

Maine Wetland Program Plan

2023-2028



Third Edition, February 2023

Prepared by the Maine Department of Environmental Protection in collaboration with a multi-agency team pursuant to the U.S. Environmental Protection Agency's Enhancing State and Tribal Wetland Programs (ESTP) Initiative

Agency Participants and Partners

The following agency participants and non-governmental partners are included in planned activities listed in the 2023-2028 Maine Wetland Program Plan:

Maine State Agencies

Maine Department of Agriculture,
Conservation and Forestry (DACF):
 Maine Forest Service (MFS)
 Maine Geological Survey (MGS)
 Land Use Planning Commission (LUPC)
 Maine Municipal Planning Assistance
 Program (MPAP)
 Maine Natural Areas Program (MNAP)
 Bureau of Parks and Lands (BPL)

Maine Department of Environmental
Protection (DEP):
 Biological Monitoring Program (BMP)
 Bureau of Land Resources (Land)
 Marine Environmental Monitoring
 Program (MEMP)
 Marine Vegetation Mapping Program
 (MVMP)

Maine Department of Inland Fisheries and
Wildlife (MDIFW)

Maine Department of Marine Resources
(DMR) Maine Coastal Program (MCP)

Maine Department of Transportation (DOT)

Maine Governor's Office
 Governor's Office of Policy Innovation
 and the Future (GOPIF)

Maine Office of GIS (MEGIS)

Federal Agencies

US Army Corps of Engineers (USACOE)
US Environmental Protection Agency
(USEPA)
US Fish and Wildlife Service (USFWS)
National Oceanic and Atmospheric
Administration (NOAA)
Natural Resources Conservation Service
(NRCS)

Additional Partners

Bates College
Bigelow Laboratory for Ocean Sciences
Casco Bay Estuary Partnership (CBEP)
Island Institute
Kennebec Estuary Land Trust (KELT)
Maine Coast Heritage Trust (MCHT)
Maine Invasive Species Network (MISN)
MidAtlantic Wetland Workgroup
(MAWWG)
NatureServe
New England Biological Assessment of
Wetlands Work Group (NEBAWWG)
NEIWPC
The Nature Conservancy (TNC)
University of Maine
Wells National Estuarine Research Reserve
(WNERR)

Report Contact:

Beth Connors, Maine Department of Environmental Protection
Division of Environmental Assessment

Beth.connors@maine.gov

(207) 441-6139

Maine Wetland Program Plan: Background

Maine's landscape is graced with a wealth of freshwater and coastal wetlands. According to the U.S Fish and Wildlife Service National Wetland Inventory (NWI) dataset, Maine has 88,136 acres of Estuarine intertidal (NWI E2), 69,455 acres of Marine intertidal (NWI M2) and 2,019,917 acres of Freshwater wetlands (NWI Palustrine)¹. Additionally, according to the most recent available data from DMR² and DEP,³ the Maine coastline hosts 19,399 acres of seagrass beds. Our abundant wetland resources provide habitat for a diverse array of wildlife and aquatic life including rare, threatened and endangered plant and animal species. Wetlands afford Maine residents and visitors with a wide variety of outdoor recreation opportunities, and serve vital functions related to water quality, flood control, and shoreline protection.

Recognizing the need to protect Maine's invaluable wetland resources for future generations, an interagency work group was assembled in the late 1990s to identify needed regulatory, management conservation, planning and research measures to address increasing environmental threats and cumulative impacts to wetlands. In 2001, the Maine Wetland Interagency Team completed the Maine State Wetlands Conservation Plan which included 6 broad wetland protection goals. The following updated goals are central to Maine's Wetland Program Plan:

- Goal One:** Identify and protect wetlands systems of statewide significance through fee acquisition, conservation easements, or other tools for permanent conservation.
- Goal Two:** Increase the knowledge base about Maine's wetlands through surveying, monitoring, research, and assessment to establish wetland condition, identify trends, and the causes and sources affecting wetland change.
- Goal Three:** Provide effective and responsible levels of protection and restoration of Maine's wetlands systems through an efficient regulatory program.
- Goal Four:** Promote the appreciation, stewardship and voluntary protection of wetland resources by private landowners, towns, and non-governmental entities.
- Goal Five:** Improve coordination between agencies with respect to wetland policies and regulatory programs to ensure efficiency in effort, consensus in outcome, and consideration of wetlands at the landscape scale.

¹ Based on Maine DEP calculations from NWI data, 2/13/2023

² [MaineDMR - Eelgrass 2010 | MaineDMR - Eelgrass 2010 | ArcGIS Hub Home](#)

³ Casco Bay 2022 seagrass delineation survey (*in review*); and [MaineDEP Seagrass 2021 \(South Coast - Elliot to Cape Elizabeth\) | MaineDEP Seagrass 2021 \(South Coast - Elliot to Cape Elizabeth\) | ArcGIS Hub Home](#)

Goal Six: Develop and maintain a wetland program, including a geospatial database, to track historic wetland loss, wetland compensation, and other wetland areas placed in permanent conservation, and to use the database to assess and evaluate progress.

The first Maine Wetland Program Plan was completed in 2011 as part of the US Environmental Protection Agency’s Enhancing State and Tribal Wetland Programs (ESTP) Initiative. Guided by the Maine’s overarching wetland protection goals, the Plan is organized according to EPA’s four Core Elements of an Effective State and Tribal Wetland Program. The Core Elements include:

1. Monitoring and Assessment
2. Regulatory Activities, including 401 Certification
3. Voluntary Restoration and Protection
4. Water Quality Standards for Wetlands

Additional information about EPA’s ESTP initiative and Core Elements Framework may be found here: <https://www.epa.gov/wetlands/what-enhancing-state-and-tribal-programs-effort>

The current Plan builds on past accomplishments and provides a framework to strengthen the core elements of Maine’s wetland program. It addresses existing and emerging threats to wetlands including urbanization, habitat loss and fragmentation, nutrient enrichment, invasive species, toxic contaminants, hydrologic changes, and climate change. This Plan is a multi-agency effort and is a work in progress that may be revisited and revised as needed.

