority

The federal Small Business Liability Relief and Brownfields Revitalization Act (Public Law 107-118) provides funds to assess and clean up brownfields; clarifies CERCLA<sup>10</sup> liability protections; and provides funds to enhance state and tribal response programs. In 1993, the Maine Legislature enacted 38 M.R.S. §343-E, which established a voluntary program at DEP whereby landowners receive technical assistance to assess potentially contaminated properties and liability protection from enforcement action for conducting voluntary cleanup actions.

### Brownfields and NPS Pollution Sources

Brownfield sites are properties where redevelopment is impeded by the presence or potential presence of hazardous contaminants. These brownfield sites are often abandoned industrial sites like mills that were originally located near waterbodies for waterpower, transportation, and waste discharge. The contamination from these sites poses a direct NPS threat to water bodies from contaminated runoff and underwater seeps. DEP has identified 2,410 potentially contaminated sites in Maine with dozens more discovered each year.

Investigations at brownfield sites have identified groundwater and surface discharges to waterbodies that are contaminated with toxic pollutants like heavy metals, polycyclic aromatic hydrocarbons (PAHs), dioxins, polycyclic biphenyls (PCBs), pesticides, and volatile organic compounds (VOCs) such as perchloroethylene (PCE) and trichloroethylene (TCE). Many of these toxic pollutants are persistent in the environment, and several bioaccumulate.

### BMP Guidelines

The Maine DEP has developed Standard Operating Procedures and guidelines to supplement federal and industrial Best Management Practices for the investigation and remediation of sites contaminated with petroleum and/or hazardous substances. DEP has compiled these BMPs on DEP's website at:

<http://www.maine.gov/dep/spills/publications/guidance/index.html>.

Programs/Projects	Description
<b>EPA Brownfields Grants</b>	EPA's Brownfields program provides technical assistance, tools and grant funding for Brownfields inventories, planning, environmental assessments, and community outreach. Maine uses a mixture of these funding sources to address Brownfield sites, including EPA Brownfield grants under section 128(a) and 104(k) of CERCLA. Under the Brownfield grants, the state, municipalities and non-profits have hired

<sup>10</sup>Comprehensive Environmental Response, Compensation and Liability Act, commonly called "Superfund".



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	environmental contractors to take cleanup action at 392 sites. The grants also help leverage private funding for site cleanup and redevelopment.
<b>Brownfields Revolving Loan Fund Program</b>	<p>The Maine Department of Economic and Community Development and DEP oversee the Brownfields Revolving Loan Fund program. The primary goals of the program are to clean up sites, foster business redevelopment and sustain the program. Low interest program loans, along with DEP technical support, allow eligible parties to tackle costly contamination issues and help leverage private developer funds, municipal funds and/or state funds.</p> <p>DEP has identified over 20 sites posing NPS risk with high redevelopment potential and a completed brownfields assessment, but due to lack of funding these sites have not been cleaned up. Clean-up will be much more costly and difficult if redevelopment occurs before clean-up. DEP estimates a demand of \$1.25 million for Brownfields site assessments and cleanup over the next three years. DEP is currently exploring the possibility of supplementing the existing loan fund program with additional CWSRF funding to help finance loans for sites that are suspected of causing NPS impacts to ground or surface waters.</p>
<b>Voluntary Response Action Program</b>	DEP's Voluntary Response Action Program allows applicants to voluntarily investigate and cleanup properties, in exchange for certain liability protections. The program is intended to encourage the cleanup and redevelopment of contaminated properties within the state. Many program sites are also in the Brownfields program.

## Marine Debris, Trash and Microplastics

### Lead Agency: Maine DEP

#### Core Law / Regulatory Authority

In 2019, Maine enacted legislation that bans single use polystyrene foam containers for food and beverages (Sec. 1. 38 M.R.S. §1652-A) and single use plastic carry-out bags (Sec. 2. 38 M.R.S. §1611). In 2015, Maine enacted Sec. 1. 38 M.R.S. §419-D, which bans manufacture or sale of products containing microbeads.

#### Management Strategies

Identify Erosion & Sedimentation Control products that are not bio-degradable. Develop and publish alternative product list. Develop NPS policy eliminating the use of non-biodegradable plastic for CWA s.319 funded NPS project. Reduce sources of plastics and other debris that are transported to Maine waters. Raise public awareness about impacts of debris and ways to reduce personal impacts. Host cleanup events.

#### Marine Debris/Trash/Microplastics and NPS Pollution Sources

When waste does not make it to a landfill or transfer station, it can become NPS pollution washing into streams, rivers, lakes and marine waters. While trash in Maine waterbodies has not been considered a major pollutant, there has been growing global concern about the amount and impact of trash ending up in water resources. Common trash from consumer goods makes up the majority of what eventually becomes marine debris, polluting our waterways and oceans. Plastics in the aquatic environment are of increasing concern because of their persistence and effect on the environment, wildlife, and human health. Ongoing research conducted by the University of Maine in Orono has documented higher concentrations of microplastics in river locations compared to ocean locations in Frenchman Bay. The source of some of these microplastics may be derived from plastic used in biodegradable erosion and sedimentation control blankets.

Programs/Projects	Description
<b>Coastweek Cleanup</b>	The Maine Coastal Program organizes the annual Coastweek Cleanup. Each year over a thousand participants clear hundreds of miles and thousands of pounds of trash. The amount and types of debris is recorded and becomes part of the international ocean trash index, which is compiled by Ocean Conservancy. In 2022, 533 volunteers removed 2,580 lbs. of trash, which cleaned 56 miles of coast.
<b>Regional Collaboration to Address Marine Debris in the Gulf of Maine</b>	With the support of NOAA, the Gulf of Maine Association is working in partnership with the Gulf of Maine Council, Center for Coastal Studies, Urban Harbors Institute, Surfrider Foundation, Blue Ocean Society for Marine Conservation, and Huntsman Marine Science Centre to conduct shoreline cleanups and implement actions to prevent marine debris from entering the Gulf of Maine. As of December 2023, partners have removed nearly 48,000 lbs. of debris from more than

7,200 acres of coastline through 532 cleanups conducted by more than 3,600 volunteers.
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## I. Other NPS Sources

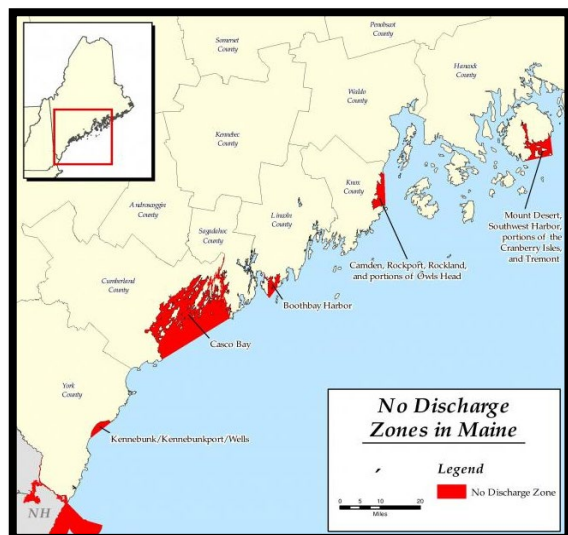
The preceding sections describe six major NPS categories in Maine. Boatyards, Marinas and Recreational Boating and Land Disposal are no longer major sources of NPS pollution. Regulatory and nonregulatory programs have reduced the water quality threat from these two NPS categories.

### Boatyards, Marinas and Recreational Boating

Because of their proximity to water, marine facilities including boat repair yards, marinas, commercial piers, and boat ramps can adversely affect water quality. Many types of pollutants including fuels, oils, grease, antifreeze, cleaning materials, fish waste and solid waste can get into nearby waters. In large part, marine facilities are regulated by the MEPDES program, through both the Industrial Multi-Sector General Permit and the Waste Discharge Program. In addition, marine facilities may be subject to regulation for fuel storage, hazardous, solid or sanitary waste, and air discharges. Commercial piers and municipal or state boat ramps are potential sources that are not regulated.

DEP plays the lead role in carrying out these regulatory programs and providing technical assistance and outreach efforts for boatyards and marinas. In conjunction with the Maine Marine Trade Association, DEP updated the Maine Marine Environmental Compliance Guide in 2019. This document provides guidance on various BMPs such as fish waste and bait management, boat cleaning, fuel spill prevention, solid waste management and sediment and erosion controls.

**Figure 15. No Discharge Zones in Maine**



Recreational boating can cause NPS impacts in Maine's waters outside of the boatyards and marina facilities. Federal law prohibits discharges of untreated sewage (toilet waste) into waters within three miles of the coast; requires the use of marine sanitation devices to treat all sewage generated from boats; and provides a process for a State to create No Discharge Areas. Maine law prohibits the discharge of sewage from a vessel into inland waters, such as rivers and lakes, and requires pumpout stations at certain marinas.

Since 1999 DEP has managed the Maine Pumpout Grant Program funded by the United

States Fish and Wildlife Service with funding from the Clean Vessel Act (CVA) Grant Program. Funds for the CVA program are provided annually from the Sport Fish Restoration and Boating Trust Fund and are derived from excise taxes on fishing equipment, motorboat and small engine fuels, import duties, and interest on the fund. Maine applies for grant funding every year through a nationally competitive process.

Maine's Pumpout Grant Program provides a 75% grant for the installation, operation and maintenance of boat holding tank pumpout equipment to marinas, boatyards, and municipalities, through a non-competitive program. Maine has developed a detailed plan to ensure that pumpouts are installed where they are needed. In addition, grant funding is used to produce educational materials for the boating public. Since 1999, Maine has received over \$4 million in CVA funds and has passed over \$3.3 million directly to Maine towns and businesses, resulting in 121 pumpouts available to boaters on the coast and lakes.

States can apply to the EPA to designate an area as a No Discharge Area if the state concludes that additional protection from the impacts of boat sewage is needed to protect public health, sensitive environments and shellfish resources. There are five approved No Discharge Areas in Maine: the Kennebunk-Wells, Casco Bay, the Boothbay Region, West Penobscot Bay and the Southern Mount Desert.

The sport of wake surfing is becoming more popular on Maine lakes. Specialized boats create large wakes for the purpose of surfing. These boats are more powerful than similar sized craft and have specialized ballast tanks and other mechanical systems to enhance the size of the wake. Use of these boats near shore are a concern for increased erosion as the wake strikes the shore, downward angled propellers suspend sediment, and the ballast tanks can potentially transport invasive plants and animals. LD 693: An Act to Protect Inland Water Quality, Shorelines, Wildlife and Public Safety by Prohibiting Operation of a Wake Boat to Create an Enhanced Wake Close to Shore or in Shallow Water sought to prevent the sport within 500 feet of the shore and in waters less than 20 feet deep. The Act led to the formation of a 2023 task force that studied the issue and developed recommendations. A subsequent bill ([LD 2284](#)) based on the task force report was enacted in April 2024. The new law prohibits an individual from operating a motorboat in less than 15 feet of water or within 300 feet of the shoreline when the motorboat is engaged in wakesurfing.

## Land Disposal

Waste disposal was historically a significant NPS problem in Maine. Waste and leachate delivered toxics and nutrients to surface and ground waters. Fortunately, several laws have been enacted over the past several decades, and waste disposal activities are now highly regulated and monitored. In fact, most of Maine's landfills are currently inactive or have been closed. There are now only 39 highly regulated landfills, including 27 municipal operations.

The State of Maine supports an integrated approach to waste management. This includes programs to reduce the amount and toxicity of waste generated, promote reuse and recycling

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of waste, and compost and process waste to create safe and useful products. Disposal through incineration and landfilling is the least preferred option.

DEP's solid waste programs include solid waste facilities management, sludge and residuals management, scrap tire management, electronic waste and mercury product management, and the non-hazardous waste transporter program. These programs provide education and technical assistance and carry out regulatory activities including licensing, compliance and enforcement of the State's solid waste laws.

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## VIII. NPS Programs and Partnerships

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### A. DEP NPS Programs

DEP conducts focused work on NPS issues through the NPS Grants Program, NPS Technical Assistance Services and NPS Outreach. The following section describes these program areas and identified management strategies associated with each.

#### NPS Grants Program

DEP administers a pass-through grants program that awards and monitors sub-grants of EPA Section 319 & 604b funds (Clean Water Act) for watershed projects to help restore or protect lakes, streams, rivers, or marine waters from NPS pollution. These grants help communities identify nonpoint water pollution sources, prepare watershed-based management plans, and take action to reduce or prevent NPS pollution. DEP Agreement Administrators are assigned to each NPS project to monitor grantee progress in implementing the project and provide technical support to help grantees successfully carry out projects. DEP offers two types of grants to help communities:

- **Develop a watershed-based plan** - A WBP provides assessment and management information and describes actions needed over a ten-year period to restore NPS-impaired water bodies, or to protect water bodies threatened by NPS pollution. The extent of the planning area (watershed) needs to be a geographically-appropriate size so that implementing actions can lead to measurable reductions in pollution and achievement of water quality goals.
- **Implement a watershed-based plan** - Grants are available to help partners make progress carrying out NPS management measures (actions) described in the plan. A WBP accepted by the DEP is a prerequisite to be eligible to apply for NPS grant funds to help implement the plan.

DEP administers the Section 319 grant award received from EPA in accordance with the national EPA guidance for state NPS management programs and the EPA-DEP Performance Partnership Agreement (PPA). EPA guidelines designate the annual Section 319 award into two categories – NPS program funds and watershed project funds. States may use 50 percent of their Section 319 grant allocation (NPS program funds) to support any eligible NPS activities in the State NPS management plan. States are required to use at least 50 percent of funding (watershed project funds) to implement on-the-ground watershed projects guided by a watershed based plan. Watershed project funds are for restoring impaired waters through the implementation of a WBP or to implement alternative plans approved by EPA, such as protecting unimpaired waters designated as a priority in a State NPS Plan. Project funds may not be used for planning activities such as WBP or TMDL development.

In Maine, Section 319 NPS program funds are used primarily to support DEP staff performing NPS program services and training programs through the NPS Training and Resources Center. DEP expects to use a limited amount of program funds to help develop new WBPs. Section 319 “Watershed project funds” will be used primarily for implementation of WBPs to help restore NPS impaired waters or alternative plans to protect unimpaired waters that are considered threatened. DEP plans to use up to 50 percent of watershed project funds for implementation of WBPs to help communities protect unimpaired waters that are considered threatened or most at risk.

### Technical Assistance Services

In addition to the support provided to active 319 projects, DEP invests considerable staff resources to provide technical support to watershed groups, municipalities and other partners. Some of the main areas of support are described below.

- **Watershed Association Support** – DEP staff support the work of lake and watershed associations through presentations, meetings and other technical assistance. DEP provides information to help groups understand their watershed’s NPS issues and evaluate available options for further assessment and remediation. Staff also promotes the use and adoption of the NPS Site Tracker, which helps groups manage information on erosion sites in their watersheds. The tool allows prioritization of erosion sites, tracking of sites as they are fixed, and listing of new sites as they are discovered.
- **Watershed Surveys** – Watershed Surveys find, document, and prioritize NPS pollution sources in a watershed and recommend BMPs needed at specific NPS sites. Most watershed survey projects are conducted with local funding, and DEP provides technical assistance and project oversight.
- **Watershed Roundtable** – DEP hosts an annual Watershed Roundtable for watershed managers from state agencies, municipalities, watershed organizations, SWCDs, and the private sector. This informal, day-long event provides an opportunity for networking, sharing lessons learned, and discussing common problems in both rural and urban watersheds across the state.
- **Youth Conservation Corps** – The DEP provides technical assistance and training to the State’s seven YCC programs. These YCC programs hire high school students to install buffers, erosion control measures, and other conservation practices in lake and river watersheds. Most of these programs originally started as part of 319 grant projects, but communities then secured local funding to continue the programs after the grants ended.
- **Municipal Comprehensive Plan Reviews** – DEP provides maps and waterbody information to municipalities working on comprehensive plans, which are required under the Comprehensive Growth Management Act (30-A M.R.S. § 4311). After plans are submitted to the state, DEP reviews the water resources sections of municipal comprehensive plans for consistency with agency goals, programs, and policies. Suggestions are also provided for possible strategies to address NPS threats and problems.



## NPS Outreach

NPS pollution is the result of a myriad of individual actions throughout a watershed. While many important polluted runoff sources can be controlled through administration of local ordinances or state regulations, outreach promoting voluntary use of BMPs can effectively prompt more widespread use of BMPs. DEP carries out several programs that promote voluntary adoption and use of BMPs to address NPS pollution. Some of the main outreach activities are described below:

- **Nonpoint Source Training and Resource Center** – The NPSTRC provides training to various groups throughout the state to help them prevent NPS pollution. Training topics include erosion and sediment control; stormwater management; and septic system installation, design, and inspection. The NPS Training Center coordinates the Contractor Certification Program, which is required for contractors that disturb soil in the shoreland zone. The Center also coordinates conferences; develops and maintains various online trainings, publications and a video lending library; and acts as a clearinghouse for NPS and BMP information.
- **Outreach to Municipal Officials** –The NPS Training Center provides some training to fill this need through certification classes and online training modules. Limited assistance is also provided to municipalities that view the modules and would like additional information (e.g., ordinances changes).
- **School Outreach** – DEP provides support for student and teacher activities that enhance understanding of NPS and Maine’s water resources. Staff help support partner events including regional Envirothon competitions for high schools, classroom visits, trout releases and other water quality field trips. DEP helps plan and carry out the annual Southern Maine Children’s Water Festival and the biennial Northern Maine Children’s Water Festival. These events bring over 700 4<sup>th</sup>, 5<sup>th</sup> and 6<sup>th</sup> graders to the University of Southern Maine and University of Maine to learn about Maine waters, ecosystems, challenges and stewardship. DEP also provides middle and high school environmental education curricula, including modules on watersheds, wetlands and ocean acidification.
- **Target Audience Analysis** - Effective outreach segments audiences into discrete groups of people with common characteristics and then facilitates a more effectively targeted outreach effort. DEP’s NPS Outreach Program aims to understand key target audiences and then use this knowledge to effectively influence BMP use. DEP has funded and supported trainings on the use effective use of social media to influence behavior, beliefs, values, and reduce barriers to behavior adoption. DEP then provides this information to partners who are working to promote water quality efforts.
- **NPS Outreach Assistance to 319 Grant Projects** – DEP provides outreach assistance to partners developing and implementing watershed based plans to make sure that outreach efforts are as effective and targeted as possible. The guidance document *Outreach Guidance for NPS Watershed Implementation Projects* (DEP, 2008) has been developed for grantees. DEP also provides staff support to help identify the target audiences that are key to advancing water quality improvement and protection. Once the audience is identified,

projects can tap into existing programs or, if needed, design new ones based on the fundamentals of effective behavior change science.

- **NPS Outreach Assistance to Partners** - The most effective way to promote voluntary use of BMPs is through one-on-one contact and local outreach. Since DEP doesn't have the staffing or local reach to effectively accomplish voluntary BMP adoption on a statewide basis, DEP partners with and supports local organizations. These organizations and programs deliver local behavior change efforts through technical assistance, educational opportunities, and cost-sharing. The organizations include statewide organizations with a local presence such as Maine Lakes' LakeSmart program and the Maine Board of Pesticide Control's YardScaping program. DEP also supported public outreach efforts associated with the ban on coal tar sealant products on driveways and parking lots, which went into effect starting in 2020.

DEP has identified a number of important target audiences who in one form or another can have a significant impact on the quality or quantity of stormwater runoff. These audiences typically need encouragement to voluntarily implement BMPs. BMP promotional efforts and programs for several target audiences are described below.

**Table 8. Key NPS Target Audiences and Current BMP Promotional Efforts.**

Target Audience/Activity	Prominent Organizations (Outreach Efforts)
Agriculture	USDA NRCS (voluntary technical assistance & funding for conservation practices/BMPs through EQIP, USDA Farm Services Agency (voluntary technical assistance & funding through CRP), and DACF (Maine nutrient management law administration)
Developers	DEP Nonpoint Source Training and Resource Center (NPSTRC) (limited outreach through occasional conferences)
Earthwork contractors	DEP NPSTRC (contractor certification program & courses)
Homeowners and residents	Think Blue Maine partnership (website, trainings, outreach materials), DEP (319 project support), Maine Board of Pesticide Control (Yardscaping Program)
Local Public Road Maintenance	Maine Local Roads Center (training and technical assistance), NPSTRC (indirectly through Erosion & Sediment Control courses)
Municipal officials and employees	Nonpoint Source Education for Municipal Officials (limited workshops and presentations), NPSTRC (training for CEOs and planners on low impact development)
Shorefront property owners	<b>Lakes</b> – Maine Lakes (LakeSmart Program), Lake Stewards of Maine (trainings, website), Regional groups; <b>Streams/Rivers</b> – Regional groups; <b>Marine</b> – Regional groups, Casco Bay Estuary Partnership, Piscataqua Region Estuaries Partnership
Winter snow/deicing contractors/property managers	Statewide Salt Task Force (policy development, partner outreach), Long Creek Watershed Management District, Individual Municipalities (SWiM®), NPSTRC (conference, trainings)

**Forestry**

Maine Forest Service (Certified Loggers program, BMP site inspections) and USDA NRCS (voluntary technical assistance and funding for forestry management practices, Forestry plans and water quality conservation practices through EQIP).

## B. Integration with Other Government Programs that Protect Water Quality

In addition to the DEP programs mentioned in the previous section, there are many other DEP, state, federal and municipal programs that help protect and restore water quality. The most prominent NPS-related programs are described below.



### Environmental Protection Agency

EPA provides annual funding through Section 319 of the Clean Water Act to help DEP carry out its NPS Programs. EPA personnel also provide extensive program guidance and technical assistance for the NPS Grants Program to ensure compliance with EPA guidelines and reporting requirements. In

2023 the annual Section 319 program grant to Maine was \$1,995,800. In addition to CWA s. 319 funding, EPA provides other funds for water quality related programs and activities including Clean Water and Drinking Water State Revolving Funds, CWA s. 604(b) grants, the Maine Healthy Beaches Program and the National Estuary Program (CWA s. 320)320). EPA and DEP performance objectives, priorities and commitments are detailed in an annual Performance Partnership Agreement. For further explanation of funding sources, see Section IX, below.

FMI - <http://www.maine.gov/dep/about/planning.html>



### Maine Coastal Program

In 1978, NOAA approved the Maine Coastal Program (MCP) as the State's coastal zone management plan in accordance with the federal Coastal Zone Management Act (15 U.S.C. §, *et seq.*). The MCP works to improve the environmental and economic health of Maine's coastal areas in accordance with the CZMA and the general policies stated in the state's Coastal

Management Policies Act (38 M.R.S. § 1801). DACF's Bureau of Geology, Natural Areas, and Coastal Resources is the lead agency for administration of the MCP. Several state agencies, primarily DEP and DMR, play key roles in implementing Maine's networked program. The MCP's activities center on the designated state "coastal area", which is comprised of the land area of all municipalities on tidally-influenced waters and coastal waters and all islands within them seaward to the three-mile limit of state ownership.

The MCP's NPS-related efforts focus primarily on planning related to the interaction of land uses and coastal water quality. Watersheds of shellfish growing areas are a major focus; as required by NOAA, MCP has a goal and indicator program to track progress in opening shellfish growing areas for harvesting. While DMR administers the shellfish classification program, MCP provides technical support to municipalities to develop municipal plans, policies and ordinances

that address coastal pollution in shellfish growing area watersheds. MCP administers a competitive Coastal Community Grant program for municipalities and regional organizations that may fund NPS-related projects such as water quality monitoring, pollution source surveys, and habitat restoration; and assists coastal organizations applying for CWA Section 319 funds. MCP also provides limited funding to Regional Planning Councils in nine coastal regions that may assist coastal municipalities with NPS-related issues, among others. MCP's Municipal Planning and Assistance Program, which supports smart growth strategies, low impact development, and other land use planning, and the MCP's outreach program, which educates the public about coastal issues and promotes good stewardship, also contribute to the state's approach to NPS management.

FMI - <https://www.maine.gov/dmr/mcp/index.htm>

### **Maine DEP Stormwater Program (Maine Pollutant Discharge Elimination System)**

Since 1987, EPA has had authority under the federal Clean Water Act to regulate certain stormwater discharges as point source discharges through the National Pollution Discharge Elimination System. EPA developed specific stormwater requirements for construction sites, industrial activities and for discharges from municipal separate storm sewer systems. In 2001, EPA delegated authority to DEP to administer this program (now referred to as MEPDES).

- **Construction General Permits** - DEP issues general permits for point source stormwater discharges from construction activity. This general permit applies solely to construction activity and not to ongoing stormwater management following construction. The permit sets standards for managing stormwater that may pick up pollutants, including soil, and discharge them to waters of the State such as lakes, streams, and wetlands. The requirement for a permit is triggered by the amount of disturbed area created during construction, and whether the site will directly discharge to surface waters of the state.

FMI - <http://www.maine.gov/dep/land/stormwater/construction.html>

- **Municipal Separate Storm Sewer Systems (MS4)** - DEP issues general permits for discharges from MS4s in certain regulated communities. In 2020, there were 40 entities regulated through this program, including 30 municipalities, eight State or Federal-Owned facilities and two transportation agencies. Regulated entities are required to develop and implement a stormwater program management plan that addresses the following six Minimum Control Measures: public education and outreach on stormwater impacts; public involvement and participation; illicit discharge detection and elimination; construction site stormwater runoff control; post-construction stormwater management in new development and redevelopment; and pollution prevention/good housekeeping for municipal operations.

FMI - <http://www.maine.gov/dep/land/stormwater/MS4.html>

- **Industrial Multi-Sector General Permit** - In 2005, Maine's Multi-Sector General Permit was issued for point source stormwater discharges associated with industrial activity. Regulated entities are required to develop and implement a Stormwater Pollution Prevention Plan,

which includes general guidelines as well as specific standards for each listed industrial activity. The Industrial Stormwater Unit provides technical assistance, training, outreach and support to help the Maine business community meet permit requirements.

FMI - <http://www.maine.gov/dep/land/stormwater/multisector.html>

- **Concentrated Animal Feeding Operations** (CAFOs) – In 1998, the Maine Legislature enacted the Maine Nutrient Management Law (7 MRS §747) which established the framework for a comprehensive Nutrient Management Program. One component of this law requires certain livestock operations, because of their size or other criteria, are required to obtain a Livestock Operations Permit (LOP) from the Department of Agriculture, Conservation, and Forestry (DACF). Also issued concurrently with the LOP, if applicable, is a MEPDES permit issued by the DEP, in consultation with DACF. The DEP also monitors CAFOs consistent with the Nutrient Management Rules (01-001 CMR 565) and assists these farms with compliance to federal CAFO Rules. Maine currently has seven CAFO permits including five dairy operations, one poultry operation, and one beef cattle operation.
- **Long Creek Watershed** - In 2009 and 2015, DEP issued a MEPDES general permit for post-construction discharges of stormwater from properties with one acre or more of impervious area in the Long Creek watershed, an urban impaired stream located in the municipalities of South Portland, Westbrook, Portland, and Scarborough. Operators of properties that have a designated discharge are required to obtain an Individual Waste Discharge License from the Department or file for coverage under the Long Creek General Permit which requires permittees to participate in and comply with implementation of the Long Creek Watershed Management Plan, which is being carried out by the Long Creek Watershed Management District.



FMI - [http://www.maine.gov/dep/water/wd/long\\_creek/index.html](http://www.maine.gov/dep/water/wd/long_creek/index.html),  
<https://www.restorelongcreek.org/>



### Maine Department of Marine Resources

DMR was established to conserve and develop marine and estuarine resources through scientific research, promotion of the coastal fishing industry, and implementation of laws and regulations. DMR's Shellfish Growing Area Program determines shellfish growing area classifications in all shellfish harvesting areas to ensure that only pollution-free areas are open to harvesting. Classifications are set through sanitary surveys that include a shoreline survey to identify pollution sources that may impact water quality, marine water sampling to determine fecal coliform bacteria levels, and analysis of how weather conditions, tides, currents, and other factors may affect the distribution of pollutants in the area. Water samples are collected monthly from January through December to determine bacteria levels. DMR sanitary surveys have identified NPS pollution as the likely sources of bacteria in numerous shellfish harvesting areas in the state. This information, in turn, has been used by DEP to help identify NPS Priority Watersheds.

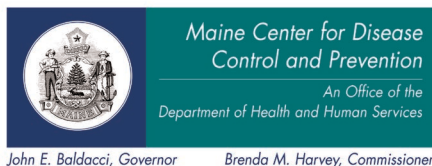
FMI - <https://www.maine.gov/dmr/fisheries/shellfish>

### Maine Climate Council

In 2019, the Governor and Legislature created the Maine Climate Council, an assembly of scientists, industry leaders, local and state officials, and citizens to develop a plan to address the impacts of climate change on Maine, build resiliency to climate effects, and meet state statutory targets to reduce greenhouse gas emissions. With the support of six working groups and two subcommittees, the *Maine's Climate Action Plan: Maine Won't Wait* was released in December 2020 and will be updated in December of 2024. This four-year plan and update contain strategies and goals to emit less carbon, produce energy from renewable sources and protect Maine's natural resources, communities and people from the effects of climate change. To help reach these goals, the State created the Maine Climate Change Adaptation Toolkit and Action Guides aimed for homes, vehicles, businesses, and communities. The Community Resilience Partnership offers grants and technical assistance to municipal and tribal governments for projects to make communities more resilient to climate change and incorporate clean energy into operations.



FMI – <https://www.maine.gov/climateplan/> and <https://www.maine.gov/dep/sustainability/climate/adaptation-toolkit.html>



### Maine Drinking Water Program (DWP)

The Maine Drinking Water Program, which is part of the Center for Disease Control and Prevention, implements the Safe Drinking Water Act. The program uses EPA's multiple barrier approach to help keep water safe and secure. Source protection is the program's primary focus since poorly planned and managed development represents the greatest risk to water quality and quantity. Key DWP partners include Public Water Systems and Maine Rural Water Association. None of these groups have authority to manage land use. However, the DWP, public water systems and DEP collaborate on projects in a number of drinking water watersheds. The DWP also provides input on state-wide priorities for 319 projects and provides public water systems with financial resources that can be used to enhance NPS projects. The DWP is also a key partner in the Salmon Falls Watershed Collaborative, which is an inter-state effort to protect drinking water supplies for over 47,000 residents in Maine and New Hampshire.

FMI - <http://www.maine.gov/dhhs/mecdc/environmental-health/water/>





### **Maine Healthy Beaches Program**

The Maine Department of Environmental Protection's Maine Healthy Beaches Program (MHB) was established to ensure that Maine's salt-water beaches remain safe and clean. The program brings together communities to perform standardized monitoring of beach water quality, notify the public if bacteria levels threaten human health, and educate both residents and visitors on ways to keep Maine's beaches healthy. The MHB program is funded by EPA under the Federal Beaches Environmental Assessment and Coastal Health Act. There are 30 beach management entities in the MHB program. While the focus of the program is to monitor bacteria levels at beaches, entities finding high bacteria levels at beaches often expand testing into feeder streams to help determine bacteria sources.

FMI - <https://www.maine.gov/dep/water/beaches/index.html>

### **Municipalities**

Maine includes 488 organized municipalities that provide a wide range of services and responsibilities associated with self-government. Municipal roles related to NPS include road construction and maintenance, comprehensive planning, and growth management. Most municipalities have planning boards that carry out laws and ordinances related to comprehensive planning and growth management functions. The Municipal Subdivision Law (30-A M.R.S. § 4401) requires planning boards to review subdivisions using the criteria set out in the statute. The Comprehensive Growth Management Act (30-A M.R.S. § 4311) encourages municipalities to identify tools and resources to effectively plan for and manage future development within their jurisdictions. The Mandatory Shoreland Zoning Act (38 M.R.S. § 435) requires the adoption of local shoreland zoning ordinances that regulate lands within 250 feet of normal high water of certain water bodies and wetlands.

Since Maine is a 'home rule' state, municipalities have broad authority to adopt additional local land use ordinances. Site Plan Review Ordinances have been adopted by numerous municipalities under the authority of home rule to regulate developments which normally cannot be reviewed as subdivisions. A smaller number of municipalities have also adopted ordinances limiting phosphorus export from single-lot development, promoting low impact development practices or creating set-backs along small headwater streams. In addition to local ordinance work, 30 municipalities are part of the MS4 program, which addresses NPS issues from municipal stormwater systems. The Maine Municipal Association is a non-profit organization that provides services such as advocacy, education and information, professional legal and personnel advisory services, and group insurance self-funded programs for member municipalities. Numerous municipalities have also become involved in and provided support for 319 grant projects and other community efforts to protect and restore local water quality.

FMI - <http://www.memun.org/>

### **Municipal Planning Assistance Program**

This program, which is housed in the Maine DACF, helps municipalities manage growth to enhance economic development and natural resource protection. MPAP works with towns throughout the state's organized area. The Maine Coastal Program funds planning staff whose



efforts focus on coastal communities and coastal issues. In addition to administering Maine's Growth Management Act, program staff regularly provide technical assistance to local and regional planners, other municipal officials, and volunteer boards on the development of land-use ordinances, interpretation of state land use laws, the local comprehensive planning process, and numerous other matters. The program also collaborates with other state agencies on the development of policies, rulemaking, comprehensive resource assessments, and other strategic state-level matters.

FMI - <http://www.maine.gov/dacf/municipalplanning/index.shtml>



### **Natural Resources Conservation Service, USDA**

The NRCS administers multiple federal Farm Bill programs that provide technical and financial assistance for implementation of water quality practices. The 2018 Farm Bill provides added opportunities for leveraging funding and other resources to improve water quality affected by agricultural and silvicultural NPS pollution. The Environmental Quality Incentives Program (EQIP) provides financial and technical assistance to agricultural producers in order to address natural resource concerns and deliver environmental benefits such as improved water and air quality, conserved ground and surface water, reduced soil erosion and sedimentation or improved or created wildlife habitat.

The National Water Quality Initiative (NWQI) began in 2012 as a collaborative program between NRCS and EPA to help improve water quality in agriculturally influenced watersheds. NRCS, in consultation with DEP and other partners, selects new NWQI watersheds based on shared NRCS and state priorities. Watersheds must be impaired, threatened, or contribute to downstream impairments; and the watershed must also demonstrate technical capacity, an established partner network, and producer interest. A minimum of two HUC-12 watersheds are selected for projects in each state. In the project planning phase, NRCS provides technical assistance and resources for assessments and pre-implementation planning. In the implementation phase, NRCS provides technical assistance to help landowners develop a conservation plan with targeted conservation practices, and financial assistance to help accelerate voluntary adoption of conservation practices. EPA supports the partnerships between NRCS and state water quality agencies through use of CWA Section 319 funds for watershed assessment, planning, and monitoring. Prior NWQI watersheds in Maine include Sebasticook Lake, Unity Pond, and the Meduxnekeag River. In 2020, the Sheepscot River and Cross Lake watersheds were enrolled in the program, both of which are in the implementation phase. EPA, NRCS, and DEP will continue to implement encourage and facilitate program coordination in these watersheds.

FMI - <http://www.nrcs.usda.gov/wps/portal/nrcs/site/me/home/>

### **Soil and Water Conservation Districts**

Maine's 16 SWCDs provide local conservation leadership, teach the value of natural resources, encourage conservation efforts and help plan and implement voluntary programs. Districts are governmental subdivisions of the state that are governed by a Board of Supervisors and funded

in part by the DACF and their respective counties. Districts are part of the non-profit Maine Association of Conservation Districts, which helps coordinate and publicize District activities. Districts are heavily involved in DEP's 319 grant program because their mission of NPS abatement and close ties with the local community make them ideal partners.

FMI - [https://www.maine.gov/dacf/about/commissioners/soil\\_water/index.shtml](https://www.maine.gov/dacf/about/commissioners/soil_water/index.shtml)

### State Universities

The University of Maine System supports NPS-related work through several programs. The George Mitchell Center's Water Institute and Sustainability Solutions Initiative conduct water-related research and promote sustainable policies and solutions through conferences, publications and local outreach. The University of Maine's Margaret Chase Smith Policy Center convened a wide range of stakeholders to examine winter salt issues and authored a comprehensive report that spurred the formation of the Winter Salt Task Force. In addition, professors and students at several campuses help with water quality monitoring and technical assistance on local projects. The University of New Hampshire's Stormwater Center (UNH) conducts research and outreach related to stormwater BMPs in cold climates.

FMI - University of Maine - <http://www.umaine.edu/sustainabilitysolutions/about/index.htm>

University of New Hampshire Stormwater Center - <http://www.unh.edu/unhsc/>

### Tribal Governments

Five federally-recognized Native American tribes are located within the State of Maine. These include the Houlton Band of Maliseet Indians (HBMI); the Penobscot Indian Nation (PIN); the Passamaquoddy Tribe of Indians at Pleasant Point Reservation (PPP); the Passamaquoddy Tribe of Indians at Indian Township Reservation (PIT); and the Mi'kmaq Nation (MN). The HBMI, PIN, PPP, and PIT have NPS programs. Mi'kmaq Nation is currently working on a NPS assessment and a NPS management program plan; expected completion dates are in FY25. Tribal NPS programs are focused on protecting and restoring waters included within their statutory scope for CWA §319. Tribal governments conduct projects that directly benefit their waters, both on and off the Reservation by collaborating with the surrounding communities, organizations, and the State of Maine. Tribes seek to restore and protect waters within the following watersheds: Wolastoq (St. John) River, Penobscot River, and Schoodic (St. Croix) River.

FMI – Houlton Band of Maliseets - <http://naturalresources.maliseets.com/>

Penobscot Nation - [www.penobscotnation.org/departments/departments-of-natural-resources/](http://www.penobscotnation.org/departments/departments-of-natural-resources/)

Passamaquoddy Tribe of Indians Indian Township Reservation - [www.passamaquoddy.com](http://www.passamaquoddy.com)

Passamaquoddy Tribe of Indians Pleasant Point Reservation - [www.wabanaki.com](http://www.wabanaki.com)

Mi'kmaq Nation - <https://micmac-nsn.gov/>

**Table 9. Programs, Partners, and Roles.**

Program and Partner Names	Education & Outreach	Financial Assistance	Technical Assistance	Technology Transfer	Monitoring	Regulatory Enforcement	Policy & Planning
Maine Coastal Program		X	X	X			X
Maine DEP Stormwater Program			X			X	
Maine DMR					X		
Maine Climate Council	X	X					X
Maine Drinking Water Program		X					X
Maine DEP MHB	X		X		X		
DACF MPAP							X
Municipalities	X	X				X	X
USDA NRCS		X	X	X			
SWCDs	X		X	X	X		
State Universities	X		X	X	X		X
Tribal Governments	X		X	X	X		X
US EPA	X	X	X	X	X	X	X

## C. Partnerships with Non-Governmental Organizations

DEP relies on local non-governmental organizations to carry out NPS assessment and remediation work at the local level. These groups provide local knowledge and expertise, carry out monitoring and stewardship, and provide in-kind support or direct funding to get work done. The most successful NPS projects typically are initiated and implemented by a dedicated local organization with support from other local, regional, or statewide groups. Although there are too many organizations to list each individually, the key non-governmental organizations and types of groups are described below.



### Casco Bay Estuary Partnership (CBEP)

CBEP is part of the National Estuary Program established by EPA.

CBEP works with partners to protect and restore the water quality and fish and wildlife habitat of the Casco Bay ecosystem, while ensuring compatible human uses. CBEP's work is guided by the following five goals in the Casco Bay Plan: support projects to conserve and restore habitat, manage stormwater, monitor water quality, reduce toxic contamination, and promote active stewardship in Casco Bay. CBEP's focus area is the Casco Bay watershed, which covers 986 square miles and includes 42 municipalities. CBEP provides financial support, collects scientific data, catalyzes project development and implementation, provides technical assistance, and promotes citizen involvement and awareness.

FMI - [www.cascobayestuary.org/](http://www.cascobayestuary.org/)



### Maine Audubon

Since 1843, Maine Audubon has worked to conserve Maine's wildlife and wildlife habitat by engaging people in education, conservation and action. Two partnership programs of note are Stream Smart and Stream Explorers. Stream Smart is a training program and resource for anyone responsible for constructing road-stream crossings. The goal of Stream Smart is to connect fish and wildlife habitat while protecting roads and public safety and to enhance the climate resilience of these structures. Since 2011, Maine Audubon and partners have trained over 1,000 individuals and reconnected hundreds of miles of stream habitat for wildlife. The Stream Explorers is a community science project featuring aquatic macroinvertebrates identification to measure of water quality across southern Maine.

FMI - <https://maineaudubon.org/projects/stream-smart/>  
<https://maineaudubon.org/projects/stream-explorers/>



### Lake Stewards of Maine (LSM)

LSM (formerly Volunteer Lake Monitoring Program) is a nonprofit organization that trains, certifies, and provides technical support to over 1,000 volunteers who monitor a wide range of indicators of water quality, assess watershed health, and screen over 500 lakes for invasive aquatic plants and animals. LSM volunteers monitor assigned lakes twice a month from May through October, and the resulting data are used by DEP to help determine lake health and attainment status. LSM also conducts outreach about water quality and watershed stewardship through its annual meeting, website, trainings, newsletters, and annual report. LSM and DEP jointly conduct an annual workshop on watershed surveys, and LSM has raised funds to help support a small number of watershed surveys.

FMI - <https://www.lakestewardsofmaine.org/>



### Maine Lakes

Maine Lakes (formerly Maine Congress of Lake Associations) was formed in 1970 as a non-profit, charitable organization focused on protecting water quality and promoting sound land-use practices for the protection and preservation of Maine's lakes. Maine Lakes serves as an information clearinghouse and conducts education to lake associations through its website, annual conference, newsletter, floating classroom program, and other avenues. Maine Lakes also conducts legislative advocacy related to lake management issues. In 2012 the LakeSmart program was transferred from DEP to Maine Lakes. LakeSmart was established in 2002 to recognize lake-friendly properties and promote a new norm for lakefront development.

FMI - <https://www.lakes.me/>

### Piscataqua Region Estuaries Partnership (PREP)



PREP is part of EPA's National Estuary Program. PREP's mission is to carry out the Comprehensive Conservation and Management Plan, which outlines 98 Action Items to improve water quality in the Great Bay Estuary and the Hampton-Seabrook Estuary. PREP provides financial assistance to partners and projects, conducts water quality and environmental monitoring, and conducts education and outreach programs. In 2007 the PREP Management Committee expanded PREP's focus area to the entire Great Bay Estuary watershed, including the 24 percent of the watershed in Maine. In total, the watersheds include 42 municipalities in New Hampshire and 10 municipalities in Maine. PREP receives its funding from the EPA and is administered by UNH.

FMI - <https://prepestuaries.org/>

### Watershed Organizations

Local watershed organizations are key partners in NPS work including water quality monitoring, outreach, and watershed stewardship. Several regional groups focused on water resource protection include Friends of Casco Bay, Lakes Environmental Association, 7 Lakes Alliance, Cobbossee Watershed District, 30 Mile River Watershed Association, Raymond Waterways Protective Association, Acton Wakefield Watersheds Alliance, China Region Lakes Alliance, Friends of the Cobbossee Watershed, Saco Watershed Collaborative, Saco Headwaters Alliance, Androscoggin River Watershed Council, and ProjectSHARE. These organizations tend to have some paid staff and often serve as resources for smaller organizations. In addition to these larger groups, there are over 200 lake associations that focus on individual lakes, and a smaller number of groups focused on rivers, streams, and marine areas.

### Wellsreserve Wells National Estuarine Reserve

Wells Reserve is one of 28 national estuarine reserves that partners with the National Oceanic and Atmospheric Administration to study and protect vital marine and estuarine resources. Wells Reserve conducts marine research and water quality monitoring in local marine and connected freshwaters. They also provide education through school programs, decision-maker training, and work with partners to promote watershed protection in coastal watersheds in Southern Maine.

FMI - <http://www.wellsreserve.org/>

**Table 10. Partner Organizations and Roles.**

Partner Organizations and Roles	Education & Outreach	Financial Assistance	Technical Assistance	Technology Transfer	Monitoring	Policy & Planning
Casco Bay Estuary Partnership	X	X	X	X	X	
Maine Lakes	X					X
Piscataqua Region Estuaries Partnership	X	X				

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Lake Stewards of Maine	X		X		X	
Watershed Organizations	X		X		X	
Wells National Estuarine Research Reserve	X			X	X	

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## IX. Funding

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Many sources of funding are available to conduct NPS assessment and mitigation work. These include grants, loan programs, direct funding, and in-kind contributions. Many of these sources are highly competitive and have specific purposes and requirements. As a result, it is a significant challenge to garner the resources needed to restore and protect Maine's vast water resources. Successful NPS mitigation efforts often leverage multiple funding sources and work to raise ongoing funding from the local community. Some of the main NPS funding sources are described in the following section.

### **Clean Water Act, Section 319 and 604(b) Grants**

DEP administers a competitive grants program using Section 319 and 604(b) funding from EPA to help communities identify NPS sources, prepare WBPs, and take action to reduce or prevent NPS pollution. Maine public organizations such as state agencies, SWCDs, regional planning agencies, watershed districts, municipalities, and nonprofit (501c3) organizations are eligible to receive grants. An annual RFP process offers grants for developing watershed plans and implementing projects identified in the plans. Local project sponsors are required to provide match to the grant funds, and projects are typically conducted over a two-year period.

### **DEP Support**

DEP promotes and supports implementation of WBPs largely through DEP technical services and EPA Section 319 grants. Fifty-one percent (\$4,965,983) of Section 319 funds received by DEP between FFY 2019 – FFY 2023 (\$9,749,557) were used for implementation of WBPs. DEP provides technical assistance to assist municipalities or watershed groups in the design and installation of structural BMPs; shares lessons learned from other implementation projects; provides information to planning boards; and provides other resources as needed. Since implementation of WBPs is led by local entities, DEP's support is flexible and responsive to local needs. This assistance may be intensive and short-term, or spread-out over many phases, whichever is more appropriate and supportive of local plan implementation. FMI - <http://www.maine.gov/dep/water/grants/319.html>

### **Clean Water State Revolving Fund**

As noted by EPA, the CWSRF under Title VI of the Federal Water Pollution Control Act is the largest water quality financing source in the nation. Through the CWSRF program, each state and Puerto Rico maintain revolving loan funds to provide independent and permanent sources of low-cost financing for a wide range of water quality infrastructure projects. Funds to establish or capitalize the CWSRF programs are provided through federal government grants and state matching funds (equal to 20 percent of federal government grants). States may choose from a variety of assistance options, including loans, refinancing, purchasing, or guaranteeing local debt and purchasing bond insurance. States can also set specific loan terms, including interest rates from zero percent to market rate, and repayment periods up to 30 years or the useful life of the project, whichever is less. States have the flexibility to target resources to their particular environmental needs, including polluted runoff from urban and



agricultural areas, wetlands restoration, groundwater protection, brownfields remediation, estuary management, and wastewater treatment. Additional information on the CWSRF program is available at [http://water.epa.gov/grants\\_funding/cwsrf/cwsrf\\_index.cfm](http://water.epa.gov/grants_funding/cwsrf/cwsrf_index.cfm)

In Maine, CWSRF funds nonpoint source projects through three different loan mechanisms; direct loans, passthrough loans, and linked deposit loans. To provide additional funding for private nonpoint source projects, DEP expanded the traditional CWSRF direct loan program into the other two loan programs. DEP and the MMBB jointly administer the CWSRF. DEP administers the technical aspects of the program and project eligibility; the MMBB is the financial manager of the fund.