The following tables describe wetland program activities planned for 2023 through 2028, and are organized according to EPA’s Core Elements framework and associated Maine wetland protection goals.

List of Planned Activities by Core Element (2023-2028)

Core Element 1: Monitoring and Assessment:

Maine Goal 2: Increase the knowledge base about Maine’s wetlands through surveying, monitoring, research, and assessment to establish wetlands condition, identify trends, and the causes and sources affecting wetlands change

Maine Goal 6: Develop and maintain a wetland program, including a geospatial database, to track historic wetland loss, wetland compensation, and other wetland areas placed in permanent conservation, and use the data base to assess and evaluate progress

Objective 1: Develop a monitoring and assessment strategy consistent with Elements of a State Water Monitoring and Assessment Program for Wetlands (USEPA, 2006)

Actions	Responsible agency(s)	Completed Activities	Planned activities	2023	2024	2025	2026	2027	2028	Potential Partners
a. Identify program decisions and long-term environmental outcome(s) that will benefit from a wetlands monitoring and assessment program	DEP/BMP	Wetlands included in water quality monitoring and assessment program	Provide monitoring and assessment data for wetland and water quality protection programs, restoration/mitigation projects, watershed management plans, TMDLs, etc. as requested. (ongoing)	X	X	X	X	X	X	
	MNAP/DACF, MDIFW, DEP/MEMP, DEP/MVMP	Increased coastal wetland monitoring and partnership building toward coastal wetland conservation, restoration, and outreach	Identify short and long-term coastal wetland ecological monitoring and assessment needs, resources, and partnership opportunities to benefit tidal wetlands as well as staffing needs and priorities to efficiently conduct work and collaborate with partners. These may include long term monitoring and identifying trends, pre- and post-restoration monitoring, high resolution mapping, technical support or ecological review of conservation, restoration or enhancement projects, climate change planning, species or habitat vulnerability assessments, and blue carbon evaluation.	X	X	X	X	X	X	MCP/DMR, MCHT, MEGIS, TNC, CBEP, NOAA, USFWS

Actions	Responsible agency(s)	Completed Activities	Planned activities	2023	2024	2025	2026	2027	2028	Potential Partners
b. Define wetlands monitoring objectives and strategies	DEP/BMP, DEP/MEMP, DEP/MVMP	Updated DEP Comprehensive Surface Water Ambient Water Quality Monitoring and Assessment Strategy including wetland elements (current plan 2015 to 2025)	Revise, refine and update Comprehensive Strategy as needed/required	X	X	X	X	X	X	USEPA
	DEP (coordinating agency)	Maine Wetland Program Plan completed in 2011 and updated in 2016 and 2022 in accordance with USEPA Core Elements Framework.	Revise, refine and update Wetland Program Plan as needed	X	X	X	X	X	X	multiple State agencies
	DEP, MNAP/DACF	Supported acquisition of LiDAR data in Maine	Support the acquisition of improved wetlands mapping data for the state (such as NWI+ or other remote mapping methods). DEP/BMP to convene workgroup to discuss the interest in and process to acquire updated NWI maps.	X	X	X	X	X	X	USFWS, NOAA
	MNAP/DACF and MDIFW	Completed revision of State's official Endangered and Threatened plant list (2021); Completed update of State's Endangered and Threatened Animal list including additions/revisions to 6 wetland-related species (2015)	Evaluate and update conservation status of RTE wetland plants, animals, and natural communities (to include ETSC species, Species of Greatest Conservation Need, and S-ranks). Update IFW's SC list (by 2022), ET list (by 2023) and SGCN list (by 2025), with legislative and public engagement as required. Also relevant to Core Element 3.	X	X	X	X	X	X	NatureServe, Maine State Legislature

Actions	Responsible agency(s)	Completed Activities	Planned activities	2023	2024	2025	2026	2027	2028	Potential Partners
	MCP/DMR	Maine Blue Carbon Network formed, representing State natural resource agencies and other research entities. Mission Statement available at: https://sites.google.com/view/main-blue-carbon-network	In support of climate mitigation strategies identified in Maine's Climate Action Plan, the Maine Blue Carbon Network seeks to meet regularly to advance research goals/identify gaps, and to communicate with a range of stakeholders on the following topics: 1) Inventories of Maine's Blue Carbon resources (salt marshes, seagrasses, and seaweeds) to inform baseline estimates of current storage and sequestration, 2) Identify additional inventory and monitoring needs for Maine's Blue Carbon resources to fill any identified knowledge gaps, 3) Changes in sequestration/emissions over time, 4) Impact of restoration/conservation practices that aim to optimize carbon burial and obtain both climate mitigation and resilience benefits, and 5) Emerging or new and relevant datasets/studies.	x	x	x	x	x	x	MNAP/DACF, MCHT, Bates College, WNERR, DEP/MEMP, DEP/MVMP, USEPA, Bigelow Laboratory, Island Institute
c. Develop monitoring design, or an approach and rationale for site selection that best serves monitoring objectives (e.g. census, probabilistic survey, rotating basin)	DEP/BMP	Wetlands integrated into DEP BMP using 5-year rotating basin monitoring approach. Site selection process described in QAPP/SOPs		x	x	x	x	x	x	