- **Direct Loans** - Through direct loans from the CWSRF to municipal and quasi-municipal entities, low interest funding is provided for NPS abatement projects. The DEP funds NPS projects for stormwater (e.g., infiltration basins, bio-swales, and bioretention cells); the capping and other water-quality related closure activities for non-discharging municipal landfills; and the covering of sand/salt storage areas. In 2017 a MOU was signed by the DEP, MMBB, and the Finance Authority of Maine (FAME) to allow FAME to administer the Compliance Assistance Loan Program to commercial borrowers for the renovation, removal, disposal or replacement of underground or aboveground oil storage tanks or facilities.
- **Linked Deposit Loans** – To provide these low interest CWSRF loans, the MMBB works with a private lending institution to fund NPS control by accepting a reduced rate on a certificate of deposit (CD) investment and the lending institution agrees to provide a loan to the borrower at a similarly reduced rate. The Maine Forestry Direct Link Loan Program provides incentive financing to loggers that reduces NPS pollution risk on timber harvests. This program, which works in partnership with the MMBB and the Maine Forest Service, provides low interest loans for silviculture best management practices.

FMI - <http://www.maine.gov/dep/water/grants/srfparag.html>

- **Standalone Stormwater and Nonpoint Source Plans** – In 2024, the DEP offered up to \$50,000 per applicant in principal forgiveness to help fund the cost of developing a stormwater or nonpoint source plan (SW/NPS). Funding is available for standalone SW/NPS Plans that are not associated with a construction loan project. The principal forgiveness funds for SW/NPS Plans require a 100% match, which can be in the form of in-kind services. Of the \$200,000 available, there is an initial allocation of \$50,000 for Stormwater Asset Management Plan and Stormwater Utility Development projects, and \$150,000 for the remaining NPS project types. If the total funds requested are less than the amounts allocated to either of the categories above, the remaining funding balance may be applied to the other eligible projects. See Attachment 5 for eligibility requirements and ranking details.

FMI - <https://www.maine.gov/dep/water/grants/SRF/cwsrf/index.html#application>

FMI - <https://www.mainelegislature.org/LawMakerWeb/summary.asp?ID=280085382>

### **Drinking Water State Revolving Fund**

The Drinking Water State Revolving Fund (DWSRF) was established by the 1996 amendments to the Safe Drinking Water Act (SDWA). EPA awards capitalization grant funds to each state based upon the most recent Drinking Water Infrastructure Needs Assessment. A portion of the DWSRF is used to fund non-construction projects that help improve and protect drinking water in Maine.

- **Source Protection Grants** are available for planning or implementing projects that protect their surface or ground water sources, respectively. Awarded grants are typically up to \$10,000, with grants of \$20,000 available depending on the project scope. Eligible projects include developing or updating Watershed Management Plans; establishing local protective ordinances or legal agreements in the source protection; developing or implementing drinking water education and public outreach programs; developing and/or implementing lake monitoring programs; and identifying and/or removing potential sources of contamination from the source protection area.
- **Capacity Development Grants** can be used by water systems to prepare documents/reports that will assist in the maintenance or enhancement of water quality by identifying possible improvements in technical, financial or managerial operations. These grants cover between 75-90% of projects' costs and range from \$9,000 - \$30,000 depending on system size.

FMI - <https://www.maine.gov/dhhs/mecdc/environmental-health/dwp/pws/financialResources.shtml>

### **Farm Service Agency (FSA) Conservation Reserve Program**

The FSA carries out the Conservation Reserve Program, a voluntary program that provides funding for conservation practices on sensitive lands addressing water quality and wildlife management concerns. NRCS provides technical assistance for the program.

FMI - <https://www.fsa.usda.gov/programs-and-services/conservation-programs/conservation-reserve-program/index>

### **Lake Restoration Fund**

In 2023, the Maine Legislature passed LD 164, An Act to Fund the Lake Restoration Fund. This bill provides funding for Section 480-N of the Natural Resources Protection Act (Lake Water Quality Restoration and Protection Fund). A total of \$200,500 was allocated for which the DEP will make grants to support alum treatments for impaired lakes. The DEP is developing the grant criteria and RFA at the time of this report.

FMI - <https://www.mainelegislature.org/LawMakerWeb/summary.asp?ID=280085382>FMI - <https://www.mainelegislature.org/LawMakerWeb/summary.asp?ID=280085382>

### **Lake Stormwater Phosphorus Compensation Fee Program**

Under the Maine Storm Water Management Law, projects located in eligible lake watersheds may satisfy permit requirements for phosphorus reduction by paying a compensation fee into a Lakes Stormwater Phosphorus Compensation Fund for that same eligible lake watershed. The development project needs to be designed to provide at least a 60% reduction in off-site export of phosphorus required by the permit. The fee rate is \$25,000 per pound of phosphorus. Compensation fund monies are used to implement Stormwater Compensation Projects to reduce phosphorus export from existing high phosphorus export land uses in the lake watershed. DEP staff works annually with seven partner organizations to identify and implement phosphorus mitigation projects in these watersheds.

FMI - <http://www.maine.gov/dep/water/grants/stormwatercomp/>

### **Local Funding**

Local funding is key to fixing NPS problems and is often the source of match required by grant programs. Since grant funding is limited, it can also be the sole source of funding for projects that are important to the local community but that don't fit in well with grant programs. Local funding can be in the form of in-kind services or direct funding, and come from municipalities, local organizations, private businesses, and individual citizens. Given the high costs associated with some restoration projects, certain communities are also exploring and pursuing stormwater utilities and other ways to raise dedicated funds for watershed restoration work.

### **Maine Coastal Program Grants**

Towns and regional organizations in Maine's coastal zone are eligible to apply for small grants through the Maine Coastal Program. The Coastal Communities Grant Program provides funds to towns and regional organizations for projects designed to improve water quality, increase resiliency and adaptation to erosion and flooding, conserve coastal habitat, promote sustainable development, and enhance the coastal-dependent economy while preserving natural coastal resources. In Fiscal Year 2021, \$788,523 was awarded through this program. Grantees are required to provide at least 25 percent non-federal match. Education Grants provide up to \$10,000 to educational efforts relating to Maine coastal issues and projects that relate to greater ocean literacy.

FMI - <https://www.maine.gov/dmr/mcp/grants/index.html>

### **Maine Governor's Office of Policy Innovation and the Future**

Through grants and direct support to municipal and tribal governments and unorganized territories, the Community Resilience Partnership assists communities to reduce carbon emissions, transition to clean energy, and become more resilient to climate change effects such as to extreme weather, flooding, rising sea levels, and public health impacts. The Community

Resilience Partnership offers two types of grants: Community Action Grants and Service Provider Grants.

Community Action Grants are open to Municipal and tribal governments and unorganized territories in Maine who have joined the Partnership may apply directly for funds to support projects that reduce energy use and costs and/or make their community more resilient to climate change effects, such as flooding, extreme weather, drought, and public health impacts. A list of Community Actions defines eligible work, one of which is to create or update a watershed plan to identify flooding and water quality priorities and adaptation options.

Service Provider Grants are open to regional planning organizations, councils of governments, county governments, academic institutions and cooperative extensions, non-profit organizations, and for-profit enterprises. Municipalities are generally not eligible. This program's focus on regional collaboration, local capacity-building, and community engagement that are critical for supporting municipal climate action. The desired outcomes from the Service Provider Grants are new enrollments in the Partnership by multiple communities, developing a list of each community's priority projects, as well as any cooperative group priorities, and applications to the Community Action Grant program. Service Providers are expected to assist communities with the enrollment activities and apply for Community Action Grants.

FMI - <https://www.maine.gov/future/climate/community-resilience-partnership/grants>

### **Maine Healthy Beaches Program**

The Maine Healthy Beaches Program (MHB) is a partnership between the DEP and local municipalities and state parks. The program is funded by the EPA through the Beaches Environmental Assessment and Coastal Health (BEACH) Act of 2000. MHB is a statewide effort to monitor water quality and protect public health at Maine's participating coastal saltwater beaches.

FMI - <https://www.maine.gov/dep/water/beaches/>

### **Maine Healthy Soils Program**

The Maine Healthy Soils Program (MHS) was established by the Maine Legislature (12 MRS §352 et. seq.) in 2022 to provide farmers with resource to adapt to a changing climate. Services range from 1:1 soil health coaching to administration of grant and incentive opportunities. As of July 1, 2024, MHS anticipates making funding available for soil health testing, establishing soil health practices on-farm, maintaining soil health practices on-farm, and reducing barriers to soil health practice adoption.

FMI - <https://mainesoilhealth.com/funding-and-grants/>

### **Maine Municipal Planning Assistance Program**

Towns, unorganized territories, tribal governments, and regional organizations are eligible to apply for Coastal Community Planning Grants for work in the coastal zone to build community

resiliency to adapt to a changing climate; prepare for flooding, sea level rise, coastal storms, storm surge, and shoreline erosion; reduce water quality impacts from polluted runoff in Nonpoint Source Priority Watersheds listed by the Maine DEP as Impaired or Threatened Marine Waters or Streams, with an emphasis on shellfish growing areas. The total amount of funds for FY24 is \$165,000, with anticipated awards ranging from \$20,000-\$50,000. Grantees are expected to provide 25% non-federal match. Funding is provided by the Maine Coastal Program, but administered by MPAP.

FMI - [https://www.maine.gov/dacf/municipalplanning/financial\\_assistance.shtml](https://www.maine.gov/dacf/municipalplanning/financial_assistance.shtml)

### **Maine Municipal Stream Crossing Upgrade Grant Program**

State funds from the General Fund will expand the Municipal Stream Crossing Grant Program, which provides local governments and organizations competitive grants towards the upgrade of undersized and failing culvert stream crossings on municipal roads. Administered by the Maine Department of Transportation, this program will help more communities upgrade municipal culverts at stream crossings to cost-effectively improve fish and wildlife habitats, reduce flooding, and increase community safety.

FMI – <https://www.maine.gov/mdot/grants/stream>

### **Maine Natural Resource Conservation Program**

The MNRCP was created to manage the allocation of funds collected through DEP's In Lieu Fee Compensation Program. This voluntary program allows entities that are impacting natural resources, primarily wetlands, to make a payment directly to the DEP as an alternative to the traditional mitigation process. Fees collected by DEP are deposited in a Natural Resource Conservation Fund administered by The Nature Conservancy. Public agencies, non-profit conservation organizations, and private entities can apply through a competitive process for funds to restore, enhance, preserve, and create high quality natural resources throughout the State of Maine. Funding is available for land acquisition, habitat enhancement and restoration, and projects that restore watershed health.

FMI - [https://www.maine.gov/dep/land/nrpa/ILF\\_and\\_NRCP/index.html](https://www.maine.gov/dep/land/nrpa/ILF_and_NRCP/index.html)

### **Maine Sea Grant**

Maine Sea Grant at the University of Maine releases a biennial request for research proposals that link the scientific capacity of Maine with the needs of coastal stakeholders. The 2023 RFP anticipated that an estimated \$600,000 would be available to support research projects up to \$200,000 over the two-year funding period. A 50% non-federal match is required. Maine Sea Grant is administered by the University of Maine, but the research competition is open to faculty and staff at any public or private research or higher education institution in the state.

FMI - <https://seagrant.umaine.edu/funding-opportunities/>

### **Maine Small Community Grants Program**

The program provides grants to towns to help replace malfunctioning septic systems that are polluting a waterbody or causing a public nuisance. Grants can be used to fund from 25 to 100 percent of the design and construction costs, depending upon the income of the owners of the property, and the property's use. An actual pollution problem must be documented to qualify for funding. The highest priority is given to problems that are polluting a public drinking water supply or a shellfishing area.

FMI - <https://www.maine.gov/dep/water/grants/scgp.html>

### **National Estuary Program**

The National Estuary Program is an EPA place-based program to protect and restore the water quality and ecological integrity of estuaries of national significance. There are 28 estuaries across the country. Through this non-regulatory program, each estuary develops and implements a Comprehensive Conservation Management Plan based on local priorities. There are two National Estuary Programs in Maine:

- **Casco Bay Estuary Partnership Grant Program**

CBEP carries out several grant programs focused on NPS and water quality in the Casco Bay watershed. Non-profit organizations, towns, and state and federal conservation programs are eligible to apply for funds. The Habitat Protection Fund Grant supports permanent protection of coastal habitat and upland areas that help protect water quality in targeted areas in partnership with Maine Coast Heritage Trust, DIFW, and US Fish and Wildlife Service Gulf of Maine Coastal Program. Other grant programs assist with planning and implementation of habitat or community resilience efforts and expanding environmental monitoring in the Casco Bay watershed.

FMI - <http://www.cascobayestuary.org/about-us/grant-opportunities/> FMI - <http://www.cascobayestuary.org/about-us/grant-opportunities/>

- **Piscataqua Region Estuaries Partnership Grant Programs**

PREP offers several grant programs to municipalities, community groups, watershed associations, and other organizations that conduct conservation work in PREP's coastal watershed. The annual Local Grants Program must relate to at least one Action Item from PREP's Management Plan. Eligible activity areas include water quality, land use and habitat protection, shellfish resources, habitat restoration, and public outreach. A request for proposals is issued each fall. The Community Technical Assistance Program provides assistance to communities on a wide range of regulatory and non-regulatory approaches to natural resources protection. The program is intended to be simple for communities; PREP pays for the assistance and manages the contract agreement with the Technical Assistance Providers.

FMI - <https://prepestuaries.org/resources/prepa-grants/>

### **Natural Resource Conservation Service Programs**

The NRCS carries out several programs that provide funding for conservation practices on agricultural lands. This includes the Wildlife Habitat Incentive Program, the Regional Conservation Partnership Program and EQIP. The EQIP program aligns especially well with NPS mitigation. EQIP is a voluntary program that provides financial and technical assistance to agricultural producers to help plan and implement conservation practices that address natural resource concerns and for opportunities to improve soil, water, plant, animal, air, and related resources. Projects located in watersheds selected through USDA and EPA's National Water Quality Initiative are designated as high EQIP funding priorities. The NWQI is a national program started in 2012 that provides targeted EQIP funding to help farmers install practices to reduce water quality impacts in priority watersheds. States work with NRCS to identify focus areas and conduct assessment to track restoration progress.

FMI –

[http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/programs/financial/eqip/?cid=stelp\\_rdb1047761](http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/programs/financial/eqip/?cid=stelp_rdb1047761)

### **State General Fund**

The State of Maine provides funding for one staff position in the DEP's NPS Program. Funding is provided through the State's General Fund and fulfills part of the State's requirement to match EPA Section 319 funding. State funding also provides position and monitoring program support for several DEP programs that conduct NPS monitoring of the State's lakes, streams, rivers, marine and estuarine waters.



## X. NPS Program Five-year Objectives, Actions, and Annual Milestones

This section provides the five-year objectives, actions, and milestones for Maine's NPS program for the years 2025 through 2029. Tables 11 and 18 focus on DEP's NPS Program administration and its watershed approach to improve and protect water quality. Tables 12 to 17 list objectives for Maine's statewide approach to address six major NPS pollution categories: developed areas, agriculture, transportation, forestry, subsurface wastewater disposal, and hydrologic and habitat modification.

**Table 11. Watershed Approach**

Table 11. Watershed Approach				Lead Agency: Maine DEP					Schedule				
Five-Year Objectives	Actions	Lead Contact	Milestones	2025	2026	2027	2028	2029					
1. <u>Prioritization List</u> : Identify NPS Priority Watersheds and evaluate NPS priority lists biennially, or more frequently as new information becomes available.	<ul style="list-style-type: none"> <li>Evaluate NPS priority watersheds lists and criteria biennially or more frequently as needed. Announce public opportunity to submit requests and support for waterbodies to be added to the priority lists.</li> <li>Update priority lists and decision tree as needed - add or remove individual waterbodies as new information becomes available.</li> <li>Notify towns, planning commissions, shellfish committees and other stakeholders about new or removed NPS priority watersheds.</li> <li>Develop map and post on DEP webpage. Share with partners, including DEP Land Bureau.</li> <li>Continue to identify chloride-impacted or threatened streams. Sensitive and Threatened Streams lists (to be incorporated into the NPS Priority Watersheds Lists published the following years)</li> </ul>	Alaina Chormann, DEP	1. Update NPS priority watershed list and map biennially.		X		X						

Table 11. Watershed Approach				Lead Agency: Maine DEP				Schedule				
Five-Year Objectives	Actions	Lead Contact	Milestones	2025	2026	2027	2028	2029				
2. <u>Prioritization Criteria</u> : Revise NPS Priority List criteria to reflect current needs.	<ul style="list-style-type: none"><li>• Incorporate the updated Most Vulnerable Lakes list and associated criteria (considering factors including climate change, sediment chemistry, lake morphometry, anoxia potential and land use) to incorporate the most current information available.</li><li>• Develop criteria to include EJ communities with watershed needs</li></ul>	Alaina Chormann, DEP  Jeremy Deeds, DEP	2. Revise Most Vulnerable Lakes criteria. Revision will include Environmental Justice considerations.				X					
3. <u>Prioritization Criteria</u> : Investigate ways to protect and restore tidal marshes/eelgrass beds and their high-carbon storage capacity, where negatively impacted or threatened by NPS pollution and habitat modification.	<ul style="list-style-type: none"><li>• Explore ways to support and encourage tidal marsh restoration and protection work, specifically in marshes with high carbon storage potential, significant habitat values or floodwater storage potential, or high marsh mitigation potential.</li><li>• Connect with stakeholders to identify ways the NPS program can assist with salt marsh restoration work.</li><li>• Assist stakeholders in developing watershed-based plans or projects in existing NPS Impaired or Threatened Marine watersheds.</li></ul>	Alaina Chormann, DEP	3. Support at least 2 NPS Impaired or Threatened Marine watershed-based projects with an emphasis on tidal marshes to completion.					2				
4. <u>Assessment</u> : Conduct supplemental water quality monitoring and other assessments to support future NPS watershed planning and project development.	<ul style="list-style-type: none"><li>• Evaluate data collected by DEP, LSM and other partners.</li><li>• Coordinate with local partners to conduct supplemental water quality monitoring (e.g., nutrients, temperature, DO, SpC, bacteria, macroinvertebrates, algae); habitat, stream corridor and geomorphic assessment.</li></ul>	Jeff Dennis, DEP	4. Supplemental monitoring conducted in at least three watersheds/year.	3	3	3	3	3				

Table 11. Watershed Approach				Lead Agency: Maine DEP				Schedule				
Five-Year Objectives	Actions	Lead Contact	Milestones	2025	2026	2027	2028	2029				
	<ul style="list-style-type: none"><li>Consult with partners and use Stream Stressor Guidance document to evaluate and identify primary stressors.</li><li>Expand this effort to include threatened streams.</li></ul>											
5. <u>Evaluation</u> : Examine trends in cyanobacteria blooms (existing data) and possible links to climate parameters within the state	<ul style="list-style-type: none"><li>Work with DEP’s Lakes Unit to evaluate historical cyanobacteria bloom occurrences and compare with regional climatological parameters (i.e., precipitation, temperature and ice-out)</li></ul>	Alaina Chormann, DEP	5. DEP report on cyanobacteria blooms and possible links to climate parameters.				X					
6. <u>Restoration Planning</u> : Approve nine-element watershed-based plans (new or updates) that guide local actions to restore impaired waters.	<ul style="list-style-type: none"><li>Provide decision makers with information needed to develop sound WBPs including data necessary to determine the dominant stressors contributing to the impairment and sufficient watershed and stream corridor information to identify and prioritize specific implementation activities needed to restore the waterbody.</li><li>DEP will provide technical support to create one nine-element watershed-based management plan for an impaired estuarine watershed by 2029.</li></ul>	Alex Wong, DEP	6. Ten nine-element WBPs approved.	2	2	2	2	2				
7. <u>Protection Planning</u> : Approve alternative WBPs (new or updates) that guide protection of unimpaired waters.	<ul style="list-style-type: none"><li>Working with partners, provide technical assistance for the development of lake watershed-based protection plans. Coordinate to secure EPA approval of alternative WBPs.</li></ul>	Alaina Chormann, DEP	7. Ten alternative WBPs approved.	2	2	2	2	2				
8. <u>Planning</u> : Promote collaboration and planning for projects that maintain open shellfish harvesting	<ul style="list-style-type: none"><li>Convene coastal work group and conduct annual meetings to share information and identify and collaborate on shared priorities.</li><li>Meet with MPAP annually</li></ul>	Addie Halligan and Alaina	8. NOAA Coastal Community Grant program funds at least one coastal planning	1	1	1	1	1				

Table 11. Watershed Approach				Lead Agency: Maine DEP				Schedule				
Five-Year Objectives	Actions	Lead Contact	Milestones	2025	2026	2027	2028	2029				
areas or restore closed shellfish harvesting areas, reduce coastal beach advisories, and mitigate climate related and other NPS impacts to coastal waters.	<ul style="list-style-type: none"><li>• DEP, DMR, Maine Coastal Program and MPAP will collaborate to support shared priorities through the NOAA-funded Coastal Community Grants program. DEP and DMR will review proposals and provide technical support to selected projects.</li><li>• Participate on CCG review team and provide technical assistance.</li><li>• Conduct E&amp;O and provide materials to coastal communities interested in NPS planning grants to inform them of CCG opportunities.</li></ul>	Chormann, DEP <i>Partners: MCP, DMR, MPAP</i>	project per year in DEP NPS Priority Watersheds									
9. <u>Funding</u> : Incentivize the use of low maintenance and climate resilient BMPs in 319 grant projects to facilitate increased BMP adoption in NPS priority watersheds	<ul style="list-style-type: none"><li>• Develop list of low maintenance and climate resilient BMPs.</li><li>• Explore use of match reduction as incentive.</li></ul>	Alex Wong, DEP	9. Develop Request for Proposals (RFA) with incentives (e.g., CWA s. 319 nonfederal match reduction) for use of low maintenance and climate resilient BMPs.				X					
10. <u>Environmental Justice</u> : Build capacity for watershed protection and restoration by Disadvantaged Communities in NPS Priority Watersheds.	<ul style="list-style-type: none"><li>• Explore avenues for match reduction or elimination for projects benefiting disadvantaged communities.</li><li>• Develop “circuit rider” pilot program in Aroostook County (disadvantaged communities) to assist agricultural producers with implementing BMPs to increase soil health. DEP plans to use CWA s. 319 watershed project funds for this pilot and collaborate with NRCS to leverage potential EQIP funds and/or other USDA grant programs.</li><li>• Explore inclusion of Environmental Justice focused outreach actions in all work plans.</li></ul>	Alex Wong, DEP	10. Aroostook County DAC soil health pilot program for agricultural producers.	X								

Table 11. Watershed Approach				Lead Agency: Maine DEP					Schedule				
Five-Year Objectives	Actions	Lead Contact	Milestones	2025	2026	2027	2028	2029					
11. <u>Restoration</u> : Fully or partially restore one NPS impaired waterbody and submit to EPA as NPS Success Story.	<ul style="list-style-type: none"> <li>• Provide technical support and funding through CWA s. 319 grant program to support implementation of WBPs for waters with high potential to be restored.</li> <li>• Collect targeted water quality and biological information to determine if water classification standards have been met.</li> <li>• Prepare NPS Success Story that documents the restorations.</li> </ul>	Alex Wong, DEP	11. One Type 1 NPS success story approved for partially or fully restored waterbodies.				1						
12. <u>Substantial Improvement</u> : Demonstrate substantial improvement in water quality and/or ecological condition in two NPS impaired waterbodies.	<ul style="list-style-type: none"> <li>• Provide technical support and funding through NPS CWA s. 319 grant program to support implementation of WBPs for impaired waters.</li> <li>• Collect targeted water quality and biological information to determine the effectiveness of implementation efforts and guide WBP modifications.</li> <li>• Evaluate data to determine if water classification standards have been met or if there has been substantial incremental improvement.</li> <li>• Prepare NPS Success Stories that document the substantial improvement in water quality and/or ecological condition.</li> </ul>	Alex Wong, DEP	12. Two NPS success stories approved that show progress toward achieving water quality goals (Type 2) or ecological restoration (Type 3).		1		1						
13. <u>Protection of NPS threatened waters</u> : Demonstrate protection of water quality and/or ecological condition in two NPS waterbodies	<ul style="list-style-type: none"> <li>• Provide technical support and funding through Section 319 grant program to support implementation of WBPs for waters with high potential to be protected.</li> </ul>	Alex Wong, DEP	13. Two Type 4 NPS success stories that show achievement of water quality protection goals.	1		1							

Table 11. Watershed Approach				Lead Agency: Maine DEP				Schedule				
Five-Year Objectives	Actions	Lead Contact	Milestones	2025	2026	2027	2028	2029				
	<ul style="list-style-type: none"><li>Collect targeted water quality and biological information to determine if water classification standards have been met.</li><li>Prepare NPS Success Stories that document the protection.</li></ul>											
14. <u>Interim Metrics/Reporting</u> : Provide qualitative measures toward restoring/improving water quality and hydrology.	<ul style="list-style-type: none"><li>Provide technical support and funding through CWA s. 319 grant program to support implementation of WBPs in impaired waters and waters with high potential to be restored or protected.</li><li>Evaluate potential indicators of qualitative success in projects that have not yet resulted in a measurable or observed water quality improvement (e.g., co-benefits beyond water quality goals; completion of all management measures in critical source areas; at least 80% implementation of management measures identified in the watershed plan)</li></ul>	Alex Wong, DEP	14. Two Type 5 NPS success stories that feature interim qualitative measures toward restoring/improving water quality and hydrology.			1		1				

**Table 12. Developed Areas**

Table 12. Developed Areas Lead Agency: Maine DEP				Schedule				
Five-Year Objectives	Actions	Lead Contact	Milestones	2025	2026	2027	2028	2029
1. Require and promote the use of effective erosion and sediment control (ESC) BMPs during soil disturbance activities.	<ul style="list-style-type: none"> <li>Enhance E &amp; S requirements and limits on site alteration for solar array projects and support efforts to enforce compliance. Update ESC BMP Manual as needed to reflect current approaches.</li> </ul>	Kerem Gungor, DEP	1. ESC BMP Manual Update 2026 with requirements for solar array projects.		X			
2. Provide assistance to municipalities implementing Chapter 1000 Shoreland Zoning ordinances to strengthen water quality protection at the local level.	<ul style="list-style-type: none"> <li>Provide TA to municipalities with older shoreland zoning ordinances to implement most recent standards.</li> </ul>	Colin Clark, DEP	2. Meet with municipalities	10	10	10	10	10
3. Continue to support guidance about climate change resiliency and adaptation planning and reduce water quality impacts from new or redevelopment projects.	<ul style="list-style-type: none"> <li>Review stormwater and ESC BMPs for climate resiliency and adaptation considerations, including storm sizing and modifications needed for areas with rising groundwater and sea level.</li> <li>Submit Chapter 500 rule revisions to the legislature by January 2025. If approved complete process for and effective date of September 2025</li> </ul>	Kerem Gungor, DEP	3. Revised rules adopted in 2025.	X				
4. Regularly update the Maine Stormwater BMP manual to reflect the current best management practices.	<ul style="list-style-type: none"> <li>Evaluate proposals for new or modified BMPs for approval under updated Chapter 500 Stormwater Rules.</li> <li>Conduct annual review and regularly update the Maine Stormwater BMP manual to reflect current science and guidance. Complete manual update to reflect Chapter 500 updates by September 2026. Contractor hired to update BMP manual by 2025.</li> </ul>	Dave Waddell, Kerem Gungor, DEP	4. Maine Stormwater BMP Manual update by 2027.			X		



Table 12. Developed Areas Lead Agency: Maine DEP				Schedule				
Five-Year Objectives	Actions	Lead Contact	Milestones	2025	2026	2027	2028	2029
	<ul style="list-style-type: none"> <li>Annual review each year.</li> </ul>							
6. Provide guidance on new Chapter 500 rules for State and local regulators, developers and other partners, with a focus on LID/GI BMP selection in sensitive threatened watersheds	<ul style="list-style-type: none"> <li>Develop a training curriculum to educate local decision makers (e.g., municipalities, conservation commissions) in sensitive threatened watersheds on options for implementing appropriate LID/GI BMPs.</li> </ul>	Jeff Dennis, DEP	6. Trainings on Chapter 500 rules and selecting LID/GI BMPs in sensitive and threatened watersheds		1			
7. Provide training and certification to encourage proper use of ESC BMPs by contractors and other installers.	<ul style="list-style-type: none"> <li>Conduct Basic and Advanced Sediment Control training workshops.</li> <li>Administer the ESC Certification Program and maintain or increase the number of people certified to 2,500 (2,374 in 2019).</li> </ul>	John Maclaine, DEP	7. At least 500 people trained and at least 2,500 people with program certification each year.	500 trained/yr 2,500 certified/yr				
8. Provide municipalities with NPS training, technical support and resources to prompt and improve water resource protection.	<ul style="list-style-type: none"> <li>Develop training and certification program for municipal officials and inspectors.</li> <li>Certify municipal officials and inspectors to review BMPs for proper use and installation.</li> </ul>	John Maclaine, DEP	8. At least 20 municipal officials certified per year	20	20	20	20	20
9. Encourage municipalities to consider water resources in local planning decisions.	<ul style="list-style-type: none"> <li>Provide information to municipalities starting to develop or update Comprehensive Plans.</li> <li>Review draft Comp Plans for consistency and completeness and provide feedback about ways to strengthen local efforts to protect and restore water quality.</li> </ul>	Alex Wong, Jeff Dennis, Dave Waddell, DEP	9. DEP feedback provided on at least four comp plans/year.	4	4	4	4	4

Table 12. Developed Areas Lead Agency: Maine DEP				Schedule				
Five-Year Objectives	Actions	Lead Contact	Milestones	2025	2026	2027	2028	2029
	<ul style="list-style-type: none"> <li>• Provide technical support to municipalities on development and implementation of stormwater management requirements.</li> <li>• Review Comp Plan review process for improved efficiency.</li> </ul>							
10. Promote awareness of chloride contamination and encourage new and creative strategies to minimize use of, and/or mitigate the impacts of Chloride	<p>Increase chloride monitoring and data dissemination</p> <ul style="list-style-type: none"> <li>• Salt Symposium – develop workshop that focuses on chloride impacts to freshwater systems. The workshop will include current research initiatives, snow and ice management, and methods to reduce use.</li> <li>• Create a comprehensive and open-ended list of strategies to improve the efficiency of salt application, minimize the need for salt application, and/or minimize/mitigate the impact on receiving water biota. Expand as new ideas emerge. Make list available to all potential users. Create initial list, post on DEP webpage and send notice to potential users and update as necessary.</li> <li>• Seek opportunities to test and/or demonstrate promising strategies and facilitate implementation.</li> </ul>	<p>Kristin Feindel, DEP</p> <p>Jeff Dennis, DEP</p>	<p>10. Web-based dashboard with comprehensive winter salt application strategies and chloride data for streams</p> <p>11. Hold salt symposium</p>			X		X

**Table 13. Statewide Approach - Agriculture**

Table 13. Statewide Approach - Agriculture Lead Agency: Maine DACF				Schedule				
Five-Year Objectives	Actions	Lead Contact	Milestones	2025	2026	2027	2028	2029
1. Monitor agricultural operations to ensure compliance with the requirement to implement approved nutrient management plans (NMP).	<ul style="list-style-type: none"> <li>Evaluate agricultural operations (AOs) to determine if they need to develop and implement an approved NMP.</li> <li>Track existing AOs with an approved NMP to ensure that their NMP is up to date.</li> <li>Provide guidance for initial development of an NMP or for facilitating updates as needed.</li> <li>Continue to identify AOs that need an NMP and help AOs comply with the obligation to operate according to an NMP.</li> <li>Publicize updates to the Nutrient Management Rules, including stream exclusion requirement.</li> <li>Coordinate with NRCS and DEP Shoreland Zoning to align programs regarding stream exclusion.</li> </ul>	Mark Hedrich, DACF	1. 90% of NMPs that are due for renewal are updated within six months of expiration.	X	X	X	X	X
2. Coordinate training and certification program for Nutrient Management Planning Specialists.	<ul style="list-style-type: none"> <li>Provide certification and recertification training opportunities for certified planners by DACF or other DACF approved training.</li> </ul>	Mark Hedrich, DACF	2. Five trainings, from either from DACF or certified providers, training at least 100 individuals per year.	5 trainings/yr 100 individuals trained				
3. Monitor livestock agricultural operations to ensure compliance with requirement to operate	<ul style="list-style-type: none"> <li>Evaluate new or expanded agricultural operations (AOs) to determine their requirement for obtaining a LOP.</li> <li>Continue to identify AOs that need a LOP and help AOs comply with the obligation to operate according to a LOP.</li> </ul>	Mark Hedrich, DACF	3. 75% of farms needing LOPs are developed within nine months of expiration.	X	X	X	X	X

Table 13. Statewide Approach - Agriculture Lead Agency: Maine DACF				Schedule				
Five-Year Objectives	Actions	Lead Contact	Milestones	2025	2026	2027	2028	2029
according to a Livestock Operations Permit (LOP).	<ul style="list-style-type: none"> <li>Evaluate farms to determine if they are considered a Concentrated Animal Feeding Operation (CAFO) as defined by state or federal regulations.</li> <li>Initiate steps for appropriate permitting of these entities as needed.</li> <li>Conduct annual inspections of CAFOs to determine compliance with terms of the LOP.</li> </ul>							
4. Implement the Agricultural Compliance Program to resolve water quality-related complaints	<ul style="list-style-type: none"> <li>Investigate complaints concerning farm operations that involve threats to human or animal health and safety, and to the environment.</li> <li>Prescribe new or modified site-specific BMPs where needed to resolve the issue, particularly water-quality-related matters.</li> <li>Complete site visit reports to document complaints received and resolutions. Provide reports to DEP semiannually.</li> <li>DEP prepares annual summary of water quality complaints received, investigated and resolved and shares with DMR, DEP, NRCS, NMRB.</li> </ul>	Matt Randall, DACF	4. 75% of sites with water quality issues are resolved within 30 days, 25% resolved within 90 days.	X	X	X	X	X
5. Collaborate with NRCS and EPA in the NWQI program to make progress restoring impaired waters with agricultural NPS sources.	<ul style="list-style-type: none"> <li>Provide information to NRCS for project close-out of the Sheepscot River NWQI project.</li> <li>Continue implementing projects and monitoring in Cross Lake NWQI project.</li> <li>Select new watersheds with NRCS, develop monitoring plans, and conduct monitoring before NWQI implementation in new NWQI watersheds.</li> </ul>	Alex Wong, DEP	5. Continue participation in NWQI partnership program.	X	X	X	X	X
6. Coordinate and communicate with DACF, SWCDs, NRCS, and industry	<ul style="list-style-type: none"> <li>Attend NRCS State Technical Committee meetings.</li> </ul>	Jeff Dennis, DEP	6. Attend at least five SWCD local working group meetings/year	5	5	5	5	5

Table 13. Statewide Approach - Agriculture Lead Agency: Maine DAF				Schedule				
Five-Year Objectives	Actions	Lead Contact	Milestones	2025	2026	2027	2028	2029
groups (e.g., Maine Potato Board) on water quality priorities.	<ul style="list-style-type: none"> <li>Participate in Soil and Water Conservation District (SWCD) local working group meetings and Natural Resource Assessments to share DEP priorities and opportunities for NRCS program support.</li> <li>Reach out to the various industry boards and councils, or participate in industry events, to raise awareness of water quality issues related to their industry including nonattainment watersheds.</li> </ul>		in a variety of regions in the state and participate in at least one industry event/year.	1	1	1	1	1
7. Increase field crop agriculture's use of soil health practices statewide to reduce soil erosion, improve water quality and offset carbon emissions.	<ul style="list-style-type: none"> <li>Reach out to various stakeholders at the state and local levels and explore ways to address agriculturally derived water quality impairment issues.</li> <li>Suggest increasing EQIP rates for conservation crop rotation during the Local Working Group meetings each spring. Collaborate with State Technical Committee on potential NRCS policy changes.</li> <li>Integration of Maine's Healthy Soils Program into agricultural NPS projects.</li> </ul>	Matt Boucher, DAF; Alex Wong, DEP	7. Develop Healthy Soils and NPS training seminar and conduct training every two years in agricultural regions of the state.	X		X		X

**Table 14 Statewide Approach - Transportation**

Table 14. Statewide Approach - Transportation Lead Agency: MaineDOT				Schedule				
Five-Year Objectives	Actions	Lead Contact	Milestones	2025	2026	2027	2028	2029
1. Continue using Erosion and Sedimentation Control BMPs on applicable MaineDOT projects.	<ul style="list-style-type: none"> <li>Continue to implement and enforce MaineDOT Standard Specification 656.</li> <li>Continue ongoing ESC training for MaineDOT staff and contractors.</li> <li>Annual Stormwater MOA report submitted to MDEP summarizing MaineDOT activities as required by the Stormwater MOA between DEP and MaineDOT.</li> </ul>	Cindy Dionne, MaineDOT	1. At least 25 contractors trained/year and 100 DOT employees trained/year	25 contractors & 100 employees trained/yr				
2. Provide training and technical assistance to promote the use of BMPs on town and county roads.	<ul style="list-style-type: none"> <li>MLRC will provide training to towns through the Maine Local Roads Center (MLRC).</li> <li>NPSTC will promote DEP Erosion and Sediment Control certification for Public Works staff.</li> </ul>	John Maclaine, DEP Peter Coughlin, MDOT	2. DEP will certify at least five DPW employees through the NPSTC per year.	5	5	5	5	5
3. Promote chloride salt reduction BMPs to protect water quality while maintaining safe roads for travelling public.	<ul style="list-style-type: none"> <li>Continue MLRC training and BMP Task Force to promote snow and ice control BMPs to municipal Public Works.</li> <li>MaineDOT will continue to investigate new products, technologies, or efficiencies to reduce the use of chlorides.</li> </ul>	Peter Coughlin, MaineDOT	3. At least 30 workshops held/year, covering 4 different subjects for 150 different towns.	30	30	30	30	30
4. Address NPS problems identified by DEP on State roads through MaineDOT maintenance program and construction projects.	<ul style="list-style-type: none"> <li>MDOT, MTA and DEP will meet annually to review DEP needs (above) and MaineDOT's six-year plan to identify shared priorities and possible NPS projects that can be completed through MaineDOT and MTA maintenance or construction projects.</li> </ul>	Jeff Dennis, DEP	4. MaineDOT completes at least one major NPS project on state roads/year	1	1	1	1	1

Table 14. Statewide Approach - Transportation Lead Agency: MaineDOT				Schedule				
Five-Year Objectives	Actions	Lead Contact	Milestones	2025	2026	2027	2028	2029
5. Provide technical assistance and training to prevent and mitigate NPS impacts from unpaved camp roads.	<ul style="list-style-type: none"> <li>NPSTRC and partners will host workshops and online resources to promote gravel road BMPs.</li> <li>Promote the development of informal or formal road associations to coordinate road maintenance and improvement.</li> </ul>	John Maclaine, DEP	5. At least two NPSTC-approved workshops/year focused on mitigating NPS from unpaved camp roads.	2	2	2	2	2
6. Administer stream culvert grant program that funds upgrades of municipal culverts.	<ul style="list-style-type: none"> <li>DEP to support projects previously funded, including visiting projects, documenting conditions, and comparing proposed designs.</li> <li>DOT to select projects and implement contracts for one RFP totaling \$4 million.</li> <li>Ensure funded culvert upgrades have substantial stream health benefits, including connectivity, geomorphology, and habitat.</li> <li>Support partner efforts to secure additional program funding.</li> </ul>	Taylor LaBrecque, DOT	6. 15 culverts upgraded through 2029 RFP.	3	3	3	3	3



**Table 15. Statewide Approach - Forestry**

Table 15. Statewide Approach – Forestry				Lead Agency: Maine Forest Service					Schedule				
Five-Year Objectives	Actions	Lead Contact	Milestones	2025	2026	2027	2028	2029					
1. Increase overall effective BMP application on harvests from 76% to 85% or greater. Effective BMPs include all appropriately applied BMP practices, effective planning and avoiding waterbody crossings.	<ul style="list-style-type: none"> <li>• Offer BMP training programs, with partners including the Maine Sustainable Forestry Initiative, Certified Logging Professional, Qualified Logging professional program and Northeast Master logger.</li> <li>• Deliver existing or develop new and topic specific trainings as needed to address problem areas when identified by monitoring, compliance inspections and industry consultation.</li> <li>• Work with DEP and Maine Municipal Bond Bank and EPA to maintain CWSRF funding and promote the Maine Forestry Direct Link Loan Program financing to reduce NPS risk at timber harvest sites. Apply northeast regional forestry BMP monitoring protocol on a biennial basis to assess use &amp; effectiveness of forestry BMPs.</li> </ul>	Tom Gilbert, MFS	1. Maine Forestry “BMPs Use and Effectiveness Report” documents effective BMP application on 85% of sites inspected.	85		85		85					
2. Maintain the Forest Ranger-approved water quality inspections of timber harvest sites at over 90%.	<ul style="list-style-type: none"> <li>• Forest rangers will continue routine inspections of timber harvests for environmental compliance. MFS field foresters will continue to provide technical assistance to prevent problems from occurring and quickly fix problems encountered during inspections.</li> </ul>	Tom Gilbert, MFS	2. Over 90% of sites exhibit environmental compliance during timber harvest inspections.	90	90	90	90	90					
3. Increase the number of municipalities that have adopted statewide standards for timber harvesting in shoreland	<ul style="list-style-type: none"> <li>• DEP will support adoption of SWS by inviting MFS to participate in Shoreland Zoning trainings.</li> <li>• DEP will support adoption of SWS by providing draft municipal Shoreland Zoning ordinances to MFS before issuing approvals and incorporating</li> </ul>	Tom Gilbert, MFS	3. By December 2029, 25 new municipalities adopt statewide timber harvesting standards	5	5	5	5	5					

Table 15. Statewide Approach – Forestry				Lead Agency: Maine Forest Service					Schedule				
Five-Year Objectives	Actions	Lead Contact	Milestones	2025	2026	2027	2028	2029					
areas from 256 in 2023 to 281.	information about SWS adoption process in Shoreland Zoning training. <ul style="list-style-type: none"> <li>MFS will proactively approach towns, provide technical assistance with ordinance updates and review draft ordinances to help align with SWS.</li> </ul>		or DEP adopts ordinances for them.										
4. Implement statewide standards (38 MRS 438-B), statewide.	<ul style="list-style-type: none"> <li>Undertake rulemaking to comply with the statutory requirement found in 38 MRS 438-B, which was triggered by surpassing the 252-town critical mass in 2024.</li> </ul>	Tom Gilbert, MFS	4. Rulemaking to align Statewide Standards for Timber Harvesting and Related Activities in Shoreland Areas (01-669 CMR 21) and Standards for Timber Harvesting and Timber Harvesting Related Activities within Unorganized and Deorganized Areas of the State (001-669 CMR 27).			X							

**Table 16. Statewide Approach – Subsurface Wastewater Disposal**

Table 16. Statewide Approach – Subsurface Wastewater Disposal Agency: Maine DHHS, Environmental Health				Lead		Schedule			
Five-Year Objectives	Actions	Lead Contact	Milestones	2025	2026	2027	2028	2029	
1. Ensure municipalities properly implement Subsurface Wastewater Disposal (SSWD) rules to protect public health and water quality.	<ul style="list-style-type: none"><li>• Provide technical assistance and training to towns on the appropriate implementation of the subsurface rules.</li><li>• Assist in the training and licensing of Local Plumbing Inspectors. Develop resource for CEOs showing photos with a range of site conditions.</li></ul>	Brent Lawson, DHHS	1. 200 visits to towns per year.	200 visits/yr					
2. Provide training on new subsurface disposal rules to Licensed Plumbing Inspectors (LPI) and Code Enforcement Officers (CEO)	<ul style="list-style-type: none"><li>• Host annual training sessions for LPI/CEOs about updated inspection program rules with requirements for inspectors to receive national certification, take a standard test, submit inspection forms, etc.</li><li>• Continue OSDS Inspection Program in all shoreland zones.</li></ul>	Brent Lawson, DHHS	2. 10 Trainings per year	10	10	10	10	10	
3. Conduct public outreach about requirements in the shoreland zone.	<ul style="list-style-type: none"><li>• Partner with Maine Association of Realtors and the Maine Real Estate Commission to develop accredited online training module for continuing education.</li></ul>	Alex Wong, DEP	3. Training module completed and published.			X			

**Table 17. Statewide Approach – Hydrologic and Habitat Modification**

Table 17. Statewide Approach – Hydrologic and Habitat Modification				Lead Agency: Maine DEP		Schedule				
Five-Year Objectives	Actions	Lead Contact	Milestones	2025	2026	2027	2028	2029		
1. Provide training to minimize impacts during culvert installation/ replacement and ensure long term stability and proper function.	<ul style="list-style-type: none"><li>Continue providing trainings on culvert installation/replacement.</li><li>Develop online ‘Stream Crossing Installation for Water Quality’ training.</li></ul>	John Maclaine, DEP <i>Partners: MaineDOT DIFW ACOE</i>	1. One multi-agency workshop held per year.  2. Online training by 2026.	1	1  X	1	1	1		
2. Promote use of nature-based practices/living shorelines and similar approaches to address NPS problems, restore impacted habitat and maintain existing habitat values.	<ul style="list-style-type: none"><li>Evaluate living shorelines pilot projects.</li><li>Pursue revisions to Chapter 305, Section 8 Stabilization to require living shoreline approaches in coastal and other shoreline areas.</li><li>Support or provide trainings to encourage use of living shorelines. Trainings may focus on benefits, design and/or installation methods as determined most useful.</li><li>Establish advanced certification for nature-based shoreline practitioners.</li><li>Develop BMP manual on nature-based shoreline stabilization practices.</li></ul>	John Maclaine, DEP	3. Shoreline stabilization permit-by-rule revised to require living shoreline design standards (Chapter 305, Section 8).  4. At least two nature-based stabilization trainings per year.  5. One nature-based shoreline certification training per year.  6. Nature-based shoreline BMP manual developed.	X  2  1  X	 2  1	 2  1	 2  1	 2  1		

**Table 18. Statewide Approach – NPS Program Coordination**

Table 18. Statewide Approach – NPS Program Coordination Lead Agency: Maine DEP				Schedule				
Five-Year Objectives	Actions	Lead Contact	Milestones	2025	2026	2027	2028	2029
1. <u>Program Administration:</u> Continue to manage and implement the NPS Program to meet program goals and work towards addressing the State's water quality problems as effectively and expeditiously as possible.	<ul style="list-style-type: none"> <li>• DEP employs appropriate programmatic and financial systems that ensure section 319 funds are used efficiently and consistent with fiscal and legal obligations (Section 319 program guidelines, EPA-DEP Performance Partnership Agreement).</li> <li>• In keeping with CWA Section 319(h)(8) and (11), provide EPA with sufficient information, annual reports, GRTS data and other information about Maine's 319 program to determine whether the State's previous year progress was satisfactory.</li> <li>• Conduct sub-recipient monitoring according to program standard operation procedures using DEP's NPS Grant Administration Guidelines (2016). Complete and close out all active grant projects within the contract period.</li> <li>• NPS Annual Reports contain sections on CWSRF for NPS funding summary, Environmental Justice (EJ) and Climate Resiliency.</li> </ul>	Alex Wong, DEP	1. Maine's NPS Program submits annual report to EPA and continues to achieve Satisfactory Progress Determination from EPA.	X	X	X	X	X
2. <u>Program Administration:</u> Update the Maine NPS Management Program Plan by 2029.	<ul style="list-style-type: none"> <li>• Consult with lead agencies and gather partner input to update the Maine NPS Management Program Plan for the next five-year cycle including milestones for 2030-2034.</li> </ul>	Alex Wong, DEP	2. By October 1, 2029, have an updated and EPA-approved NPS Management Program in place including annual milestones for 2030-2034.					X