Actions	Responsible agency(s)	Completed Activities	Planned activities	2023	2024	2025	2026	2027	2028	Potential Partners
	DEP/MEMP, DEP/MVMP	Established 5-year rotating regional mapping program for coast-wide seagrass beds and salt marshes. Completed mapping and ground truthing of seagrass beds in Southern Maine (2021) and Casco Bay (2018, 2022) to create comprehensive coverage layers.	<p>MVMP: Develop and improve mapping survey design and ground truthing methodologies, including the use of remote sensing methodologies and underwater video technology.</p> <p>MEMP: Pending legislative request for sustainable program funding, incorporate comprehensive water column and benthic characterization in estuaries and marine waters hosting seagrass habitat into 5-year rotating shoreline segment approach, to coincide with annual MVMP survey location.</p>	X	X	X	X	X	X	MNAP/DACF, MCP/DMR, MEGIS
	DEP/BMP		Incorporate the consideration of Environmental Justice and disadvantaged communities into annual monitoring	X	X	X	X	X	X	
	MNAP/DACF		Identify, monitor and assess significant wetlands and/or coastal systems that provide a full suite of ecological functions to support and protect climate resiliency for disadvantaged communities (e.g. floodwater storage and abatement, clean drinking water, shoreline stabilization, wildlife and biodiversity, traditional use, recreation and economy); make data available for GOPIF or other State Programs involved in funding and planning for climate resiliency.	X	X	X	X	X	X	GOPIF
	MNAP/DACF	Completed assessment of floodplain forests by major watershed statewide (2020)	Strategically identify RTE wetland plants, natural communities, ecosystems, and geographic areas in need of assessment and conduct field inventory and assessment	X	X	X	X	X	X	USEPA, TNC, and private and public landowners

Actions	Responsible agency(s)	Completed Activities	Planned activities	2023	2024	2025	2026	2027	2028	Potential Partners
	MNAP/DACF	Completed coast-wide mapping and ground truthing of tidal marshes to create comprehensive data layer.	Identify important data gaps and remote sensing methodologies to improve and refine coastal marsh mapping, such as sub-habitat mapping, fringe marshes and marshes associated with barriers	X	X	X	X	X	X	MCP/DMR, MCHT, DEP/MVMP
	MNAP/DACF	Completed steps to train and license staff in small UAVs (drones); developed draft UAV monitoring plan for coastal marshes	Incorporate flights and/or UAV-derived imagery into wetlands monitoring, in particular long-term monitoring sites (freshwater and coastal).	X	X	X	X	X	X	TNC, BPL/DACF
	MDIFW, MNAP/DACF	Revised Maine's Wildlife Action Plan and Species of Greatest Conservation Need list (2015)	Identify RTE wetland animals, plants, and priority Species of Greatest Conservation Need habitats in need of assessment and conduct field inventory and assessment	X	X	X	X	X	X	USEPA, TNC, and private and public landowners
	MCP/DMR	Developed Tidal Barrier Atlas	Develop and publish methodology for analysis of barriers on tidal streams (CoastWise)	X	X	X	X	X	X	MNAP/DACF, TNC, Casco Bay Estuary Partnership, Maine Coast Heritage Trust, NOAA
	MNAP/DACF and MDIFW	Surveyed, databased, and mapped rare, exemplary and high value wetlands hosting rare and endangered species statewide through a variety of projects	Continue to identify data gaps for rare, exemplary, or high value wetland communities and ecosystems (by geography or wetland type) and work toward addressing these on a statewide scale while also updating historic data to improve accuracy and maintain currency.	X	X	X	X	X	X	TNC, private landowners, public land managers
d. Select a core set of indicators to represent wetland condition or a suite of functions	DEP/BMP	Current core indicators include aquatic macroinvertebrates, algae, water chemistry and habitat indicators for emergent/aquatic bed wetlands.	Continue refinement of core indicators, including exploring their application to additional types of wetlands. Develop new indicators and methods as needed to address emerging issues of concern	X	X	X	X	X	X	MNAP, NEBAWWG/MAWWG

Actions	Responsible agency(s)	Completed Activities	Planned activities	2023	2024	2025	2026	2027	2028	Potential Partners
	MNAP/DACF	Current core indicators include vegetation (and FQI), soils, hydrology, landscape context, wetland size, and EIA scores.	Continue refinement of core indicators as needed. Develop new indicators and methods as needed to address emerging issues of concern or comparable efforts in neighboring states (e.g. coarse woody debris, old forest stands)	X	X	X	X	X	X	NatureServe, BPL
	DEP/MEMP	The current core indicator of seagrass bed condition as determined by statewide aerial survey is percent cover. Condition indicators as determined by SCUBA transect at select monitoring sites includes shoot density, percent cover, canopy height, light attenuation, and depth at deep edge.	Refine core indicators as needed and feasible for statewide aerial surveys and SCUBA- and boat-based assessment of seagrass health.	x	x	x	x	x	x	
	MNAP/DACF	Implemented open wetland monitoring protocols in a selection of open wetlands.	Update protocols to detect changes to open wetlands in Ecological Reserves, related to climate change (such as groundwater monitoring, soil chemistry, and/or soil organic content); Update open wetland monitoring protocols to be comparable to other wetland monitoring in Maine and nationally. Develop strategy for implementing additional monitoring.	X	X	X	X	X	X	NEBAWWG, MGS/DACF, NRCS, DEP/BMP
	MNAP/DACF	Completed landscape analysis and field inventory of floodplain forests in Saco, Androscoggin, St. John, and smaller coastal rivers which means floodplain forests in all major watersheds have been assessed	Develop and implement an approach for conducting landscape analysis and field inventories of wetlands and connectivity corridors that have the potential to provide refugia, support native biodiversity or species movement, or be highly resilient to changing environmental patterns related to climate change	X	X	X	X	X	X	TNC, public landowners