Table 18. Statewide Approach – NPS Program Coordination Lead Agency: Maine DEP				Schedule				
Five-Year Objectives	Actions	Lead Contact	Milestones	2025	2026	2027	2028	2029
3. <u>Education &amp; Outreach</u> : Promote more effective awareness and behavior change methods, best management practices (BMPs), and tools for DEP programs and NPS projects and partners.	<ul style="list-style-type: none"> <li>Create outreach material that provides information on BMPs that are low maintenance and/or climate resilient.</li> </ul>	Kirsten Thompson, DEP	3 . Update Maine “319 Outreach Guidance”  4. Create issue profile (DEP NPS webpages) on climate change and cyanobacteria – including mitigation strategies with an emphasis on prevention.		X			X
4. <u>Partnerships</u> : Build and strengthen partnerships to promote collaboration and effective implementation of the Maine NPS Management Plan.	<ul style="list-style-type: none"> <li>Conduct the annual Watershed Roundtable to bring together watershed professionals to share information, network and foster collaboration.</li> <li>Include discussion of CWSRF funding opportunities in the annual Watershed Managers Roundtable. to explore and promote ways for CWSRF to meet Maine’s NPS needs (e.g., salt reduction equipment, uncovered sand/salt piles, WBP development, brownfields, alum treatments, land protection).</li> <li>Continue to coordinate the watershed managers’ listserve to efficiently promote sharing between partners.</li> <li>Meet with Tribes and Nations regarding leveraging CWA s. 319 funded projects.</li> </ul>	Alex Wong, DEP	5. Host annual Watershed Roundtable and explore other opportunities for funding and building partnerships.	X	X	X	X	X

Table 18. Statewide Approach – NPS Program Coordination Lead Agency: Maine DEP				Schedule				
Five-Year Objectives	Actions	Lead Contact	Milestones	2025	2026	2027	2028	2029
5. <u>Partnerships</u> : Promote collaboration and planning for projects that mitigate climate related NPS impacts to marine watersheds including shellfish areas and beaches.	<ul style="list-style-type: none"> <li>• Participate in the review team and provide technical feedback on Coastal Community Grant (DACF) applications that involve NPS and climate resiliency.</li> <li>• Conduct outreach and provide educational materials to coastal communities interested in NPS Planning Grants to inform them of coastal community grant opportunities.</li> <li>• Participate in the Fishermens' forum and Beaches conference.</li> </ul>	Alaina Chormann, DEP	6. Meet annually with partners about grant and project opportunities in coastal areas. (see action item list)	X	X	X	X	X
6. <u>Intra-agency Collaboration</u> : Increase Intra-Departmental collaboration focused on climate change and resiliency.	<ul style="list-style-type: none"> <li>• Increase NPS Program collaboration with other DEP programs (within Water, Land, Air and Remediation Bureaus) focused on climate adaption efforts.</li> <li>• Intra-departmental climate workgroup to be established in 2025.</li> </ul>	Nathan Robbins, DEP	7. Participate in the Department-wide climate workgroup.	X	X	X	X	X
7. <u>Leveraging funds</u> : Utilize other state and federal funding and/or incentives to supplement CWA s.319 grants.	<ul style="list-style-type: none"> <li>• Explore and promote additional funding (e.g., CWSRF and Community Action Grants (under Maine Community Resilience Partnership program (CRP)) to support development of WBPs and watershed implementation projects.</li> <li>• Explore, promote coordination and pursue FEMA hazard mitigation grants for installation of green infrastructure, stream/floodplain restoration and culvert replacements.</li> <li>• Share information with partners about funding opportunities through listserv and WBP planning and implementation projects.</li> </ul>	Alex Wong, DEP  Alaina Chormann, DEP	8. Report on leveraged funds to EPA  9. Develop outreach materials about the NPS program for Community Resilience Partnerships regional coordinators.	X  X	X	X	X	X



Table 18. Statewide Approach – NPS Program Coordination Lead Agency: Maine DEP				Schedule				
Five-Year Objectives	Actions	Lead Contact	Milestones	2025	2026	2027	2028	2029
	<ul style="list-style-type: none"> <li>Investigate sources of funding for maintenance of BMPs.</li> <li>Explore match reduction and elimination for NPS projects especially in Disadvantaged Communities.</li> </ul>							
8. <u>Restoration/Protection</u> : Promote reducing or eliminating use of non-biodegradable plastics as erosion and sediment control (ESC) in NPS projects.	<ul style="list-style-type: none"> <li>Identify ESC products that are not bio-degradable.</li> <li>Develop and publish alternative products list.</li> <li>Include information regarding alternatives to plastic ESC materials in NPSTC trainings.</li> <li>Develop NPS policy eliminating use of non-biodegradable plastic for ESC in 319 projects.</li> </ul>	Alex Wong, DEP	10. Develop policy for plastics in ESC materials.			X		

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## XI. Measuring Progress and Evaluating Maine's NPS Program

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### A. Measuring Environmental Success

The long-term goals of Maine's NPS program are:

- **Restoration of Waters** - To restore the waterbodies which are impaired by nonpoint sources so that they meet water quality standards.
- **Protection of Waters** - To prevent nonpoint source related impairments of unimpaired waterbodies.

Evaluation of the effectiveness of Maine's NPS program must be based on assessments that quantify the progress the program has made in restoring and protecting waters. Discussion of evaluation strategies associated with the two long term goals follows.

#### Restoring Waters

DEP's ambient water quality monitoring programs for lakes, rivers and streams, wetlands, and marine waters provide the data necessary to evaluate success in restoring impaired waters. The Integrated Report reports the findings of monitoring and assessment programs.

- **Lakes** - Most lake impairments are due to violations of the lake trophic standards which state that lakes must be free of culturally induced blue green algal blooms and must have either stable or decreasing trophic states. The Lake Stewards of Maine in combination with the DEP's annual targeted baseline monitoring provide a strong data set for evaluating compliance with these standards. The combination of the LSM's bimonthly Secchi disk readings and baseline sampling of chlorophyll and phosphorus concentrations are very effective in detecting blue green algal blooms. This monitoring also provides a long-term data set that can be used to monitor trends in a lake's trophic state. Lakes that have been impaired due to the presence of blue green algal blooms are considered restored if they are free of blooms for at least five years out of the most recent ten-year period. Additionally, trend analysis can show that even though a lake may still support occasional blooms, the water quality is improving because the frequency and duration of blooms is decreasing. Lakes that have never supported algal blooms but are impaired due to a documented trend of increasing trophic state are considered restored when the long-term data set shows a reversal of the trend.
- **Rivers and Streams** - The most critical impairments of rivers and streams are violations of the aquatic life criteria. With the exception of the bacteria standards, all other water quality criteria have the goal of supporting aquatic life. The DEP's Biomonitoring Program assesses rivers and streams on a five-year rotating schedule and determines their status in terms of compliance with the aquatic life criteria. This evaluation indicates not only whether the

river or stream segment in question meets the appropriate criteria for the segment's class, but also what class's criteria it does meet, if any. An impaired stream is considered restored if it meets its class's criteria and is considered improved if it meets a higher class's criteria than it had previously met. For instance, if a Class B stream segment historically had failed to meet even Class C criteria, but now consistently meets Class C criteria, it would be considered substantially improved. Assessment of impairments due to violations of the bacteria standards are treated similarly. If long term monitoring indicates that the standard is being met, the segment is considered restored. If the frequency and magnitude of the violations is significantly reduced, it is considered improved.

- **Wetlands** – Freshwater wetlands are also evaluated by the Biomonitoring Program and the means of determining restoration and/or improvement are parallel.
- **Marine Waters** - The most widespread impairment of marine waters are violations of bacterial standards for shellfish harvesting. Bacterial monitoring is done by several agencies including DMR, MHB and DEP.

## Protecting Waters

The same data sets discussed above can be used to evaluate whether DEP is successful in preventing unimpaired waterbodies from becoming impaired. Simply stated, if no new waterbodies, particularly waterbodies that have historical records of meeting water quality standards, are added to the list of impaired waters, the State has succeeded in meeting this goal. If new waterbodies are added to the NPS impaired list, as will likely happen since many are considered threatened, evaluation of the success of protection efforts is more challenging. Program success must be based on an evaluation of how many waterbodies would have become impaired if preventative measures had not been taken. Evaluation of the success of protection efforts therefore requires not only documentation that degradation has not occurred, but also the more challenging quantification of the threat and the relative mitigation value of the protection measures that are taken. The mitigation value of protection measures can often be quantified through pollutant load reduction models and similar metrics. It is much more difficult, if not impossible, to project the changes that would have happened in the receiving water, and particularly in its biological community, if for example, the pollutant loads had not been reduced or the stream corridor had not been protected.

## Defining Success

As stated above, the long-term goals of Maine's NPS Program are to restore NPS impaired waterbodies so that they meet applicable water quality standards and to prevent nonpoint source related impairments of unimpaired waterbodies. In most cases, attainment of the restoration goal is feasible, though in many instances it may take a long time and require commitment of a large amount of resources. The following discusses some of the particular challenges associated with restoring some lakes and urban streams, and the need to recognize not only the value of full restoration, but also the value of interim improvements in water quality and ecological condition.

The potential for restoration of impaired waters in Maine is influenced by a number of factors which must be considered when establishing realistic objectives. Maine's Water Classification system is a goal-oriented system that establishes water quality standards based on the waterbodies designated use such as protecting aquatic life and recreation. While the State aims to have its water meet those standards, it may not always be feasible to do so, especially in the short term. The trophic state standard for lakes requires that lakes have stable or decreasing trophic states and that they be free of culturally induced algal blooms. Restoring lakes with an impaired trophic state is challenging as some algal blooms are fed not by phosphorus from the watershed, but by recycling of accumulated phosphorus in the lake's sediments. While in these cases addressing NPS sources in the watershed can result in reduction in the intensity and duration of the algal blooms, it often cannot eliminate the blooms without measures being taken to directly control the recycling of phosphorus from the bottom sediments. Such measures include treatment of the sediments with aluminum salts and enhanced seasonal flushing of the epilimnion during the peak of the algal bloom. These measures can be prohibitively expensive, and though aluminum treatments nearly always result in dramatic reductions in the intensity and duration of blooms, they may not always completely eliminate blooms.

The aquatic life standard for streams presents some different limitations, particularly for urban streams. When streams and rivers were originally classified in the 1970s and 1980s, the larger rivers with point discharges, for which much data had been collected, were classified with realistic goals. However, most smaller streams were given the default classification of B, unless they were located in pristine areas, in which case they were designated Class A or AA. This was appropriate in most cases, but in some urban and agricultural areas it may be unrealistic to expect the stream to be able to meet such a high aquatic life standard. If the only reason for the aquatic life impairment is the contribution of stormwater pollutants from the watershed, then attaining Class B standards is likely achievable through BMP retrofits, though it may be quite expensive. The exception to this is where the groundwater that feeds baseflow in an urban stream has been contaminated with chloride derived from infiltration of winter and early spring runoff draining surfaces that have been treated with deicing salts. In these cases, even if the salt discharge to the ground water is eliminated, a very challenging proposition in itself, it may take many years for the contaminated groundwater to flush through the system. Even if stormwater pollutants are not an issue, if the stream and its corridor have been significantly altered through physical manipulations (e.g., straightening and widening, channel hardening, and filling of flood plains) or simply as a result of the greatly increased storm flows that the stream must pass, the habitat may be so compromised that even when the pollutant loads are attenuated, the stream may not be able to meet Class B standards. Fixing stream channel and corridor issues may not be technically feasible or may be prohibitively expensive.

In the cases cited above – lakes with internal recycling of phosphorus and urban and/or agricultural streams with baseflow chloride contamination or serious alteration of the channel and corridor – it is almost always feasible to make the waterbody much healthier than it was. Even if algal blooms cannot be completely eliminated, their intensity and duration can be greatly reduced, and the people who use and enjoy these lakes greatly appreciate the change.

Pollutant load reductions, storm flow attenuation, and simple habitat restoration measures can result in significant improvements in the composition and structure of the biological community in urban streams, even though the community may not fully meet aquatic life standards.

Though the goal is to have these waters meet standards, it is important that the measures of success for the State's NPS program not only recognize the value of restoring an impaired waterbody to fully meeting standards, but also appreciate the value of making significant improvements in an impaired water that enhance its ecological integrity and its value to the public when full restoration is not feasible, at least in the short term.

It is at least equally important to recognize the value of protecting threatened healthy waters so that they are not degraded to the point of violating water quality standards. The mitigation value of protection measures can often be quantified through pollutant load reduction models and similar metrics. However, it is much more difficult to project the changes that would have happened in the receiving water, and particularly in its biological community, if, for example, the pollutant loads had not been reduced or the stream corridor had not been protected. Many of the impaired streams in the State are in areas that have been urbanized relatively recently and were healthy resources two or three decades ago. If protective measures had been taken as these watersheds were developed much of the degradation could have been avoided. The same pressures for urbanization are still in play in other watersheds, so it is crucial that protection efforts be given highest priority, or we will replace restored waters with newly impaired ones. The effort required to restore a waterbody is always much greater than that required to avoid impairment.

## B. NPS Program Evaluation

In addition to tracking progress with water quality restoration and protection goals, DEP will conduct other program evaluation on an ongoing basis as required by EPA's 319 guidance (EPA, 2024). The following reporting requirements will help EPA measure Maine's progress in meeting annual milestones and NPS Plan success.

- **Milestone Tracking** – DEP will track NPS Plan milestone progress and completion. Progress will be submitted to EPA on an annual basis as part of the NPS Annual Report.
- **NPS Annual Report** – DEP completes an annual CWA s. 319 NPS Program Report to report on NPS program activities, successes and completed grant projects. The report will be tailored to report on completed goals, objectives and measurable milestones from this Plan. Past annual reports are available at <http://www.maine.gov/dep/water/grants/319-documents/reports/>.
- **Grant Reporting and Tracking System (GRTS)** – DEP will continue to enter program information into EPA's GRTS database. Pollutant load reduction estimates resulting from project activities will be entered on an annual basis.

- **Federal Financial and Performance Reports** – Annual financial and performance reports will be completed annually as required by 40 CFR 31.40(b)(1) and 31.41(b).
- **Sub-recipient Monitoring** - DEP will continue to monitor grantees using established Standard Operating Practices including annual Office Visits and site visits to a subset of construction projects.
- **Satisfactory Progress Determination** – DEP will provide information EPA needs to conduct its annual progress and performance review under Section 319(h)(8).
- **NPS Plan Updates** – Maine’s NPS Management Plan will be updated at least every five years. The next update will be prepared for 2030-2034.

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## Appendix 1. EPA's Key Components of an Effective State NPS Management Program

Key Program Components	Maine NPS Plan Location
1. The state program identifies water restoration and protection goals and program strategies (regulatory, nonregulatory, financial and technical assistance, as needed) to achieve and maintain water quality standards. It includes relevant, current, and trackable annual milestones for program implementation.	Sections II, VII and X
2. The state program identifies the primary categories and subcategories of NPS pollution, and a process for prioritizing impaired and unimpaired waters and identify how national and state priorities align.	Sections II, VII, X
3. The state program identifies management measures (i.e., systems of practices) that will be undertaken to reduce pollutant loadings resulting from each category, subcategory, or particular nonpoint source identified in component 2, above. The measures should also consider the impact of the BMPs on groundwater quality.	Sections VI and VII
4. The state uses both watershed projects and well-integrated regional or statewide programs to restore and protect waters, achieve water quality benefits, and advance any relevant climate resiliency goals.	Section III
5. The state identifies and strengthens its collaboration with appropriate federal, state, interstate, Tribal, and regional agencies as well as local entities (including conservation districts, private sector groups, utilities, and citizen groups) that will be utilized to implement the state program. Furthermore, the state supports capacity-building in disadvantaged, underserved, or overburdened communities.	Sections II and VIII
6. The state manages and implements its NPSMP efficiently and effectively, including necessary financial management.	Sections X and XI
7. The state evaluates its NPSMP using environmental and functional measures of success and revises its NPSMP plan at least every five years.	Section XI

## Appendix 2. NPS Watershed Prioritization and NPS Priority Lists

### A. Guiding Principles for Selection of NPS Priority Watersheds

The purpose of the priority list is to guide Section 319 NPS grant funds and assistance and to encourage NPS abatement work in these watersheds. Watersheds are evaluated using several guiding principles. The first overall requirement is that NPS priority waters must have NPS pollution as the primary source of impairment or threat. Watersheds with point sources or legacy pollutants as the primary source of pollution are not selected as priorities since the point source or legacy pollutant would have to be addressed for water quality to significantly improve. Second, watersheds are evaluated for the likelihood that NPS grant funds and support could make a difference in the water quality. Another guiding principle is to keep the number of NPS priority watersheds reasonably focused so that so that limited resources would not be spread too thin and there would be the best opportunity for restoring and protecting the highest priorities.

The prioritization criteria were developed with the goal of making the selection process as objective as possible, using monitoring data, analysis, and reports. The priority lists of partner agencies and organizations are also used to assist with the prioritization process.

DEP water resource professional staff knowledgeable in statewide lake, stream, or marine water quality and management issues developed criteria for each waterbody type, reviewed available data and information and selected waters for each list. Partner agencies and regional monitoring organizations are also consulted in some cases. Specific criteria are listed in the table below and described in the following waterbody-specific sections. Since these criteria are periodically updated, please refer to DEP's website for the most current information ([https://www.maine.gov/dep/land/watershed/nps\\_priority\\_list/index.html](https://www.maine.gov/dep/land/watershed/nps_priority_list/index.html)).

**Table 19. NPS Priority Watershed Selection Criteria Summary.**

Waterbody Type	Selection Criteria	Exclusion Criteria
Impaired Lakes	<ul style="list-style-type: none"> <li>Category 4A, 5A, 5-Alt</li> </ul>	<ul style="list-style-type: none"> <li>Category 4B, 4C</li> <li>Limited existing development</li> <li>Legacy nutrient accumulations</li> <li>Naturally eutrophic</li> </ul>

Waterbody Type	Selection Criteria	Exclusion Criteria
<b>Threatened<sup>11</sup> Lakes</b>	<ul style="list-style-type: none"> <li>• DEP Watch List</li> <li>• Public water system</li> <li>• Negative water clarity trend</li> <li>• Sensitive to additional phosphorus inputs</li> <li>• Sensitive due to sediment chemistry</li> <li>• Priority watershed of partners</li> <li>• Outstanding water quality with watershed threats</li> <li>• Recent increased impacts or threats from agriculture or development</li> </ul>	<ul style="list-style-type: none"> <li>• Negative water clarity trend not indicative of water quality shift</li> <li>• Watershed protected</li> <li>• Small lakes (≤50 acres) with limited development</li> </ul>
<b>Impaired Streams</b>	<ul style="list-style-type: none"> <li>• Category 4A, 5A, or 5B due to NPS, and:               <ul style="list-style-type: none"> <li>○ Has TMDL report:                   <ul style="list-style-type: none"> <li>▪ Individual TMDL</li> <li>▪ IC TMDL or NPS TMDL</li> <li>▪ Bacteria TMDL and had only source of impairment as bacteria</li> </ul> </li> <li>○ Priority watershed of partners</li> <li>○ High growth area</li> <li>○ High risk for development due to proximity to highway access</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• Categories 4B, 4C, 5C, 5D</li> <li>• Impaired due to natural reasons</li> <li>• Legacy pollutant accumulations</li> <li>• Impaired due to point sources</li> <li>• Large rivers</li> </ul>
<b>Threatened<sup>11</sup> Streams</b>	<ul style="list-style-type: none"> <li>• Watch List (Category 3)</li> <li>• Recent increased impacts or threats from agriculture or development</li> <li>• Priority watershed of partners</li> <li>• High risk for development due to proximity to highway access</li> <li>• Identified as a priority salmon stream</li> </ul>	<ul style="list-style-type: none"> <li>• Wastewater discharges</li> <li>• Large rivers</li> </ul>
<b>Impaired and Threatened<sup>11</sup> Estuarine and Marine Waters</b>	<ul style="list-style-type: none"> <li>• Impaired (Categories 4, 5)</li> <li>• Coastal Designated Beaches Category 3 or 5B</li> <li>• Priority NPS-impacted watersheds of partners:</li> </ul>	<ul style="list-style-type: none"> <li>• Impaired due to natural reasons</li> <li>• Legacy pollutant accumulations</li> </ul>

<sup>11</sup> The use of the term ‘threatened’ in this document refers to unimpaired waters that are subject to potential impacts from NPS pollution. The term is not intended to be used as described in Maine’s Integrated Report, where waters are listed as ‘threatened’ for Clean Water Act §303(d) listing purposes if those waters are anticipated to fall into non-attainment with the next listing cycle of two years.

Waterbody Type	Selection Criteria	Exclusion Criteria
	<ul style="list-style-type: none"> <li>○ Maine Department of Marine Resources</li> <li>○ Casco Bay Estuary Partnership</li> <li>○ Maine Municipal Separate Storm Sewer Program</li> <li>● Documented negative water quality indicators</li> </ul>	<ul style="list-style-type: none"> <li>● Large or exposed areas with high flushing</li> <li>● Point sources such as wastewater discharges</li> <li>● Sources not clearly NPS or limited NPS sources</li> </ul>

## B. Lake Watersheds Prioritization

### Impaired Lakes

As a starting point, all lakes on the 2018/2020/2022 Integrated Water Quality Monitoring and Assessment Report listed as impaired i.e. Category 4A: Impaired Use other than Mercury, TMDL Completed; 5A: Needing TMDLs; and 5-Alt: Lakes impaired by a pollutant and have had a Watershed-based Management Plan are considered for inclusion on the priority list. Lakes on the Integrated Report Impaired List due to hydrologic reasons (Category 4C: Impairment not Caused by a Pollutant) were excluded from the priority list. These lakes are impaired primarily due to hydrologic reasons, such as a major dam. Lakes falling under this category are: Aziscohos Lake, Brassua Lake, Flagstaff Lake, Graham Lake, Otter Pond, and Scapan Lake.

Several lakes were not added to the priority list if they are believed to have a low feasibility for restoration due to having limited existing watershed development or legacy nutrient accumulations in sediments. Lakes removed from the list for this reason are Arnold Brook Lake in Presque Isle, Lovejoy Pond in Albion, and Sewall Pond in Arrowsic.

**Table 20. Impaired Lakes Priority List (22 lakes).**

Lake	Town
Alamoosook	Orland
Annabessacook Lake	Winthrop
China Lake	China
Christina Reservoir	Ft Fairfield
Cochnewagon Lake	Monmouth
Cross Lake	T17 R5 Wels
Daigle Pond	New Canada
East Pond	Smithfield
Great Pond	Belgrade & Rome
Lilly Pond	Rockport
Long Pond	Rome & Belgrade

<b>Monson Pond</b>	Fort Fairfield
<b>Pleasant Pond</b>	Richmond
<b>Sabattus Pond</b>	Greene
<b>Sebasticook Lake</b>	Newport
<b>Threemile Pond</b>	Windsor
<b>Togus Pond</b>	Augusta
<b>Toothaker Pond</b>	Phillips
<b>Tafton Lake</b>	Limestone
<b>Unity Pond</b>	Unity
<b>Webber Pond</b>	Vassalboro
<b>Wilson Pond</b>	Wayne

### Threatened Lakes

Unimpaired lakes were assessed based on threats to water quality and value of the resource. Threatened lakes include lakes on the DEP Watch List, lakes having a recent or long-term significant negative trend in water clarity, lakes determined as being sensitive to additional phosphorus inputs, and lakes having a recent increased threat to the watershed by development or agriculture. Lake value was designated as ‘high’ if a drinking water supply, if designated a priority water body by a partner agency, or if determined to have outstanding water quality and being in need of protection. Lakes which had either a significant threat to water quality and/or significant value were added to the priority list. The details of these selection criteria are below.

Unimpaired lakes were determined to have priority threatened lake watersheds if they met one of the following criteria:

- Listed on the DEP’s **watch list**. Lakes are included on the watch list if they were recently impaired and therefore still sensitive, or data suggests their water quality is near the impairment threshold.
- Licensed by the Maine CDC Drinking Water Program as a **public water system** with a lake or pond as the surface water source.
- Has a strong long or short-term **negative water clarity trend**. This was determined by running the lake water clarity trend analysis model for lakes with Secchi disk transparency readings for a significant number of years. The model was run for the whole dataset for each lake to determine the long-term trend, and for the past 10 years for the short-term trend. Data was needed for eight years or more to run the short-term trend model. Results of -0.5 or lower were deemed to be a significant negative trend. Lakes with a significant negative trend were then further analyzed to determine if the negative trend was likely the result of a natural cycle or an overall shift in water quality. See the exclusion criteria section below for a description of what was not included.
- Are **sensitive** to additional phosphorus inputs due to the lake’s hydrology and threats in the watershed. A lake was determined to be sensitive if DEP’s vulnerability modeling predicts

the number of years for the lake's phosphorus concentration to increase by 1 ppb is 25 years or less. The vulnerability model predicts changes in lake phosphorus concentration using watershed growth projections to estimate changes in phosphorus loading and the 1976 version of Vollenweider's lake model to convert load to concentration. The model compensates for the influence of upstream lakes. If these sensitive lakes were determined to have watershed threats, they were then added to the priority list.