Actions	Responsible agency(s)	Completed Activities	Planned activities	2023	2024	2025	2026	2027	2028	Potential Partners
	MCP/DMR, MNAP/DACF	Installed Rod-Surface Elevation Tables (RSETs) for monitoring sediment accretion or loss in tidal marshes (MCP/DMR); Completed 4 years of monitoring; Initiated first year of water level measurements and first year of vegetation monitoring.	Convene a Scientific Advisory Committee for State Sentinel Sites, develop charter and monitoring plan, identify long-term funding and technical resources, implement data management and facilitate cross-agency sharing/access, establish monitoring timeline and partnerships. Continue with current metrics (sediment, water level, vegetation) and consider additional metrics to support the long-term monitoring of salt marshes and associated wetland/upland buffers to detect and assess changes resulting from sea level rise and inundation. Also relevant to 1c.	X	X	X	X	X	X	MDIFW, NOAA, WNERR, CBEP, USFWS, BPL, TNC, York Land Trust, MCHT, DEP
	MNAP/DACF, MCP/DMR	Developed long term vegetation monitoring protocol for salt marsh sentinel sites; Installed long term vegetation plots in 11 marshes	Conduct vegetation plot revisits every 2-3 years, as part of long term monitoring at sentinel sites; Maintain database, images, GPS data.	x	x	x	x	x	x	MGS, BPL, MDIFW, York Land Trust, TNC
	MNAP/DACF	Activities initiated on tidal restoration sites; future application and ongoing refinement planned starting in 2023	Develop and implement consistent pre- and post-restoration monitoring protocols and wetland condition assessments for mitigation projects (conservation, restoration, or enhancement), including possible application of EIA methodology	X	X	X	X	X	X	DEP, MDIFW, NatureServe, Bates College, KELT
	DACF (formerly State Planning Office)	Vernal pool remote identification completed and partially field verified in 12 municipalities								

Objective 2: Implement a sustainable monitoring program consistent with the wetlands monitoring strategy

Actions	Responsible agency(s)	Completed Activities	Planned activities	2023	2024	2025	2026	2027	2028	Potential Partners
a. Ensure the scientific validity of monitoring and laboratory activities	DEP/BMP	Comprehensive Biological Monitoring QAPP and SOPs completed in accordance with DEP Quality Management Plan	Review QAPP and SOPs annually and revise as needed. Complete additional SOPs as new field, lab and data management procedures are added.	X	X	X	X	X	X	USEPA
	MNAP/DACF, MCP/DMR	QAPPs developed for monitoring projects in collaboration with EPA	Establish QAPP and monitoring protocols for long-term monitoring study metrics including RSET, marker horizon, vegetation data collection and data management	X	X	x	X	X	X	USEPA
	DEP/MEMP		Create SOP for SCUBA- and boat-based seagrass health assessments. Annually, review SOP and complete SAPs to document site locations and deviations from SOP content.	X	X	X	X	X	X	USEPA
	DEP/MVMP		Establish QAPP and annual SAPs for new statewide seagrass and tidal marsh mapping program.	x	x	x	x	x	x	MNAP/DACF, MCP/DMR
b. Monitor wetland resources as specified in strategy	DEP/BMP	Wetland monitoring conducted annually on a 5-year rotating basin schedule.	Continue annual wetland monitoring and assessment using rotating basin schedule as resources allow. Conduct monitoring for special research needs and management questions as requested and resources allow (e.g. regulatory programs, restoration projects, impact assessments, Baxter State Park, Acadia National Park, Maine Ecological Reserves, Katahdin Woods and Waters National Monument)	X	X	X	X	X	X	Various State and Federal agencies, tribes and NGOs
	MDIFW	First iteration of high resolution aerial-image based impervious surface mapping, statewide								MNAP/DACF

Actions	Responsible agency(s)	Completed Activities	Planned activities	2023	2024	2025	2026	2027	2028	Potential Partners
	MDIFW	Published revised tidal waterfowl and wading bird habitat layer (2016)	Update the mapping of Inland Waterfowl/Wading bird Habitats in unorganized towns	X	X	X	X	X	X	
	MDIFW, MNAP/DACF	Developed and implemented a novel remote sensing routine to model vernal pool locations in six towns in southern Maine.	Support ongoing efforts to map potential vernal pools.	X	X	X	X	X	X	
	MNAP/DACF	Provided technical review of all MNRCP-proposed projects from 2015-2022; Collaborated with MDIFW on environmental review and species surveys of proposed MNRCP projects	Conduct field surveys and assessments of wetland habitats and species associated with potential or actual wetland restoration and conservation projects, as a proactive support effort for In Lieu Fee mitigation; provide technical support in the review of MNRCP-proposed projects (actions both completed and ongoing)	X	X	X	X	X	X	MDIFW, USEPA, TNC
	MNAP/DACF	Adapted existing wetland Ecological Integrity Assessment (EIA) methodologies for use in tidal marshes	Continue to apply tidal marsh EIA to monitoring and assessment of tidal marshes; evaluate UVVR modeling when made available statewide by USGS to improve assessment of condition, restoration, and enhancement opportunities for marsh resilience.	x	x	x	x	x	x	USGS (Woods Hole); MCP/DMR; BPL; MDIFW, NatureServe
	MNAP/DACF	Established open wetland Ecological Reserve monitoring plots	Continue ongoing Ecological Reserve monitoring in forested wetlands; Update, maintain and serve Ecological Reserve monitoring data for public use; Conduct analysis of Ecological Reserve monitoring data.	X	X	X	X	X	X	TNC, MDIFW, BPL

Actions	Responsible agency(s)	Completed Activities	Planned activities	2023	2024	2025	2026	2027	2028	Potential Partners
	MNAP/DACF	Completed landscape analysis and field inventory of floodplain forests in Saco, Androscoggin, St. John, and smaller coastal rivers watersheds	Conduct landscape analysis, field inventories, landowner outreach, data analysis, and database management to address data or assessment needs, update historic information, conduct environmental review, assist in conservation planning, and provide management recommendations to landowners. Also relevant to Core Element 3.	X	X	X	X	X	X	USEPA, TNC, MDIFW and private and public landowners
	MNAP/DACF and MDIFW	Hundreds of new and updated rare, threatened, and endangered plant, animal, natural community, and ecosystem records documented in previous 5-year WPP period								TNC, public and private landowners
	MNAP/DACF	Ongoing use of iMapinvasives web program and centralized data repository to map invasive plant species locations	Strategically monitor, map, and address invasive wetland plant and animal issues throughout the state; administer Maine's iMapinvasives program and data quality control; conduct invasive plant outreach, early detection, and management training through multiple venues and partners for both public and private landowners and land managers	X	X	X	X	X	X	BPL, MFS, MDIFW, DEP, MISN, public and private landowners
	MNAP/DACF		Use current field inventory and remote imagery to compare current status of wetlands to historic conditions as part of a broader effort of development of a Biodiversity Report Card	X	X	X	X	X	X	TNC, USFWS, MDIFW
	DEP/MEMP		Implement comprehensive water column and benthic characterization in estuaries and marine waters hosting seagrass habitat. To occur on a 5-year rotating shoreline segment basis coinciding with MVMP survey location.	X	X	X	X	X	X	