- Are **sensitive due to sediment chemistry**. Sediment chemistry has been analyzed in a subset of Maine lakes to determine susceptibility to internal phosphorus release. The analysis of sediment chemistry involves collecting shallow sediment cores and performing a complicated extraction process. Studies have shown that lake sediment with ratios of aluminum to iron less than three to one ( $Al:Fe < 3:1$ ) and aluminum to phosphorus less than 25 to one ( $Al:P < 25:1$ ) are more vulnerable to the release of sediment-bound phosphorus, which can lead to internal phosphorus loading. Lakes with both ratios indicating vulnerability are listed under this criterion. In addition, lakes with low or borderline  $Al:Fe$  ratios that also have high bottom total phosphorus grab readings (consistently  $>40$  ppb) are considered sensitive due to sediment chemistry and are included on the priority list unless there was a reason for them to be excluded (as described below).
- Identified as a **priority watershed** by the Maine Natural Resources Conservation Service Environmental Quality Incentives Program (**EQIP**) National Water Quality Incentive or by Maine Municipal Separate Storm Sewer System (**MS4**) community plans.
- Having **outstanding water quality** in need of protection from threats in the watershed. The list of lakes with outstanding water quality was determined from review of long-term water quality data. Lakes with outstanding water quality were added to the priority list if they were on 1998 NPS Priority List or their watershed was known to have a significant threat of development.
- Have recent increased impacts or significant potential threats from **agriculture or development**. This was determined through use of best professional judgment of the impact or significant threat of impact due to recent activities in the watershed. The sensitivity of the lake to more phosphorus inputs, extent and location of the agriculture or development, and cumulative effect of other watershed activities were considered in this determination. The lakes added due to these criteria have had significant DEP involvement with the lake and the associated agriculture or development.
- The lake or pond serves as a water source to state or federal **fish hatcheries**. Six lakes in Maine are utilized for intake water for fish hatcheries operated by either the Maine Department of Inland Fisheries and Wildlife or U.S. Fish and Wildlife Service. Declines or negative changes in lake water quality could seriously impact the operation of these culture facilities, which are an important public resource in the state. One of the six, West Grand Lake, does not meet the other eligibility criteria and has not been added to the priority list.

Some lakes were not included on the priority list even if they met some of the above criteria due to the following reasons:



- The water quality data for some lakes with a significant negative water clarity trend (-0.5 or lower) indicated it was **not indicative of a water quality shift**. Each lake that had a long- or short-term significant negative water clarity trend was analyzed to determine if the negative trend was likely an overall negative shift in water quality or not. This was determined by analyzing any available water quality history data, including water clarity, phosphorus, chlorophyll, and dissolved oxygen readings. Lakes having a short-term negative trend as a result of water clarity returning to a stable state after drought conditions in the early 2000's resulted in artificially 'improved' water quality, were not put on the priority list. Lakes whose negative trend were based on insufficient data or included multiple Secchi readings which hit the lake bottom were not put on the priority list.
- Lakes having a significant portion of their watershed **protected** either by being part of Acadia National Park or by having other watershed protection were also not included on the priority list, since there did not seem to be a significant threat.
- **Small lakes** (less than or equal to 50 acres) with limited existing watershed development were not included on the priority list, unless there was a compelling reason to add it to the list. Compelling reasons were if it is a public water supply or has outstanding water quality and is in need of protection from threats in the watershed.

**Table 21. Threatened Lakes Priority List (172 lakes)**

Lake	Town	Priority List Reasoning
<b>Abrams Pond</b>	Eastbrook	Watch List, Sensitive – Sediment Chemistry
<b>Adams Pond</b>	Boothbay	Public Water System, Sensitive
<b>Allen Pond</b>	Greene	Sensitive
<b>Anasagunticook Lake</b>	Canton	Public Water System
<b>Androscoggin Lake</b>	Leeds	Watch List, Sensitive – Sediment Chemistry
<b>Battle Ave Ponds</b>	Castine	Public Water System
<b>Bauneg Beg Pond</b>	Sanford	Sensitive
<b>Bay Of Naples/Brandy</b>	Naples	Public Water System, Sensitive
<b>Beaver Pond</b>	Bridgton	Sensitive
<b>Beech Hill Pond</b>	Otis	Outstanding Water Quality
<b>Bell Marsh Reservoir</b>	York	Public Water System
<b>Berry Pond</b>	Winthrop	Sensitive
<b>Big Wood Pond</b>	Jackman	Public Water System
<b>Bonny Eagle Lake</b>	Buxton	Sensitive
<b>Boulter Pond</b>	York	Public Water System
<b>Boyden Lake Stream Imp</b>	Perry	Public Water System
<b>Branch Lake</b>	Ellsworth	Public Water System
<b>Branch Pond</b>	China	Sensitive
<b>Brettuns Pond</b>	Livermore	Sensitive
<b>Brewer Lake</b>	Orrington	Watch List
<b>Buker Pond</b>	Litchfield	Sensitive

Lake	Town	Priority List Reasoning
<b>Bunganut Pond</b>	Lyman	Sensitive
<b>Burnt Land Pond</b>	Stonington	Public Water System
<b>Carlton Pond</b>	Winthrop	Public Water System
<b>Center Pond</b>	Sangerville	Sensitive – Sediment Chemistry
<b>Chases Pond</b>	York	Public Water System
<b>Chickawaukie Pond</b>	Rockport	Sensitive, Sensitive – Sediment Chemistry
<b>Clary Lake</b>	Whitefield	Negative clarity trend
<b>Cobbossecontee Lake</b>	Winthrop	Watch List, Sensitive, Sensitive – Sediment Chemistry
<b>Coffee Pond</b>	Casco	Sensitive
<b>Cold Stream Pond</b>	Enfield	Outstanding Water Quality, Fish Hatchery
<b>Crawford Pond</b>	Warren	Sensitive
<b>Crescent Lake</b>	Raymond	Sensitive
<b>Crystal Lake</b>	Gray	Sensitive
<b>Crystal Pond</b>	Turner	Sensitive – Sediment Chemistry
<b>Damariscotta Lake</b>	Nobleboro	Watch List, Sensitive – Sediment Chemistry
<b>David Pond</b>	Fayette	Sensitive – Sediment Chemistry
<b>Dexter Pond</b>	Winthrop	Sensitive, Sensitive – Sediment Chemistry
<b>Dodge Pond</b>	Rangeley	Sensitive
<b>Duckpuddle Pond</b>	Waldoboro	Watch List
<b>Eagle Lake</b>	Bar Harbor	Outstanding Water Quality, Public Water System
<b>Echo Lake</b>	Presque Isle	Watch List
<b>Echo Lake</b>	Readfield	Sensitive – Sediment Chemistry
<b>Embden Pond</b>	Embden	Fish Hatchery
<b>Estes Lake</b>	Sanford	Watch List, Sensitive
<b>Ferguson Lake</b>	Millinocket	Public Water System
<b>Floods Pond</b>	Otis	Public Water System
<b>Folly Pond</b>	Vinalhaven	Public Water System
<b>Forest Lake</b>	Windham	Sensitive
<b>Fresh Pond</b>	North Haven	Public Water System
<b>Georges Pond</b>	Franklin	Watch List, Sensitive – Sediment Chemistry
<b>Granny Kent Pond</b>	Shapleigh	Negative clarity trend
<b>Grassy Pond</b>	Rockport	Public Water System, Sensitive
<b>Great East Lake</b>	Acton	Outstanding Water Quality, Development Threat
<b>Great Pond</b>	Franklin	Watch List
<b>Green Lake</b>	Ellsworth	Fish Hatchery
<b>Hall Pond</b>	Paris	Public Water System
<b>Hancock Pond</b>	Embden	Public Water System
<b>Harriman Pond</b>	Dedham	Outstanding Water Quality, Development Threat

Lake	Town	Priority List Reasoning
<b>Hatcase Pond</b>	Dedham	Public Water System
<b>Highland Lake</b>	Bridgton	Watch List
<b>Highland Lake</b>	Windham	MS4 Priority Water, Watch List, Sensitive
<b>Hobbs Pond</b>	Hope	Sensitive – Sediment Chemistry
<b>Hogan Pond</b>	Oxford	Sensitive
<b>Holland Pond</b>	Limerick	Sensitive
<b>Horne Pond</b>	Limington	Sensitive
<b>Hosmer Pond</b>	Camden	Sensitive
<b>Indian Pond</b>	Greenwood	Watch List
<b>Ingalls Pond</b>	Bridgton	Sensitive
<b>Island Pond</b>	Waterford	Sensitive
<b>Jimmie (Jamies) Pond</b>	Manchester	Sensitive
<b>Jimmy Pond</b>	Litchfield	Sensitive
<b>Jordan Pond</b>	Mt. Desert	Public Water System
<b>Kennebunk Pond</b>	Lyman	Sensitive
<b>Knickerbocker Pond</b>	Boothbay	Public Water System
<b>Lake Auburn</b>	Auburn	Negative clarity trend, Watch List, Public Water System, Sensitive – Sediment Chemistry
<b>Little Cobbossee</b>	Winthrop	Watch List, Sensitive
<b>Little Ossipee</b>	Waterboro	Sensitive
<b>Little Pennesseewassee Pond (Hobbs Pond)</b>	Norway	Watch List
<b>Little Pond</b>	Damariscotta	Public Water System
<b>Little Pushaw</b>	Hudson	Sensitive – Sediment Chemistry
<b>Little Sebago Lake</b>	Windham	Sensitive
<b>Little Wilson Pond</b>	Turner	Sensitive
<b>Long Lake</b>	Bridgton	Watch List
<b>Long Lake</b>	T17 R4 Wels	Watch List, Agriculture Threat
<b>Long Pond</b>	Parsonsfield	Negative clarity trend, Sensitive – Sediment Chemistry
<b>Long Pond</b>	Bucksport	Sensitive
<b>Long Pond</b>	Sullivan	Public Water System
<b>Long Pond</b>	Mt. Desert	Public Water System
<b>Lovejoy Pond</b>	Wayne	Sensitive – Sediment Chemistry
<b>Lower And Upper Ponds</b>	Skowhegan	Public Water System
<b>Lower Hadlock Pond</b>	Mt Desert	Public Water System
<b>Lower Narrows Pond</b>	Winthrop	Sensitive
<b>Lower Range Pond</b>	Poland	Sensitive
<b>Madawaska Lake</b>	Westmanland	Watch List

Lake	Town	Priority List Reasoning
<b>Maranacook Lake</b>	Winthrop	Sensitive, Sensitive – Sediment Chemistry
<b>Mattakeunk Lake</b>	Lee	Sensitive – Sediment Chemistry
<b>McGrath Pond</b>	Oakland	Sensitive
<b>Meduxnekeag Lake</b>	Oakfield	Development Threat
<b>Megunticook Lake</b>	Lincolntonville	Sensitive, Sensitive – Sediment Chemistry
<b>Messalonskee Lake</b>	Sidney & Belgrade	Watch List, Sensitive – Sediment Chemistry
<b>Middle Pond</b>	York	Public Water System
<b>Middle Range Pond</b>	Poland	Sensitive
<b>Mirror Lake</b>	Rockport	Public Water System
<b>Molasses Pond</b>	Eastbrook	Sensitive – Sediment Chemistry
<b>Moose Hill Pond</b>	Livermore Falls	Public Water System
<b>Moose Pond</b>	Bridgton	Development Threat
<b>Mousam Lake</b>	Shapleigh	Watch List, Sensitive, Sensitive – Sediment Chemistry
<b>Nequasset Pond</b>	Woolwich	Public Water System, Sensitive
<b>Nickerson Lake</b>	New Limerick	EQIP Priority Water
<b>No Name Pond</b>	Lewiston	Sensitive
<b>Nokomis Pond</b>	Newport	Public Water System
<b>North Pond</b>	Norway	Sensitive
<b>North Pond</b>	Sumner	Public Water System
<b>North Pond</b>	Smithfield	Development Threat, Watch List
<b>North Pond</b>	Warren	Sensitive – Sediment Chemistry
<b>Norton Pond</b>	Lincolntonville	Sensitive
<b>Notched Pond</b>	Raymond	Sensitive
<b>Oakes Pond</b>	Skowhegan	Agriculture Threat
<b>Otter Pond</b>	Bridgton	Sensitive
<b>Panther Pond</b>	Raymond	Sensitive
<b>Papoose Pond</b>	Waterford	Watch List
<b>Paradise Pond</b>	Damariscotta	Negative clarity trend
<b>Parker Pond</b>	Casco	Sensitive
<b>Parker Pond</b>	Jay	Public Water System
<b>Parker Pond</b>	Vienna	Sensitive – Sediment Chemistry
<b>Pattee Pond</b>	Winslow	Sensitive, Sensitive – Sediment Chemistry
<b>Pease Pond</b>	Wilton	Sensitive – Sediment Chemistry
<b>Pemaquid Pond</b>	Waldoboro	Sensitive
<b>Pennesseewassee</b>	Norway	Sensitive
<b>Pleasant Lake</b>	Otisfield	Outstanding Water Quality, Fish Hatchery
<b>Pleasant Pond</b>	Turner	Sensitive
<b>Pleasant Pond</b>	T4 R3 WELS	Outstanding Water Quality

Lake	Town	Priority List Reasoning
Province Lake	Parsonsfield, S. Effingham, NH	Development Threat (Listed as Impaired by New Hampshire DES)
Pushaw Lake	Orono	Development & Agriculture Threat
Quimby Pond	Rangeley	Sensitive
Raymond Pond	Raymond	Sensitive
Roberts Wadley Pond	Lyman	Sensitive
Round Pond	Rangeley	Sensitive
Round Pond	Vinalhaven	Public Water System
Roxbury Pond	Roxbury	Watch List
Sabbathday Lake	New Gloucester	Sensitive
Salmon L (Ellis P)	Belgrade	Watch List, Sensitive – Sediment Chemistry
Salmon Stream Pond	Guilford	Public Water System
Sand Pond	Monmouth	Sensitive
Sawyer Pond	Greenville	Negative clarity trend
Sebago Lake (including Crooked River)	Sebago	Outstanding Water Quality, Public Water System
Sennebec Pond	Appleton	Sensitive – Sediment Chemistry
Shaker Pond	Alfred	Sensitive
Sheepscot Lake	Palermo	Fish Hatchery
Silver Lake	Bucksport	Public Water System
Spectacle Pond	Vassalboro	Sensitive
Square Lake	T16 R5 WELS	Watch List, Development Threat
Square Pond	Acton	Sensitive – Sediment Chemistry
St George Lake	Liberty	Outstanding Water Quality
Swan Pond	Lyman	Sensitive
Taylor Pond	Auburn	Sensitive, Sensitive – Sediment Chemistry
Thomas Pond	Casco	Sensitive
Thompson Lake	Oxford	Outstanding Water Quality, Sensitive
Threecornered Pond	Augusta	Watch List, Sensitive, Sensitive – Sediment Chemistry
Torsey (Greeley) Pond	Mount Vernon	Sensitive – Sediment Chemistry
Trickey Pond	Naples	Outstanding Water Quality, Sensitive
Tripp Pond	Poland	Sensitive
Upper Narrows Pond	Winthrop	Public Water System, Watch List, Sensitive
Upper Range Pond	Poland	Sensitive
Varnum Pond	Wilton	Public Water System, Sensitive – Sediment Chemistry
Ward Pond	Sidney	Sensitive
Wassookeag Lake	Dexter	Negative clarity trend, Public Water System, Sensitive – Sediment Chemistry

Lake	Town	Priority List Reasoning
<b>Watchic Pond</b>	Standish	Sensitive
<b>West Harbor Pond</b>	Boothbay Harbor	Sensitive
<b>Whetstone Pond</b>	Kingsbury Twp	Negative clarity trend
<b>Whitney Pond</b>	Oxford	Sensitive
<b>Wilson Pond</b>	Wilton	Watch List
<b>Wood Pond</b>	Bridgton	Sensitive
<b>Woodbury Pond</b>	Monmouth	Sensitive
<b>Youngs Lake</b>	Westfield	Public Water System

## D. Stream Watershed Prioritization

### Impaired Streams

As a starting point, all rivers and streams impaired due to nonpoint source (NPS) pollution in the following categories of the 2018/2020/2022 Integrated Water Quality Monitoring and Assessment Report are considered for inclusion on the priority list:

- Category 4-A: Rivers and Streams with Impaired Use, TMDL Completed;
- Category 5-A: Rivers and Streams Impaired by Pollutants Other Than Those Listed in 5-B Through 5-D (TMDL Required);
- Category 5-B: Rivers and Streams Impaired for Bacteria Only, TMDL Required.

To determine if a stream or river is impaired primarily due to NPS sources, the DEP Biomonitoring database was queried as to what were the major sources of the impairments. A stream is considered impaired primarily by NPS if the sources were listed as NPS, agriculture, stormwater, impervious surfaces, habitat modification, post-development erosion and sedimentation, or source unknown.

Streams on the Integrated Report Impaired List which are expected to result in attainment (Category 4-B: Rivers and Streams Impaired by Pollutants - Pollution Control Requirements Reasonably Expected to Result in Attainment) are not included on the priority list. These streams are believed to be impaired primarily due to non-NPS reasons and are being addressed by regulatory programs and remediation work.

Streams on the Integrated Report Impaired List due to hydrologic reasons (Category 4-C: Rivers and Streams with Impairment not Caused by a Pollutant), mercury (Category 5-C: Waters Impaired by Atmospheric Deposition of Mercury), or legacy pollutants (Category 5-D: Rivers and Streams Impaired by Legacy Pollutants), are not included on the priority list. These streams are believed to be impaired primarily due to sources beyond the scope of the 319 NPS program.

Once the streams impaired by NPS are identified, they are determined to be priority stream watersheds if they meet one of the following criteria.

- Had a Total Maximum Daily Load (**TMDL**) report completed or in development. This includes streams with an individual NPS-based TMDL and those included in the Maine Impervious Cover TMDL or Maine Statewide NPS TMDL. These streams are impaired primarily due to NPS pollution and the TMDLs provide an analysis of the causes of the impairment, and therefore a first step in determining what needs to be done to improve the water quality. For streams included in the Maine Statewide Bacteria TMDL, only those whose impairment is only due to bacteria that is not caused by a point source are listed as priority streams.
- Identified as a priority watershed by the Maine Natural Resources Conservation Service Environmental Quality Incentives Program (**EQIP**) National Water Quality Incentive or by Maine Municipal Separate Storm Sewer System (**MS4**) community plans.
- High risk of future development in watershed due to its location **near a highway exit**. These streams were determined by completing a risk assessment of the likelihood of development near each Maine Turnpike, Interstate 95, and Route 295 exit that had stream watersheds within a one-mile radius. Streams were categorized as having a high, medium, or low risk of development in their watershed due to Access-related development. A screening level field survey and water quality sampling was conducted on streams with a high risk of development where more information was needed. The goal of the screening was to see if the stream was showing signs of stress or not, and to assess whether it fit the NPS priority selection principles. High risk streams were added to the priority list unless the assessment showed the stream was not showing signs of stress and land use in the area did not appear to be a high threat.
- Streams that provide critical salmon habitat were identified as **priority salmon streams** by the Department of Marine Resources (DMR), with support of partners. If these streams were determined to have probable current, or future, NPS pollution threats in the watershed they were included on the priority list.

Some streams were not included on the priority list even if they met some of the above criteria due to the following reasons:

- Believed to be impaired due to **'natural' reasons** such as being a backwater stream or having wetland effects which cause the stream to not meet its class.
- Streams or rivers impaired mostly due to **legacy pollutants**, particularly legacy toxins. It is believed that the legacy pollutants would have to be addressed in order for the stream to meet class, so addressing the NPS sources would not be sufficient to have it meet class and therefore the stream is not added to the NPS priority list.
- **Large rivers** (e.g., Kennebec River, Androscoggin River, Presumpscot River) were not included as priorities since the large size of their watershed makes measurable improvement in water quality due to implementation of NPS watershed-based plans very unlikely. Instead, tributaries to these larger watersheds were considered for the priority list based both on their own characteristics and their impact on the larger impaired watersheds.
- Rivers whose impairment is primarily due to **point sources** such as combined sewer overflows or wastewater discharges were also not included on the priority list. It is believed



that the point sources would need to be addressed for the water quality of these rivers to be improved significantly.

**Table 22. Impaired Streams Priority List (92 streams)**

Stream	Town	Priority List Reasoning
Adams Brook	Berwick	TMDL
Amsden Brook	Ft. Fairfield	Agriculture Threat
Arctic Brook	Bangor	TMDL, Highway Access-related Development Threat
Barberry Creek	South Portland	TMDL
Birch Brook	Presque Isle	Agriculture Threat
Birch Stream	Bangor	TMDL, MS4 Priority Water
Black Brook	Windham	TMDL
Bond Brook	Augusta	Highway Access-related Development Threat, Development Threat
Brackett Brook	Palmyra	TMDL
Burnham Brook	Garland	TMDL
Capehart Brook	Bangor	TMDL
Capisic Brook	Portland	TMDL, MS4 Priority Water
Card Brook	Ellsworth	TMDL
Chamberlain Brook	Whitefield	TMDL
Chandler River including East Branch	Pownal	TMDL
China Lake Outlet Stream	Winslow	TMDL
Cold Stream	Skowhegan	High Growth Area
Cole Brook	Gray	TMDL
Colley Wright Brook	Windham	TMDL
Coloney Brook	Fort Fairfield	TMDL
Concord Gully	Freeport	TMDL, Highway Access-related Development Threat, MS4 Priority Water
Cowett Brook	Presque Isle	Agriculture Threat
Craig Brook	Littleton	TMDL
Crooked Brook	Corinth	TMDL
Currier Brook	Skowhegan	Bacteria TMDL
Dole Brook	Portland	TMDL
Duck Brook	Arundel	Bacteria TMDL
Dudley Brook	Chapman	TMDL
Dyer River	Newcastle	Bacteria TMDL, NWQI
Everett Brook	Fort Fairfield	TMDL
Fish Brook	Fairfield	TMDL
French Stream	Exeter	TMDL, Priority Salmon Stream

Stream	Town	Priority List Reasoning
<b>Frost Gully Brook</b>	Freeport	TMDL
<b>Goodall Brook</b>	Sanford	TMDL
<b>Goosefare Brook</b>	Saco	TMDL, Bacteria TMDL, Highway Access-related Development Threat, MS4 Priority
<b>Gray Brook</b>	Ft. Fairfield	Agriculture Threat
<b>Gully Brook</b>	Auburn	TMDL
<b>Hacker Brook</b>	Ft. Fairfield	Agriculture Threat
<b>Halfmoon Stream</b>	Thorndike	TMDL
<b>Hart (Dill) Brook</b>	Lewiston	TMDL, MS4 Priority Water
<b>Hobbs Brook</b>	Cumberland	TMDL
<b>Inkhorn Brook</b>	Westbrook	TMDL
<b>Jock Stream</b>	Wales	TMDL
<b>Kennebunk River, including Estuary</b>	Arundel, Kennebunk	Bacteria TMDL
<b>Kennedy Brook</b>	Augusta	TMDL
<b>Kennedy Brook</b>	Presque Isle	High Growth Area
<b>Kimball Brook</b>	South Portland	TMDL
<b>Logan Brook</b>	Auburn	TMDL, MS4 Priority Water
<b>Long Creek</b>	South Portland	Highway Access-related Development Threat, Development Threat
<b>Meadow Brook</b>	Bangor	Highway Access-related Development Threat
<b>Mere Brook</b>	Brunswick	TMDL
<b>Merrit Brook</b>	Presque Isle	TMDL
<b>Mill Stream</b>	Albion	TMDL
<b>Mosher Brook</b>	Gorham	TMDL
<b>Mulligan Stream</b>	St. Albans	TMDL
<b>Nasons Brook</b>	Portland, Westbrook	TMDL
<b>No Name Brook</b>	Lewiston	TMDL
<b>North Fork McLean Brook</b>	St. Agatha	Agriculture Threat
<b>Oliver Brook</b>	Houlton	Agriculture Threat
<b>Otter Brook</b>	Windham	TMDL
<b>Otter Stream</b>	Milford, Bradley	Bacteria TMDL, MS4 Priority Water
<b>Penjawoc Stream</b>	Bangor	Highway Access-related Development Threat, MS4 Priority Water
<b>Penley Brook</b>	Auburn	TMDL
<b>Perkins Stream</b>	Waterville	Development Threat, Highway Access-related Development Threat

Stream	Town	Priority List Reasoning
<b>Phillips Brook</b>	Scarborough	TMDL
<b>Pleasant River</b>	Windham	TMDL, Highway Access-related Development Threat
<b>Prestile Stream (Upper)</b>	Mars Hill	TMDL
<b>Red Brook</b>	Scarborough, South Portland	TMDL, Highway Access-related Development Threat, MS4 Priority Water
<b>Riggs Brook</b>	Augusta	TMDL
<b>Rocky Brook</b>	Mars Hill	Agriculture Threat
<b>Sabattus River</b>	Sabattus	TMDL
<b>Shaw Brook</b>	Bangor, Hampden	TMDL, Highway Access-related Development Threat
<b>Smith Brook</b>	Houlton	TMDL
<b>Stetson Brook</b>	Lewiston	High Growth Area
<b>Stroudwater River</b>	Portland, Westbrook	TMDL
<b>Sucker Brook</b>	Hampden	TMDL, Highway Access-related Development Threat, MS4 Priority Water
<b>Thatcher Brook</b>	Biddeford	TMDL, Highway Access-related Development Threat, MS4 Priority Water
<b>Thayer Brook</b>	Gray	TMDL, Highway Access-related Development Threat
<b>Topsham Fair Mall Stream</b>	Topsham	TMDL, Highway Access-related Development Threat
<b>Topsham Fairgrounds Stream</b>	Topsham	TMDL, Highway Access-related Development Threat
<b>Trout Brook</b>	South Portland	TMDL, MS4 Priority Water
<b>Unnamed Stream (Rt. 196)</b>	Lisbon Falls	TMDL, MS4 Priority Water
<b>Unnamed Trib to Androscoggin River (near Jordan Ave)</b>	Brunswick	TMDL
<b>Unnamed Trib to Androscoggin River (near River Rd)</b>	Brunswick	TMDL
<b>Unnamed Trib to Androscoggin River (near Water St)</b>	Brunswick	TMDL
<b>Unnamed Trib to Aroostook River (at Parkhurst)</b>	Presque Isle	Agriculture Threat

Stream	Town	Priority List Reasoning
<b>Unnamed Trib to Bond Brook (entering below I-95)</b>	Augusta	TMDL, Highway Access-related Development Threat
<b>Warren Brook</b>	Belfast	TMDL
<b>West Branch Sheepscot River</b>	Whitefield	TMDL, NWQI
<b>West Brook</b>	North Berwick	TMDL
<b>Whitney Brook</b>	Augusta	TMDL
<b>Whitten Brook</b>	Skowhegan	TMDL

### Threatened Streams

Non-impaired streams are assessed as to whether they are being significantly impacted or have the threat of significant impact from NPS pollution and whether the use of NPS 319 funds is likely to improve or protect water quality over the long term.

Non-impaired streams are determined to be priority threatened stream watersheds if they meet one of the following criteria:

- Streams listed on the 2018/2020/2022 Integrated Water Quality Monitoring and Assessment Report Category 3 (Waters with Insufficient Data or Information to Determine if Designated Uses are Attained) for NPS issues. For streams, Category 3 is used as a **'Watch List'** for streams of concern. Included on this list are streams that were recently impaired, and are therefore still sensitive, and streams with data that show they will likely be impaired in the future.
- Have recent increased impacts or significant potential threats from **agriculture or development**. This was determined through use of best professional judgment of the impact or significant threat of impact due to recent activities in the watershed. The sensitivity of the stream, extent and location of the agriculture or development, and cumulative effect of other watershed activities were considered in this determination.
- Identified as a priority watershed by partner organizations, such as the Maine Natural Resources Conservation Service National Water Quality Incentive (**NWQI**, previously identified in this priority list as Environmental Quality Incentives Program (EQIP)) or by Maine Municipal Separate Storm Sewer System (**MS4**) community plans.
- High risk of future development in watershed due to location **near a highway exit**. These streams were determined by doing a risk assessment of the likelihood of development near each Maine Turnpike, Interstate 95, and Route 295 exit that had stream watersheds within a one-mile radius. Streams were categorized as having a high, medium, or low risk of development in their watershed due to Access-related development. A screening level field survey and water quality sampling was conducted on streams with a high risk of development where more information was needed. The goal of the screening was to see if the stream was showing signs of stress or not, and to assess whether it fit the NPS priority selection principles. High risk streams were added to the priority list unless the assessment showed the stream was not showing signs of stress and land use in the area did not appear to be a high threat.

- Streams that provide critical salmon habitat were identified as **priority salmon streams** by the Department of Marine Resources (DMR) with support of partners. If these streams were determined to have probable current, or future, NPS pollution threats in the watershed they were included on the priority list.

Even if streams or rivers met some of the above criteria, they were not included on the priority list if they are **large rivers** and/or the impairment is due to **wastewater discharges**. For these streams or rivers, it is believed that larger scale and/or point source-related work is necessary and smaller tributary work is a better fit with the current NPS program.

**Table 23. Threatened Streams Priority List (76 streams)**

Stream	Town	Priority List Reasoning
<b>Alder Stream</b>	Corinna	NWQI Priority Water
<b>Aroostook River Tributaries from Presque Isle to the Canadian Border (Richardson Brook, Spring Brook, Prestile Brook, Caribou Stream, McDonald Brook, Pattee Brook, Libby Brook, Hockenhull Brook, Hardwood Brook, Factory Brook, and Nichols Brook)</b>	Presque Isle, Caribou, Fort Fairfield	Agriculture Threat
<b>Beaver Brook</b>	Scarborough	Highway Access-related Development Threat
<b>Beaverdam Stream</b>	Wesley	Priority Salmon Stream
<b>Black Brook</b>	Sangerville	Priority Salmon Stream
<b>Blackstone Brook</b>	Blanchard	Priority Salmon Stream
<b>Bobbin Mill Brook</b>	Auburn	Watch List
<b>Cathance Stream</b>	Edmunds TWP	Priority Salmon Stream
<b>Cemetery Brook (unnamed tributary to Penjajwoc/Meadow)</b>	Veazie	MS4 Priority Water
<b>Chenery Brook</b>	Falmouth	Highway Access-related Development Threat
<b>Chickering Creek</b>	Kittery	Highway Access-related Development Threat
<b>Collyer Brook</b>	Gray	Development Threat
<b>Cottle Brook</b>	Phillips	Priority Salmon Stream
<b>Cove Brook</b>	Winterport	Watch List
<b>Crooked River</b>	T30 MD BPP	Priority Salmon Stream
<b>Dead Stream</b>	Meddybemps	Priority Salmon Stream
<b>Deep Brook</b>	Saco	Highway Access-related Development Threat

Stream	Town	Priority List Reasoning
<b>Depot Stream</b>	Wells	Highway Access-related Development Threat
<b>East Branch Piscataqua</b>	Falmouth	Watch List, MS4 Priority Water
<b>Farnham Brook</b>	Pittsfield	Watch List
<b>Felts Brook</b>	Brewer	MS4 Priority Water
<b>Great Works River</b>	South Berwick	MS4 Priority Water
<b>Houston Brook</b>	Katahdin Iron Works TWP	Priority Salmon Stream
<b>Kenduskeag Stream (above the village of Kenduskeag)</b>	Kenduskeag	Agriculture Threat
<b>Little River</b>	York	Highway Access-related Development Threat
<b>Little River</b>	Belfast	Development Threat
<b>Maxwell Brook</b>	Sabattus	Highway Access-related Development Threat
<b>Medomak River</b>	Waldoboro	Agriculture Threat
<b>Meduxnekeag River*</b>	Houlton	NWQI Priority Water, Watch List
<b>Merrill Brook</b>	Freeport	Highway Access-related Development Threat
<b>Mill Brook</b>	Scarborough	Development Threat
<b>Mill Brook</b>	Westbrook	MS4 Priority Water
<b>Mill Creek</b>	Falmouth	Highway Access-related Development Threat, MS4 Priority Water
<b>Moose Brook</b>	Auburn	Highway Access-related Development Threat
<b>Mopang Stream</b>	T25 MD BPP	Priority Salmon Stream
<b>Moulton Brook</b>	York	Highway Access-related Development Threat
<b>Mt. Blue Stream</b>	Avon	Priority Salmon Stream
<b>Narraguagus River (North of Beddington Lake)</b>	T22 MD BPP	Priority Salmon Stream
<b>Northern Stream</b>	Berry TWP	Priority Salmon Stream
<b>Norton Brook</b>	Falmouth	Watch List, Highway Access-related Development Threat
<b>Old Stream</b>	Northfield	Priority Salmon Stream
<b>Orbeton Stream</b>	Phillips	Priority Salmon Stream
<b>Pearce Brook</b>	Houlton	Agriculture Threat, Development Threat
<b>Perham Stream</b>	Madrid	Priority Salmon Stream
<b>Perley Brook</b>	Fort Kent	Watch List

Stream	Town	Priority List Reasoning
<b>Piscataqua River</b>	Falmouth	Watch List
<b>Pleasant River</b>	Milo	Priority Salmon Stream
<b>Pleasant River (Above Saco Rd. crossing)</b>	T18 MD BPP	Priority Salmon Stream
<b>Pollard Brook</b>	Lincoln	Priority Salmon Stream
<b>Pope Creek</b>	Wells	Highway Access-related Development Threat
<b>Rockwood Brook</b>	Augusta	Highway Access-related Development Threat
<b>Rolling Dam Brook</b>	Gardiner	Highway Access-related Development Threat
<b>Salmon Brook</b>	Washburn	Watch List
<b>Salmon Stream</b>	Guilford	Priority Salmon Stream
<b>Sandy Stream</b>	Unity	Agriculture Threat
<b>Scitterygusset Creek</b>	Falmouth	Highway Access-related Development Threat
<b>Sheepscot River</b>	Whitefield	NWQI, Agriculture Threat
<b>South Branch Sandy River</b>	Phillips	Priority Salmon Stream
<b>Stone Brook</b>	Augusta	Highway Access-related Development Threat
<b>Sunday River</b>	Newry, Bethel	Watch List
<b>Swan Pond Brook Tributary (crosses Buzzell Road)</b>	Dayton, Biddeford	Watch List
<b>Tannery Brook</b>	Gorham	Watch List, MS4 Priority Water
<b>Tanning Brook</b>	Manchester	Watch List
<b>Taylor Brook</b>	Auburn	Development Threat
<b>Twelvemile Brook</b>	Clinton, Waterville	Watch List
<b>Unnamed Stream at I-95 Exit 19, tributary to Webhannet River</b>	Wells	Highway Access-related Development Threat
<b>Unnamed Stream at I-95 Exit 75, tributary to Androscoggin River</b>	Auburn	Highway Access-related Development Threat
<b>Unnamed Stream at I-95 Exit 113, tributary to Kennebec River</b>	Augusta	Highway Access-related Development Threat
<b>Unnamed Stream at I-95 Exit 150, downtown tributary to Farnham Brook</b>	Pittsfield	Highway Access-related Development Threat
<b>Unnamed Trib to Piscataqua River, crosses Mountain Rd, I-95 &amp; Gray Rd</b>	Falmouth	Highway Access-related Development Threat
<b>Unnamed Tributaries to Long Lake near golf course</b>	Madawaska	Agriculture Threat
<b>Vaughan Brook</b>	Hallowell	Development Threat
<b>Violette Stream</b>	Van Buren	Development Threat



Stream	Town	Priority List Reasoning
<b>West Branch Machias River</b>	T30 MD BPP	Priority Salmon Stream
<b>Weston Brook</b>	Manchester	Watch List
<b>Willowdale Brook</b>	Scarborough	Highway Access-related Development Threat

*\*While sections of the mainstem below the South Branch are listed in the 2022 Integrated Report as impaired (Categories 4-A, 5, 5D) the River is included on the threatened priority list since the mainstem between Meduxnekeag Lake and the South Branch is Category 3. See the Integrated Report for more information.*

## E. Marine Waters Watershed Prioritization Description

Marine areas were assessed on the impact or threat of NPS pollution, and the likelihood that NPS abatement work or support could make a short- or long-term improvement to water quality. The impact or threat was determined by whether there were impacted shellfish harvest areas of interest, beach swimming advisories or documented negative water quality indicators. It was considered likely that NPS abatement work or support could be effective if the primary pollutant sources were nonpoint and non-natural, and if the watershed likely had a significant water quality impact due to a lower degree of flushing.

Note that it is anticipated that whether a marine water is listed as a NPS Priority Impaired or Threatened Water will be dynamic as the Integrated Report continues to respond to shellfish closures and openings. It is not anticipated that the marine waters will be removed from the NPS Priority List as frequently, though they will be switched between the impaired or threatened categories as appropriate.

### Impaired Marine Waters

The marine NPS priority waters list generally has fewer numeric criteria and relies more on narrative criteria (i.e., best professional judgment) than the lake and stream NPS priority lists. Part of this difference is a result of the impaired marine waterbodies list in the Maine Integrated Report not clearly distinguishing between NPS and point source contributions. To keep prioritization criteria objective, the marine priority list is focused on data associated with bacterial closures and is reliant on data, knowledge, and priorities from professional organizations including Maine DEP. Coastal Designated Beaches were included in the Integrated Report for the first time in 2022. Subsequently the Integrated Report was used to identify priority beaches. Additions to the marine priority list are anticipated as more information continues to become available.

Marine watersheds were added to the impaired priority list if the marine waters met at least one of the following criteria:

- **Coastal beaches listed as impaired** (Category 5B: Coastal Designated Beaches Impaired for Bacteria only – TMDL Required) in the Maine DEP Integrated Report where the impairment is likely due to nonpoint source pollution.

- Marine waters that the **Casco Bay Estuary Partnership (CBEP)** has identified with high/moderate value shellfish beds, high/moderate harvester interest, and associated NPS sources documented in the CBEP report, *Expanding and Sustaining the Shellfisheries of Casco Bay 2011* (2012).
- Marine waters associated with a **Maine Municipal Separate Storm Sewer Program (MS4)** priority watershed.
- Nearshore waters and intertidal clam flats where DEP or partners (e.g., CBEP, Friends of Casco Bay, Marine Environmental Research Institute (MERI), Wells Reserve) have documented **water quality indicators** with suspected NPS links. Indicators included documented eelgrass loss (only limited availability) or recurring macroalgae blooms, chronically high nitrogen relative to comparable ambient conditions and/or chronically low dissolved oxygen (<5 mg/l).
- Marine waters that the **Maine Department of Marine Resources (DMR)** has identified as having shellfish harvest closures related primarily to NPS threat, and that are protected embayments with limited assimilative capacity. Information available from sanitary surveys, watershed surveys, and local research and knowledge were used to determine if NPS threats were the dominant contributors to documented impairment or anticipated future impairment.

Some marine waters were not included on the priority list even if they met one or more of the above criteria due to the following reasons.

- Believed to have negative water quality indicators for **‘natural’ reasons**, such as high bacteria from wildlife, or having low dissolved oxygen as a result of high sediment oxygen demand in shallow, productive, low flushing coves.
- Believed to be impaired by **legacy pollutants**, particularly legacy toxics. If legacy pollutants would have to be addressed for the waterbody to meet class, then reducing NPS sources would not be sufficient for attainment of standards.
- **Large or exposed estuaries, coastal embayments, or coastal shorelines** with relatively high degree of flushing likely. The large scale of the area and influence of tides and surface currents make measurable improvement in water quality due to implementation of NPS watershed-based plans very unlikely.
- Source of pollution is tied primarily to **wastewater discharges**, a small number of failing **septic systems** or **overboard discharges**, or other **point sources**. While failing septic systems and overboard discharges are in the realm of NPS, NPS grant program does not fund replacing sewage systems, so small watersheds with just a few septic issues are a better fit to be addressed by the town.
- Sources of pollution are **not clearly of nonpoint origin or have limited NPS sources**. More information on probable sources is needed to determine if meets NPS priority listing criteria.

**Table 24. Impaired<sup>12</sup> Marine Waters Priority List (28 marine waters)**

<b>Marine Water</b>	<b>Area/Town</b>	<b>Priority Listing Reason</b>
<b>Anthoine Creek &amp; Cove</b>	South Portland	Negative Water Quality Indicators (FOCB)
<b>Basin Cove</b>	Harpswell	Negative Water Quality Indicators (FOCB)
<b>Bunganuc Creek</b>	Brunswick	CBEP Priority Water
<b>Churches Rock</b>	So. Thomaston	DMR/NPS Threat
<b>Goose Rocks Beach – Batson River</b> (including Batson River & Smith Brook <sup>13</sup> )	Kennebunkport	Impaired Coastal Beach
<b>Goose Rocks Beach – Little River</b>	Kennebunkport	Impaired Coastal Beach
<b>Hutchins Cove</b>	Bagaduce River/ Northern Bay (Penobscot)	DMR/NPS Threat
<b>Hylar Cove</b>	Cushing	DMR/NPS Threat
<b>Little River</b>	Freeport	CBEP Priority Water
<b>Littlefield Cove</b>	Bagaduce River/Northern Bay (Penobscot)	DMR/NPS Threat
<b>Littlejohn Island Causeway</b>	Yarmouth	Negative Water Quality Indicators (FOCB)
<b>Maquoit Bay</b>	Brunswick	CBEP Priority Water
<b>Martin Cove</b>	Lamoine	DMR/NPS Threat
<b>Medomak River Estuary</b>	Waldoboro	DMR/NPS Threat
<b>Mill Cove</b>	South Portland	Negative Water Quality Indicators
<b>Mill Pond/Parker Head</b>	Phippsburg	DMR/NPS Threat
<b>Mussell Cove</b>	Falmouth	CBEP Priority Water, DMR/NPS Threat
<b>North Fogg Point</b>	Freeport	CBEP Priority Water
<b>Northeast Creek</b>	Bar Harbor	DMR/NPS Threat
<b>Oakhurst Island</b>	Harpswell	CBEP Priority Water

<sup>12</sup> Impaired vs. Threatened NPS Priority Water. Marine waters with shellfish closures are listed as impaired or Category 3 in the Integrated Report. It is anticipated that whether a NPS priority marine water is listed as a NPS Priority Impaired or Threatened Water will be dynamic as the Integrated Report continues to respond to shellfish closures and openings. It is not anticipated that the marine waters will be removed from the NPS Priority List as frequently, though they will be switched between the impaired or threatened categories as appropriate.

<sup>13</sup> Smith Brook (Kennebunkport) is not impaired in the Integrated Report but is included in this grouping due to the likely impact on the water quality of Goose Rocks Beach – Batson River.

Marine Water	Area/Town	Priority Listing Reason
<b>Ogunquit River Estuary</b> (including Riverside Beach & Little Beach <sup>14</sup> )	Ogunquit	DMR/NPS Threat, Impaired Coastal Beach (Riverside)
<b>Scarborough River Estuary</b>	Scarborough	DMR/NPS Threat
<b>Seal Cove</b>	Vinalhaven	DMR/NPS Threat
<b>Spinney Creek</b>	Eliot	MS4 Priority Water, Negative Water Quality Indicators
<b>Spurwink River</b>	Scarborough	DMR/NPS Threat
<b>St. George River Estuary from Route 1 Crossing to Head of Tide</b>	Warren, Thomaston	DMR/NPS Threat, Negative Water Quality Indicators
<b>Upper New Meadows River upstream from Howard Point</b> (including the lakes)	Brunswick, Bath	Negative Water Quality Indicators, CBEP Priority Water
<b>Weskeag River</b>	South Thomaston	DMR/NPS Threat

### Threatened Marine Waters

Marine waters that were not listed as impaired waters in the Integrated Report were considered for NPS priority water listing in the same manner as impaired waters. Non-impaired marine watersheds were added to the threatened priority list if the marine waters met at least one of the following criteria:

- Any of the criteria listed above for impaired marine waters.
- **Coastal beaches listed as Category 3** (Coastal Designated Beaches with Insufficient Data or Information to Determine if Designated Uses are Attained (One or More Uses may be Impaired)) in the Maine DEP Integrated Report where the impairment is likely due to nonpoint source pollution. For coastal designated beaches, Category 3 is used for waters of concern based on bacteria monitoring data.

Like the impaired marine waters, if threatened marine waters met any of the exclusion reasons listed in the impaired section, they were not included on the priority list.

**Table 25. Threatened Marine Waters Priority List (12 marine waters)**

Marine Water	Town	Priority List Reasoning
<b>Biddeford Pool</b>	Biddeford	Negative Water Quality Indicators

<sup>14</sup> Little Beach (Ogunquit) is not impaired and is listed as a Category 3 coastal designated beach in the Integrated Report but is included in this grouping due to its location near the outlet of the Ogunquit River, likely influence of the river, and for practical watershed planning implementation purposes.

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<b>Cape Neddick River</b> (including Cape Neddick Beach)	York	MS4 Priority Water, Beaches Category 3 (Cape Neddick Beach)
<b>Egypt Bay</b>	Hancock/Franklin	DMR/NPS Threat
<b>Harpwell Cove</b>	Brunswick	CBEP Priority Water
<b>Harraseeket River</b>	Freeport	DMR/NPS Threat
<b>Jordan River</b>	Trenton/Lamoine	DMR/NPS Threat
<b>Lincolnton Beach</b>	Lincolnton	Beaches Category 3
<b>Pemaquid River</b>	Bristol	DMR/NPS Threat
<b>Salt Pond</b>	Blue Hill/Sedgwick	DMR/NPS Threat, MERI
<b>Spruce Creek</b>	Kittery	MS4 Priority Water, Negative Water Quality Indicators
<b>Willard Beach</b>	South Portland	Beaches Category 3
<b>The Bay in Thomaston, North of Hospital Point and South of the St. George River</b>	Thomaston	DMR/NPS Threat

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## Appendix 3. Water Resource Monitoring and Assessment Strategies and Partners

### A. Types of Water Quality Monitoring and Assessment

Monitoring and assessment work by DEP is conducted for a variety of purposes (Table 25). Much of DEP's monitoring and assessment work is conducted to determine if the State's waterbodies meet their designated classification. Other types of monitoring are also integral to the NPS program. Water quality problem identification and assessment of conditions is needed to target NPS program efforts. The methods, scale and the expertise needed to carry out monitoring and assessment depends on the objective, such as ambient water quality monitoring, development of a new assessment tool, stressor analysis, or determining the sources of pollution.

#### Water Quality Monitoring:

The repeated sampling of environmental conditions at predetermined locations in order to provide a set of data to conduct assessments.

#### Water Quality Assessment:

The overall process of evaluating the physical, chemical, and/or biological nature of water in relation to natural quality, human effects, and intended uses.