Actions	Responsible agency(s)	Completed Activities	Planned activities	2023	2024	2025	2026	2027	2028	Potential Partners
	DEP/MVMP		Complete rotating regional aerial survey, ground truthing, and delineation of seagrass beds and salt marshes annually. For each region/year, produce comprehensive data layers and high-resolution aerial imagery, and work with project partners for enhance program outputs.	x	x	x	x	x	x	MNAP/DACF, MCP, DMR, TNC
c. Establish reference condition	DEP/BMP	Established reference criteria to define condition gradient for biological monitoring data analysis	Document reference criteria, including physical, chemical and biological attributes, and process of characterizing and measuring reference standard condition for minimally disturbed wetlands. Continue to build reference network and monitor sites to provide baseline data for disturbance gradient and trend analysis, and to refine wetland tiered aquatic life use criteria and Biological Condition Gradient (BCG) models.	X	X	X	X	X	X	MNAP, NEBAWWG
	MNAP/DACF, DEP/BMP	Integrated Ecological Integrity Assessment methodology into core MNAP methodology protocols for surveys of rare and exemplary wetland natural communities. With NEIWPC completed assignment of Coefficients of Conservatism for all plants by USEPA ecoregion.	Continue ongoing use of vegetative indicators such as floristic quality assessment and Ecological Integrity Assessment to survey reference condition wetlands in Maine. Evaluate the integration of FQAI into existing MDEP wetland monitoring and assessment protocols.	X	X	X	X	X	X	USEPA, NEIWPC, NEBAWWG, NatureServe

Actions	Responsible agency(s)	Completed Activities	Planned activities	2023	2024	2025	2026	2027	2028	Potential Partners
d. Track monitoring data in a system that is accessible, updated on a timely basis, and integrated with other state or tribal water quality data	DEP/BMP	Monitoring data tracked in agency-wide water quality database. Wetland site locations and monitoring results available on Biomonitoring website. DEP data (including Biomonitoring data) submitted to EPA annually for inclusion in their database	Update and maintain Biomonitoring data in DEP's EGAD database and on DEP website as new data are collected. Also update analysis routines and electronic reports as needed.	X	X	X	X	X	X	DEP EGAD coordinator and Office of Information Technology
	MNAP/DACF		Develop a system for tracking loss of rare or exemplary natural community and ecosystem extent (geographic extent) or condition deterioration when these result in downranking or de-mapping, within Biotics or supplemental centralized database	X	X	X	X	X	X	NatureServe
	MNAP/DACF		Conduct data quality control, review rare feature quality ranks, apply EIA to previously mapped natural communities and ecosystems, improve consistency in Biotics database	X	X	X	X	X	x	DEP/BMP, NatureServe
	MNAP/DACF	Created and continuously updated mitigation site database based on new field data	Update and maintain database of potential wetland conservation and restoration sites; work to integrate database with other developing efforts. Coordinate efforts to develop inclusive database of restoration sites for proactive and compensatory restoration work.	X	X	X	X	X	x	USEPA, TNC, DEP, MCP/DACF
	DEP/MEMP	Monitoring data tracked in agency-wide water quality database.	Update and maintain MEMP data in DEP's database.	X	X	X	X	X	X	

Actions	Responsible agency(s)	Completed Activities	Planned activities	2023	2024	2025	2026	2027	2028	Potential Partners
	DEP/MVMP	Hosted GIS feature services and high-resolution raster imagery for seagrass distribution in Southern Maine (2021) and Casco Bay (2018, 2022). Data products publicly available through the Maine Office of GIS.	Host a GIS feature service and high-resolution raster imagery for seagrass and tidal marsh distribution for each annual regional survey. Each region will be surveyed, and new data products hosted, on a 5-year rotation. Data products will be publicly available through the Maine Office of GIS.	X	X	X	X	X	X	MNAP/DACF, MCP/DMR
e. Analyze monitoring data to evaluate wetlands extent and condition/function or to inform decision-making	DEP/BMP	Completed linear discriminant model to predict attainment of narrative aquatic life criteria based on aquatic macroinvertebrates.	Continue to use macroinvertebrate model to evaluate attainment of State water quality standards (ongoing).	X	X	X	X	X	X	
	DEP/BMP	Completed linear discriminant model to predict attainment of narrative aquatic life criteria based on epiphytic algae	Continue to use epiphytic algae model to evaluate attainment of State water quality standards (ongoing).	X	X	X	X	X	X	
	DEP/BMP	Currently finalizing linear discriminant model to predict attainment of narrative aquatic life criteria based on phytoplankton.	Test phytoplankton model with new data and refine as necessary.	X	X	X	X	X	X	

Actions	Responsible agency(s)	Completed Activities	Planned activities	2023	2024	2025	2026	2027	2028	Potential Partners
	DEP/BMP	Completed pilot project to develop sampling protocols for aquatic macrophytes, and to test FQAI metrics for use in evaluating wetland biological health	Continue refinement of metrics and data analysis methods for wetland plant communities to predict attainment of narrative aquatic life criteria and/or for other measures/indices of wetland condition.	X	X	X	X	X	X	MNAP, NEBAWWG
	DEP/BMP	Wetland aquatic life use class attainment reported in Integrated Report since 2010 using macroinvertebrate community data to interpret narrative criteria.	Continue making wetland aquatic life use attainment determinations based on macroinvertebrate data and include results in the Integrated Report. Begin using wetland algae data to determine aquatic life use attainment and include results in the Integrated Report.	X	X	X	X	X	X	
	DEP/Land		Conduct analysis of wetlands impact data in historic wetland loss tracking database		X		X			LUPC, TNC, MNAP/DACF, DEP/BMP
	DEP/Land	WLTS was converted to a web-based system in 2021								LUPC, TNC, MNAP/DACF
	DEP/Land	Added tracking for in lieu fee compensation through Maine Natural Resource Compensation Program (MNRCP) and developed report to identify un-entered data. Reports produced annually.								LUPC, MNAP/DACF, TNC

Actions	Responsible agency(s)	Completed Activities	Planned activities	2023	2024	2025	2026	2027	2028	Potential Partners
	MDIFW, MNAP/DACF	MDIFW has assumed the lead role in Forest Management Plan (FMP) reviews and completed scripted process to automate production of FMP review reports/letters (ongoing).		X	X	X	X	X	X	
	DEP/MVMP		Conduct biennial analysis of change in seagrass and tidal marsh distribution at a regional or statewide scale.		x		x		x	MNAP/DACF, MCP/DMR
a. Evaluate monitoring program to determine how well it is meeting a state/tribe's monitoring program objectives	DEP/BMP	Participated in adapting USEPA Biological Assessment Program Review framework for wetlands (USEPA 820-R-13-001, Office of Science and Technology, February 2013).								USEPA
	DEP/BMP	Completed review of program's Quality Management Program Plan every 5 years and revise as necessary (ongoing)	Annual review of SOPs and other quality management documents (APPs, etc.)	x	x	x	x	x	x	

Objective 3: Incorporate monitoring data into agency decision making

Actions	Responsible agency(s)	Completed Activities	Planned activities	2023	2024	2025	2026	2027	2028	Potential Partners
b. Evaluate the environmental consequences of a federal or state/tribal action or group of actions; modify programs as needed based on monitoring and assessment data	DEP/BMP	ongoing	Provide review and technical support for other state and federal wetland and water quality protection programs as requested	X	X	X	X	X	X	various state and federal agencies
c. Improve the site-specific management of wetland resources	DEP/BMP	Conducted pilot studies using biological monitoring methods to evaluate the success of compensatory mitigation projects (2008 and 2020-2022)	Finalize and share results from the 2020-2022 study with DEP Land Bureau and staff of the MNRCP. Include a subset of wetland restoration and/or mitigation projects in annual monitoring as resources allow to document performance/success based on attainment of biological criteria	X	X	X	X	X	X	DEP/Land, TNC and various NGOs
	DEP/MEMP	Acknowledged value in interagency communication regarding interactions of seagrass and aquaculture	Develop interagency research priorities to inform siting and management of aquaculture lease sites.	X	X	X	X	X	X	MCP/DMR
d. Develop geographically-defined wetland protection, restoration and management plans	DEP/BMP		Incorporate the consideration of Environmental Justice and disadvantaged communities into annual monitoring	X	X	X	X	X	X	

Core Element 2: Regulatory Activities, including 401 Certification

Maine Goal 3: Provide effective and responsible levels of protection and restoration of Maine’s wetland systems through an efficient regulatory program.

Maine Goal 5: Improve coordination between agencies with respect to wetland policies and regulatory programs to ensure efficiency in effort, consensus in outcome, and consideration of wetlands at the landscape scale.

Objective 1: Clearly define the jurisdictional scope of the program

Actions	Responsible agencies	Completed Activities	Planned activities	2023	2024	2025	2026	2027	2028	Potential Partners
a. Provide clear and comprehensive jurisdictional coverage of aquatic resources	DEP/Land	Jurisdiction defined in state statute and rules								
b. Clearly identify a comprehensive scope of activities to be regulated	DEP/Land	Defined in state statute and rules								
c. Provide clear guidance to public on how to identify jurisdictional waters and activities	DEP/Land	Ongoing	Ongoing	X	X	X	X	X	X	
	DEP/BMP and Land	Publication of Natural Resource Protection Act (NRPA) Identification Guide for Rivers, Streams, and Brooks								
d. Evaluation/periodic review	MDIFW, DOT, DEP, DMR	With other stakeholders, collaboratively developed a statewide aquatic conservation and restoration strategy plan (Aquatic Resource Management Strategy)								

Objective 2: Administer regulatory activities efficiently and consistently

Actions	Responsible agencies	Completed Activities	Planned activities	2023	2024	2025	2026	2027	2028	Potential Partners
a. Adopt regulations or rules to implement state/tribal and/or federal water quality statutes	DEP/Land	Wetlands and Waterbodies Protection rules in place								
b. Develop and operate according to a clear and effective set of criteria for reviewing and responding to applications	MNAP/DACF,	Significant progress made; work on-going	Work toward new mapping protocols and protection guidelines for ETSC wetland species and rare/exemplary natural communities and ecosystems potentially subject to environmental review.	X	X	X	X	X	X	USEPA, DEP
	LUPC		Prepare application instructions and pamphlet that explains the LUPC and Army Corps requirements for wetland permits			X				USACOE
	LUPC	MOU between DEP and LUPC regarding participation in the in-lieu-fee program signed by both agencies July 21, 2021.	Submit annual report to DEP	X	X	X	X	X	X	DEP
c. Actively review proposed impacts to waters of the state	DEP	ongoing	ongoing	X	X	X	X	X	X	
d. Adopt and apply comprehensive project review criteria	LUPC		Complete research and consider other regulatory revisions to further improve consistency between the LUPC and DEP natural resource protection rules		X					
e. Coordinate among agencies, programs and industry groups to reduce duplicative efforts by the programs and the regulated public	DEP	ongoing	ongoing	X	X	X	X	X	X	
f. Require effective mitigation for authorized impacts	DEP	ongoing	ongoing	X	X	X	X	X	X	