**Table 26. Monitoring and Assessment Activities.**

Activity	Purpose	Monitoring/ Assessment Methods	Scale	Activity Initiator
<b>Ambient Water Quality Monitoring</b>	<ul style="list-style-type: none"> <li>Identify water quality problems</li> <li>Evaluate waters of the State to determine if water quality standards are being met</li> </ul>	<ul style="list-style-type: none"> <li>In-situ water quality monitoring</li> <li>Data assessment</li> </ul>	<ul style="list-style-type: none"> <li>Statewide</li> <li>Regional</li> <li>Watershed</li> </ul>	<ul style="list-style-type: none"> <li>DEP</li> <li>Partners</li> </ul>
<b>Trends Analyses</b>	<ul style="list-style-type: none"> <li>Determine if water quality changing positively or negatively due to land use changes, natural conditions or restoration activities</li> </ul>	<ul style="list-style-type: none"> <li>Statistical Analyses</li> </ul>	<ul style="list-style-type: none"> <li>Statewide</li> <li>Waterbody</li> </ul>	<ul style="list-style-type: none"> <li>DEP</li> <li>Partners</li> </ul>

Activity	Purpose	Monitoring/ Assessment Methods	Scale	Activity Initiator
<b>TMDL Development</b>	<ul style="list-style-type: none"> <li>Develop TMDL for impaired waters</li> <li>Define impairment, causes and sources of pollution, loading and reductions needed to restore waterbody</li> </ul>		<ul style="list-style-type: none"> <li>Targeted Waterbodies</li> </ul>	<ul style="list-style-type: none"> <li>DEP</li> <li>EPA</li> <li>Consultants</li> </ul>
<b>Water Quality Monitoring Tools and Assessment Methods</b>	<ul style="list-style-type: none"> <li>Develop new or refine existing monitoring methods used to determine if water quality standards are being met</li> <li>Develop new water quality criteria</li> </ul>	<ul style="list-style-type: none"> <li>In-situ water quality monitoring</li> <li>Statistical methods and models</li> </ul>	<ul style="list-style-type: none"> <li>Statewide</li> <li>Regional</li> </ul>	<ul style="list-style-type: none"> <li>DEP</li> <li>EPA</li> <li>Universities</li> </ul>
<b>NPS Project Effectiveness</b>	<ul style="list-style-type: none"> <li>Monitor and/or evaluate the effectiveness of NPS projects</li> </ul>	<ul style="list-style-type: none"> <li>Watershed evaluation to track BMPs implemented and/or calculate pollutant load reductions</li> <li>In-situ water quality monitoring</li> <li>Trend Analyses</li> </ul>	<ul style="list-style-type: none"> <li>Watershed</li> <li>Waterbody</li> </ul>	<ul style="list-style-type: none"> <li>DEP</li> <li>Partners</li> </ul>
<b>Watershed Assessment</b>	<ul style="list-style-type: none"> <li>Determine specific sources of pollution or stressors in order to develop management plans and implementation projects</li> </ul>	<ul style="list-style-type: none"> <li>Watershed or Stream Corridor Surveys that identify sources of pollution</li> <li>Waterbody specific monitoring</li> </ul>	<ul style="list-style-type: none"> <li>Watershed</li> <li>Waterbody</li> </ul>	<ul style="list-style-type: none"> <li>DEP</li> <li>Partners</li> <li>Consultants</li> </ul>
<b>Research</b>	<ul style="list-style-type: none"> <li>Provide answers to specific theories, problems and questions</li> </ul>	<ul style="list-style-type: none"> <li>Research methods</li> </ul>	<ul style="list-style-type: none"> <li>Statewide</li> <li>Regional</li> <li>Watershed</li> <li>Waterbody</li> </ul>	<ul style="list-style-type: none"> <li>DEP</li> <li>Universities</li> </ul>



## B. Monitoring and Assessment by Waterbody Type

### Rivers and Streams

The DEP assesses the water quality of rivers and streams primarily through its Biomonitoring Program on a 5-year rotating basin schedule (Aroostook County, Androscoggin basin, Kennebec basin, Penobscot basin/Downeast and Southern Maine). The Program has had a macroinvertebrate biomonitoring program for 35 years and in 2000, initiated an algal biomonitoring program. Stream macroinvertebrate communities are assessed using a statistical model that predicts the likelihood of a waterbody attaining the aquatic life criteria of its assigned class of AA/A, B, or C. Numeric biocriteria that describe the macroinvertebrate classification decision process were adopted into rule (Chapter 579) in 2003. Biological assessment methods and a statistical model for algal communities have been completed, but not yet implemented. The algal data is however being interpreted to determine narrative aquatic life criteria for the integrated report.

Additional monitoring by DEP occurs through the Salmon Habitat Monitoring Program. This program includes water quality and biological monitoring, in collaboration with partners, of Maine's Atlantic salmon rivers/streams. The Surface Water Ambient Toxics Program also conducts monitoring in rivers/streams as well as lakes and marine waters.

In 2009, DEP started the Volunteer River Monitoring Program (VRMP). Volunteer groups monitor under a Quality Assurance Program Plan and DEP provides training and equipment loan, technical support, data management and reporting. All the volunteer groups collect chemistry data (i.e., dissolved oxygen, temperature and specific conductivity) and about half of the groups also do bacteria monitoring.

The primary cause of impairment for rivers and streams is toxic contamination from organics and pesticides, as well as legacy pollutants such as DDT, dioxin and PCBs. Other causes of impairment are oxygen depletion, affecting aquatic life uses and biological effects on aquatic life criteria. Nutrients and pathogens are also notable causes.

The impairment sources are about equally divided between industrial point source discharges, unknown sources, and non-point sources. The primary non-point sources are agriculture, development and urban stormwater. Also, all freshwaters in Maine have an advisory for fish consumption due to presence of mercury presumed to be from atmospheric deposition. (Source: Integrated Water Quality Monitoring and Assessment Report)

### Wetlands

DEP's Biological Monitoring Program is primarily responsible for monitoring and assessing wetlands. In 1998, DEP began developing a biomonitoring program for wetlands which focuses on emergent and aquatic bed wetland habitat, including freshwater lacustrine and riverine fringe wetlands. Monitoring includes biological monitoring of macroinvertebrates, attached algae, and phytoplankton. In addition, ecological conditions are documented, and a rapid assessment of stressors is completed. A model that assesses freshwater wetland macroinvertebrate communities to predict attainment of tiered aquatic life use criteria in

Maine's water quality standards has been completed, but not fully implemented. The data are being interpreted to determine attainment narrative aquatic life criteria for the Integrated Report.

The primary causes of wetlands impairment are point and nonpoint sources including agriculture, development and urban stormwater.

### Lakes

Monitoring and assessment of lakes is achieved primarily through the Lake Stewards of Maine (LSM). Water quality data is collected by volunteers and associated lake organizations/regional entities as described in the "Collaborators and Partners" section. The DEP Lakes Assessment Unit provides quality assurance oversight of LSM. The Lakes Unit also conducts baseline monitoring on about 100 lakes in late summer each year. Additional monitoring by DEP includes monitoring of priority lakes and working with partners on probability-based monitoring for cyanotoxins and lake vulnerability.

The cause of impairment for most of the impaired lakes is dissolved oxygen, total phosphorus, Secchi disk transparency and habitat assessment. Nonpoint sources affecting lakes are due primarily to agricultural sources and development/urban stormwater. A subset of lakes is impaired due to non-attainment of aquatic life (habitat) standards due to hydromodification (drawdown).

### Estuaries/Marine Waters

Monitoring and assessment for marine waters is done by the Marine Unit, along with a number of partners (other governmental agencies, academic institutions and nonprofits). DEP monitoring is accomplished through two programs: Maine Environmental Monitoring Program (MEMP) established in 1991 and the Surface Water Ambient Toxics (SWAT) established in 1993. The focus of the MEMP is on monitoring industrial contaminants and pollutants in wastewater discharges and determining attainment of water quality standards. This is accomplished through monitoring ambient water quality, nutrients and eutrophication indicators. Nutrient monitoring includes mapping the extent and changes in eelgrass as an indicator of excess nitrogen in Casco Bay. The SWAT program analyzes blue mussel, softshell clam, lobster and other species' tissue for the presence of toxic contaminants affecting human and ecological health. Bacterial monitoring is through the Maine Healthy Beaches program for swimming beach quality, and Department of Marine Resources to determine shellfish closures.

Causes of impairment include bacteria, low dissolved oxygen, nutrients/eutrophication, biological indicators and toxics. Bacterial contamination is a significant cause of impairment affecting both recreational use and shellfish closures. Toxics are also a primary cause of impairment (lobster tomalley and certain saltwater finfish consumption advisory). Sources of toxic contamination include historic industrial loads for dioxin, and for some harbor areas past activities have left dioxins as well as pesticides, metals, and PCBs. More recent toxic contamination originates from several sources. These sources include urban development (PAHs and metals), boat-related activities, combined sewer overflows, and atmospheric deposition.

## Groundwater

The DEP, DHHS Division of Environmental Health, DACF Maine Geological Survey, and the U.S. Geological Survey share responsibility for the protection and assessment of groundwater. Groundwater monitoring consists of two types of monitoring, site-specific or generalized. Most groundwater data are site-specific and are gathered as part of permit conditions, enforcement, or impact assessments. General ambient monitoring is done by the Maine Geological Survey and U.S. Geological Survey. These two agencies monitor changes in water quality and quantity through a network of observation wells. DHHS also maintains a database of public water supply well water quality data.

Maine's groundwater efforts emphasize resource protection through three efforts. These are interagency coordination of groundwater programs, assessment of protection problems that include enhancement of the Environmental and Geographic Analysis Database (EGAD), and statutory changes to enable building upon state groundwater protection programs. The purpose is to increase groundwater protection and risk reduction.

Assessment of groundwater impairment is not currently done as part of the DEP "Integrated Report" assessment. However, contamination likely threatens a significant area of Maine's groundwater in developed areas of the State. Nonpoint source pollution is responsible for most groundwater pollution. Primary sources are agriculture, hazardous substance sites, spills, landfills, leaking above ground storage tanks, septic systems, shallow well injection, spray irrigation, stormwater runoff from development, and winter salt application.

## C. Collaborators and Partners

Much of the water quality data that is collected and assessed for the integrated report is collected through DEP monitoring programs. However, data are also largely provided from numerous other agencies, organizations and volunteer monitoring groups. Data collected by volunteer monitoring groups or conservation organizations must meet quality assurance/quality control requirements to be accepted by DEP. Volunteer groups that are part of the Lake Stewards of Maine or Volunteer River Monitoring Program work under a Quality Assurance Project Plan and their data is directly managed by DEP. Conservation groups not under the umbrella of one of these programs must have an EPA approved QAPP or Department approved sampling plan.

### Rivers and Streams

DEP generates much of the State's river and stream water quality data through its Biomonitoring Program, SWAT Monitoring Program, Salmon Habitat Monitoring Program as well as specific studies done for waste load allocations and TMDLs. Monitoring partners include the following:

- Federal agencies: U.S. Environmental Protection Agency, U.S. Fish & Wildlife Service, U.S. Geological Survey, NOAA, and Acadia National Park
- State agencies: Department of Inland Fisheries and Wildlife, Department of Health and Human Services, Department of Marine Resources

- Other governmental agencies: Saco River Corridor Commission
- Academic institutions: University of Maine
- Conservation organizations: Atlantic Salmon Federation, Downeast Salmon Federation, Midcoast Conservancy, Nature Conservancy
- Tribes: Penobscot Indian Nation, Houlton Band of Maliseet Indians
- Volunteer and watershed groups working under the Volunteer River Monitoring Program

### **Lakes**

The DEP Lake Assessment Unit coordinates and conducts lake monitoring. Much of the lake data is collected by volunteers through the Lake Stewards of Maine. Monitoring partners include the following:

- Federal agencies: U.S. Environmental Protection Agency, Acadia National Park
- State agencies: Department of Inland Fisheries and Wildlife
- Academic institutions: Colby College, Unity College, University of Maine
- Local lake associations
- Regional entities: Allagash Wilderness Waterway, Auburn Water District, Cobbossee Watershed District, Lakes Environmental Association, Midcoast Conservancy, Portland Water District, Rangeley Lakes Heritage Trust, 7 Lakes Alliance and 30 Mile River Watershed Association
- Tribes: Passamaquoddy Tribe at Indian Township, Penobscot Indian Nation

### **Marine and Estuarine Waters**

The DEP Marine Program generates data from its own environmental and toxics monitoring programs-MEMP for ambient water quality, nutrients and eutrophication and SWAT for toxics. Much of the data, however, is provided by a variety of partners including:

- Federal Agencies: U.S. Environmental Protection Agency
- Federally funded programs: Casco Bay Estuary Partnership, Wells National Estuarine Research Reserve, Maine Healthy Beaches Program
- State agencies: Maine Department of Marine Resources, New Hampshire Department of Environmental Services
- Academic institutions: University of Maine Darling Center
- Nonprofits: Mount Desert Island Biological Laboratory
- Regional Entities: Boothbay Region Land Trust, Friends of Casco Bay, Kennebec Estuary Land Trust, Maine Coastal Observing Alliance

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## Appendix 4. Targeted Assessment and Stressor Analysis

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The success of restoration and protection efforts hinges on understanding the environmental stressors that are causing or could cause the impairment, and the watershed conditions that are generating those stressors. The purpose of this step is to inform the development of an effective watershed-based plan by identifying and characterizing the relevant stressors and watershed conditions. The information required to accomplish this varies with the waterbody type and in many instances, whether or not the waterbody is impaired.

### A. Lake Watersheds

The water quality standard that is most likely to be violated in lakes and ponds is the trophic standard, which states that lakes and ponds (a) shall have a stable or decreasing trophic state, subject only to natural fluctuations; and (b) shall be free of culturally induced algal blooms which impair their use and enjoyment. Since the limiting factor for algal production in Maine lakes is the concentration of phosphorus in the water, the stressor of most concern for lakes is phosphorus loading. Hence, assessment efforts are focused on evaluating the lake's trophic state; characterizing important current and potential phosphorus sources to the lake from both the lake's watershed and its bottom sediments; and, as specifically as possible, identifying opportunities to reduce phosphorus loading to the lake.

- **Water Quality** - DEP's Lake Assessment Section, in combination with Lake Stewards of Maine volunteers, collect information on the trophic state of many of the State's developed lakes. The data are used to evaluate the stability of trophic state in each lake; the incidence of algal blooms; and, especially in cases of lakes with increasing trophic state or algal blooms, the amount of phosphorus being recycled into the water column from the lake's bottom sediments.
- **Watershed Surveys** - The method most often used to identify watershed phosphorus sources is the Lake Watershed Survey, in which volunteers, under the guidance of professionals, canvas the watershed to find specific, usually stormwater-related sources of phosphorus (e.g., unstable roads, eroding ditches, agricultural operations). The identified sources are then evaluated by professionals for the severity of the problem and the probable cost of repair, creating a very specific prioritized list of opportunities to reduce phosphorus loading to the lake.
- **Internal Recycling Evaluation** - Ongoing evaluation of the lake's trophic state and a watershed survey that identifies opportunities to reduce phosphorus load to the lake are likely the only assessment efforts that will be used if the lake currently meets trophic standards. If the lake does not meet standards, assessment is likely to include intensive monitoring of the phosphorus mass in the water column over the period from May through September, and also the phosphorus, iron and aluminum content in the bottom sediments. The purpose of this monitoring is to quantify the amount of internal recycling of

phosphorus from the lake's bottom sediments and to evaluate and plan for in-lake treatment strategies.

## B. Stream Watersheds

Stream watersheds typically present more complex challenges than lakes, especially if they are in urban settings and the aquatic life standard is violated or threatened. In Maine, each Class of river and stream has an aquatic life standard that describes the health of the biotic community that the stream must achieve. For Class AA and A streams, the community must be as naturally occurs; for Class B streams, the stream must support all indigenous aquatic species without detrimental change to the resident biological community; and for Class C streams, the stream must support all indigenous species of fish and the structure and function of the biological community must be maintained. There are many stressors that can cause or contribute to violation of this standard, so effective restoration and/or protection requires identification of which stressors are most important, or could become important, for any given stream situation. Given this, the suite of water quality, biological condition, habitat, stream corridor and watershed assessment tools employed varies depending on the condition of the stream and its watershed, and which stressors are most likely to contribute to impairment of the community.

### Stream Restoration

Several different assessment tools are utilized when the stream in question is impaired, and particularly when the stream fails to meet its aquatic life standard. In most cases the assessment work is performed by several entities, with some elements done by DEP staff and others by the municipality, their consultants, or other local partners.

- **Water Quality** - Water quality is always monitored to some degree, and usually includes a mix of base flow and storm event monitoring at several stations. Typical parameters include temperature, dissolved oxygen (DO), specific conductance, chloride, phosphorus, heavy metals and hydrocarbons. Rising stage samplers are often used during storm events, and data sondes are routinely used to obtain continuous measurements of temperature, DO and specific conductance. In order to focus on discrete sources, conductivity screening, where many measurements are taken along the stream, may also be used. In some Aroostook County agricultural watersheds where baseflow release of sediment phosphorus is a potential issue, baseflow screening for pH and phosphorus may be required.
- **Biological Assessment** - As part of the DEP's ambient water quality assessment program, biological assessments of the macroinvertebrate and the periphyton communities are made to define the impairment. There is often a signature in the community composition that indicates which stressors are in play and this can influence the direction in which other assessment efforts are focused. Biological assessments usually continue at regular intervals throughout the restoration process to assess effectiveness.
- **Stream Habitat and Corridor Assessment** - In-stream habitat and the condition of the stream corridor are also usually evaluated. Various habitat assessment and riparian corridor

assessment tools are used and often volunteers assist in these assessments. This helps local citizens become familiar with the issues affecting their stream. Habitat condition is characterized and areas where habitat is damaged are identified. Bank stability, flood plain integrity and the condition of riparian vegetation are also assessed. In cases where the stream receives excess storm flow from impervious surfaces in the watershed or where historic alterations have affected habitat integrity or flow regime, a fluvial geomorphological assessment is performed. This assessment describes the processes that are dominant in each reach of the stream channel, identifies and characterizes areas of channel instability, provides direction for watershed storm flow management and identifies opportunities for in-stream habitat improvement projects.

- **Watershed Assessment** - Targeted assessment always includes some level of watershed assessment. It is important to understand where the water in various reaches of the stream comes from and what it comes into contact with on its way to the stream. In urban settings, it is often necessary to map the drainage infrastructure in order to accurately map the boundaries of the watershed, as well as the boundaries of catchments that drain to each stormwater outfall. Analysis of land use, particularly imperviousness, in each outfall catchment is helpful when identifying and prioritizing BMP retrofit opportunities in the watershed. In addition to watershed mapping, watershed surveys are often employed, sometimes using volunteers. The types of sources surveyed will vary depending on the dominant land uses in the watershed and which stressors are likely contributing to the impairment. In a rural impaired watershed, agricultural hotspots might be the focus of the survey, while in an urban setting, hotspots such as road intersections, gas stations, and high- turnover parking areas as well as areas of high salt use may be the focus.

### **Stream Protection**

When the stream in question is threatened but not yet impaired, the assessment regime is usually limited and aimed at (a) ongoing evaluation of the biological community to insure it continues to meet appropriate aquatic life standards and (2) identifying the stressors most likely to become issues in the watershed. The latter is often accomplished with conductivity screening and continuous measurement of temperature, dissolved oxygen and specific conductance with data sondes and loggers. Stream corridor and habitat assessments may also be performed, with particular emphasis on identifying areas critical for riparian protection. A limited watershed survey may be performed to identify opportunities for retrofits of existing sources, but the main focus of assessment is often to guide development of local policies, ordinances, practices, and infrastructure improvement strategies that can be incorporated into an effective watershed protection plan.

## **C. Marine Watersheds**

Coastal watersheds demonstrate considerable diversity in physical, chemical, and biological characteristics as they encompass estuarine waters ranging from barely measurable salinity to fully saline seawater in marine areas. Marine waters are influenced to varying degrees by freshwater inflows from rivers and streams as well as marine waters during flood tides and



periods of offshore wind. Urban settings and large watersheds provide different sources, types, concentrations, and mechanisms of pollutant loading than do rural settings or small watersheds. Additionally, characteristics of biological communities in marine waters differ based on tolerance to the physical and chemical environment. Because of this diversity, and also the variety of standards that may apply in certain situations, assessment strategies for marine waters will vary depending on the nature of the impairment or threat.

- **Shellfish closures** - The Maine Department of Marine Resources' Shellfish Growing Area Program determines shellfish growing area classifications in all shellfish harvesting areas to ensure that only pollution-free areas are open to harvesting. Classifications are set through sanitary surveys that include a shoreline survey to identify pollution sources that may impact water quality; marine water sampling to determine fecal coliform bacterial levels in the marine water; and analysis of how weather conditions, tides, currents, and other factors may affect the distribution of pollutants in the area. Water samples are collected monthly from January through December. DMR sanitary surveys have identified NPS pollution as the likely source of bacterial contamination in numerous shellfish harvesting areas in the state. DMR's assessments are supported and complimented by a number of other organizations including the CBEP, the Friends of Casco Bay, the MERI, the Wells Reserve, the Maine Clammers Association and many of the coastal municipalities.
- **Contact Recreation** - The Maine Healthy Beaches Program is a partnership between the University of Maine Cooperative Extension/Sea Grant, DEP, and local municipalities that brings together communities to perform standardized monitoring of beach water quality and notifies the public if health risks are detected. Each year the program selects a few beaches with chronic bacterial contamination to do supplemental assessments to identify the source of the contamination. These "special projects" incorporate several assessment tools including circulation studies, bracket sampling for bacteria and whiteners, and in rare cases, microbial source tracking.
- **Algal Blooms** - In recent years there have been an increasing number of localized blooms of the macroalgae *Ulva* (formerly *Enteromorpha*) on coastal mudflats. These blooms can be detrimental to the native biological community. In some instances, the blooms are fed by land-based nutrient sources from the watershed that drains to the flats. Assessments similar to the lake watershed survey can be effective in identifying the likely sources of nitrogen and/or phosphorus that are driving the blooms.
- **Other Impairments of the Biological Community** - As with rivers and streams, each class of estuarine and marine waters has narrative biological criteria. The criteria are the same for the marine Classes SA, SB and SC as they are for the riverine Classes A, B and C respectively. There are many different stressors that can cause a biological impairment so assessment strategies must be aimed first at identifying the stressors responsible for the impairment and next, at identifying the watershed conditions that are contributing to the impairment. When the marine waterbody in question is impaired, threatened, or in need of protection, many different assessment tools and methods may be employed. These include water quality monitoring, biological assessments, habitat assessments and source identification.

Additionally, comparisons with historical data may indicate meaningful changes over time, and local knowledge of landowners, municipal officials and fishermen can inform site selection and focused study. Furthermore, knowledge of waterbody characteristics can help to identify comparable waterbodies for use as reference.

- **Water Quality** - Monitoring efforts generally include measuring temperature, salinity, D.O., pH, turbidity, chlorophyll a throughout the water column, water clarity, inorganic and total nitrogen, and phosphorus in the surface water. In the water column, light attenuation and organic nutrients, including carbon, can also be monitored to address specific research questions. Studies of sediments may include chemistry of pore water. Data sondes and sensors use discrete or unattended permit acquisition of the above data types and chemistry is completed with grab samples analyzed by qualified labs.
- **Biological Assessments** - Assessments of benthic floral and faunal communities assist in characterization of the impact on the resident biological community and can demonstrate communities where invasive species could dominate. Biological community assessments can include inventorying the distribution, abundance, and density of individuals as well as species and higher order level diversity of marine macrophytes (seagrasses, macroalgae), epifauna, and infauna. Presence and proliferation of particular organisms, especially those in areas of chronic or temporal high temperature, low pH, hypoxia or anoxia, and persistent nutrient or pollutant loading can indicate biological responses to stressors that support impairment of numeric or narrative criteria. The absence or low abundance and diversity of particular species can similarly indicate the influence of stressors.
- **Habitat Assessments** - Habitat assessments assist in determining suitability of water or sediment for the native biological community. Characterization of habitats can include chemical analysis of water or sediment pore water, particle size analysis, habitat complexity, and in-water structure including man-made (e.g., docks, anchors and mooring buoys) and natural features (e.g., cobble and boulders, macrophyte substrate). Mapping of habitat types relative to watershed characteristics and point and NPS influences can also explain sensitivity of habitats to change based on suspected anthropogenic influences. Degraded habitat is often identified by hypoxic or anoxic and acidic waters, surface sediments with high sulfide concentrations and corresponding bacterial community, scarring from dragging or erosion, fragmented macrophyte distribution with a high occurrence of invasive species, or the absence of life.
- **Pollution Source Evaluation** - Targeted assessment also includes some evaluation of watershed, offshore, and atmospheric influences to determine relative contributions of pollution sources. Watershed influences consider location and intensity of adjacent and upstream land use, change over time in land uses, minimization of impacts and use of BMPs, seasonal and year-round population, and proximity of point source discharges and their effluent quality and quantity. In-water influences consider extent of tidal magnitude and associated flows, and size and type of inflows, whether regulated or naturally flowing.

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