Actions	Responsible agency(s)	Completed Activities	Planned activities	2023	2024	2025	2026	2027	2028	Potential Partners
g. Track permit/certification program activity	LUPC	Improvements in the LUPC GOAT database for wetland tracking were completed in 2017 and 2022	Improve report to export and analyze wetland tracking data. Establish program for regular staff training on data entry and analysis.	X						DEP/Land
h. Track/Evaluate	DEP/Land and MDIFW		Review and adapt regulatory program and protocols related to Significant Wildlife Habitats if necessary, depending on outcome of any proposed legislative changes	X	X					
	DEP/Land	For projects requiring compensation, impact locations are geo-referenced by points. For compensation projects approved through the MNRCP, compensation parcels are geo-referenced by shape files								
a. Monitor the implementation of permit/certification conditions	DEP/Land	Compliance activities ongoing	ongoing	X	X	X	X	X	X	
b. Enforce aquatic resource protections	DEP/Land	ongoing	ongoing	X	X	X	X	X	X	

Objective 3: Evaluate regulatory activities to ensure environmental results

Actions	Responsible agencies	Completed Activities	Planned activities	2023	2024	2025	2026	2027	2028	Potential partners
c. Ensure impact assessments and mitigation crediting lead to replacement of aquatic resources with similar structural, functional or condition attributes										
d. Incorporate the watershed approach into the regulatory decision-making process	MNAP/DACF, DEP/Land		Update Compensation Planning Framework, as required by ACOE for continuation of ILF program. Follow up on data gaps and research needs identified through compensation planning framework process (draft update completed)	x				x	x	USACOE, TNC, stakeholders
e. Perform public education and outreach about wetland protection, regulated waters and activities, and authorization process	DEP, MNAP/DACF, MDIFW	Initial discussions of data sets were completed through revisions to Maine's State Wildlife Action Plan (2015)	Share information on who has what data related to wetlands and evaluate needs/potential outcomes of making more data available through a variety of printed and digital formats	x	x	x	x	x	x	
f. Measure/track environmental results	DEP/Land	Updated Chapter 1000 Guidelines for Municipal Shoreland Zoning Ordinances to reflect legislative mandates, effective 1/26/2015								
	DEP/Land		Maintain existing penalties and fees	x	x	x	x	x	x	

Core Element 3: Voluntary Restoration and Protection

Maine Goal 1: Identify and protect wetlands systems of statewide significance through fee acquisition, conservation easements, or other tools for permanent conservation.

Maine Goal 4: Promote the appreciation, stewardship and voluntary protection of wetland resources by private landowners, towns and non-governmental entities.

Objective 1: Clearly and consistently define restoration and protection goals throughout the state

Actions	Responsible agencies	Completed Activities	Planned activities	2023	2024	2025	2026	2027	2028	Potential partners
a. Establish goals that are consistent or compatible across relevant agencies	MNAP/DACF, MDIFW and DEP	An interagency process to review and update Focus Areas of Statewide Significance (biodiversity hotspots) included some of Maine’s most significant wetlands	Using information about identified threats and historic losses, continue to coordinate with relevant resource agencies to identify priorities and develop strategies for wetland protection and restoration. Also relevant to Core element 1	X	X	X	X	X	X	USEPA, TNC, DMR, NOAA, USFWS, NRCS
b. Consider watershed planning, wildlife habitat, and other objectives when selecting restoration / protection sites	MNAP/DACF	Published revised and updated version of Maine's Natural Community Classification in 2018. Worked with MCP/DMR to create tidal subaquatic habitat classifications	Continue to update Maine's Natural Community Classification for aquatic, tidal, and palustrine wetland types as needed; Make outreach materials available through both digital printed formats	X	X	X	X	X	X	MGS/DACF, MDIFW, MCP/DMR
	MNAP/DACF	MNRCP site assessments were made annually over the previous five years	Use field surveys, landscape analysis, and other data sets to prioritize mitigation opportunities within ecoregions and communicate results to partners to facilitate the Maine Natural Resource Conservation Program (MNRCP)	X	X	X	X	X	X	TNC, MDIFW, BPL

Actions	Responsible agency(s)	Completed Activities	Planned activities	2023	2024	2025	2026	2027	2028	Potential Partners
	MNAP/DACF	Ongoing	Use reference data on representation, frequency and location of significant wetland habitats to conduct conservation planning for protection of resource and high value integrated upland-wetland sites	X	X	X	X	X	X	TNC, USFWS, MDIFW
	MNAP/DACF,	Updated marsh migration modeling based on user input and new sea level rise scenarios.	Continue to update and work with partners to incorporate marsh migration and coastal resilience data into conservation, restoration, or municipal planning decisions	X	X	X	X	X	X	MGS/DACF MCP/DACF, TNC, MDIFW
	MNAP/DACF	Ongoing	Facilitate the incorporation of Maine wetlands data into the review of statewide and regional conservation and restoration initiatives (e.g. LMF, Forest Legacy, MNRCP)	X	X	X	X	X	X	MDIFW
	MDIFW	Revised online MapViewer is now available for habitat Maps 1 (riparian) and 2 (plant and animal habitats)								MNAP/DACF
	MDIFW	Ongoing	Incorporate Priority State Wildlife Action Plan wetland conservation and restoration actions into habitat outreach efforts	X	X	X	X	X	X	MNAP/DACF, USEPA, USFWS, NGOs
	MDIFW, MNAP/DACF	Ongoing	Review and refine Focus Areas of Statewide Ecological Significance and connectivity maps with respect to wetlands and significant wetland habitats and species, as needed. Develop outreach materials and Focus Area summaries.	X	X	X	X	X	X	TNC, MCHT
	MDIFW, MNAP/DACF	Ongoing	Work with strategic partners to implement high priority conservation actions for freshwater and coastal wetlands and associated Species of Greatest Conservation Need as identified in Maine's State Wildlife Action Plan	X	X	X	X	X	X	USFWS, University of Maine, private and public landowners

Actions	Responsible agency(s)	Completed Activities	Planned activities	2023	2024	2025	2026	2027	2028	Potential Partners
	MCP/DACF, DMR, DEP	Thousands of in-stream barriers have been identified by various parties and crossings on public roads, public lands, and private priorities for which permission has been received are now on the Stream Habitat Viewer. The Viewer does not itself prioritize areas for restoration. Also relevant to Core Element 1.								MCP/DACF Stream Connectivity Work Group, TNC
	MCP/DMR	Update the online Maine Stream Habitat Viewer to include updated tidal and freshwater wetland maps for the purpose of identifying high priority connectivity restoration projects.								MDOT, MDIFW, MNAP/DACF
c. Provide clear guidance on appropriate restoration and management techniques and success measures	MNAP/DACF	Ongoing evaluation of potential threat of specific invasive plants	Update Maine's invasive plant list as needed; Provide technical assistance and expertise to the evaluation of invasive plants (e.g. invasiveness, level of threat, habitat associations, management guidelines)	X	X	X	X	X	X	DEP, MISN
	DACF (formerly State Planning Office), DMR	MCP's Restoration Coordinator has assisted in the development of more than 30 coastal habitat restoration projects (15 of which were during 2011-2015)								

Actions	Responsible agency(s)	Completed Activities	Planned activities	2023	2024	2025	2026	2027	2028	Potential Partners
	MNAP/DACF	Ongoing	Work with partners to encourage the development of invasive plant management plans, provide technical support and critical tools for implementation, and review invasive plant management strategies as needed	X	X	X	X	X	X	MISN, public landowners, towns, TNC
	MNAP/DACF	Ongoing	Provide technical assistance in restoration planning, implementation, and monitoring for wetlands degraded by invasive plants	X	X	X	X	X	X	DEP

Objective 2: Protect wetlands from degradation or destruction

Actions	Responsible agencies	Completed Activities	Planned activities	2023	2024	2025	2026	2027	2028	Potential partners
a. Establish partnerships to leverage additional protections	MNAP/DACF, MDIFW	Reviewed approximately 600 Forest Management Plans/year over the past 5 years, and provided wetlands data to owners of 5 million + acres of private forest land	Work with forest landowners through various avenues (FMPs, forest certification) to promote wetland conservation on private lands	X	X	X	X	X	X	Private landowners
b. Establish and institutionalize long term protection using mechanisms such as incentives, purchase of land title or easements to protect wetlands	MDIFW	ongoing	Work with strategic partners to implement high priority conservation actions for freshwater and coastal wetlands and associated Species of Greatest Conservation Need as identified in Maine's State Wildlife Action Plan	X	X	X	X	X	X	MNAP/DACF, USFWS, University of Maine, private and public landowners
	MDIFW, MNAP/DACF	ongoing	Distribute information about significant wetland habitats and rare species to private landowners to make informed decisions	X	X	X	X	X	X	

Actions	Responsible agencies	Completed Activities	Planned activities	2023	2024	2025	2026	2027	2028	Potential partners
	MNAP/DACF		Share wetlands data with State and Federal public lands managers for use in land management planning	X	X	X	X	X	X	USFWS, BPL, NRCS, MDIFW
	DEP/Land	In fall of 2016, the ACOE and DEP signed A Special Area Management Plan (SAMP) for Vernal Pools in Maine, which establishes an alternative mitigation process for projects impacting vernal pools within Designated Development Areas. https://www.vernalpools.me/samp/								

Objective 3: Restore wetland acres, condition and function

Actions	Responsible agencies	Completed Activities	Planned activities	2023	2024	2025	2026	2027	2028	Potential partners
a. Increase wetland acreage through restoration (re-establishment)										
b. Improve natural wetland conditions and functions through restoration (rehabilitation)	MNAP/DACF	Implemented strategic invasive plant control in wetlands on public lands.	Ongoing consultation on best control practices for invasive plant species in ecologically important wetlands.	X	X	X	X	X	X	DEP, BPL, MDIFW, MFS, MISN
c. Establish partnerships to leverage more restoration										

Core Element 4: Water Quality Standards for Wetlands

Maine Goal 3: Provide effective and responsible levels of protection and restoration of Maine’s wetland systems through an efficient regulatory program.

Maine Goal 5: Improve coordination between agencies with respect to wetland policies and regulatory programs to ensure efficiency in effort, consensus in outcome, and consideration of wetlands at the landscape scale.

Objective 1: Ensure that wetlands are treated as waters within state and tribal water quality programs.

Actions	Responsible agencies	Completed Activities	Planned activities	2023	2024	2025	2026	2027	2028	Potential partners
a. Adopt an appropriate definition of wetlands	DEP	completed								
b. Ensure the appropriate wetlands definition is included in water quality standards	DEP/BMP	White paper written and approved by Attorney General’s office clarifying wetlands as waters of the state								

Objective 2: Develop wetland- specific water quality standards

Actions	Responsible agencies	Completed Activities	Planned activities	2023	2024	2025	2026	2027	2028	Potential partners
a. Gather and analyze monitoring data and other information that will become the basis of water quality standards	DEP/BMP	Used biological monitoring data to complete statistical models for macroinvertebrates and epiphytic algae to interpret narrative criteria for wetlands. Models will serve as basis for wetland-specific numeric criteria when implemented into rules.	Finalize predictive model for phytoplankton. Analyze wetland vegetation data to consider future biological criteria based on plant communities.	X	X	X	X	X	X	

Actions	Responsible agency(s)	Completed Activities	Planned activities	2023	2024	2025	2026	2027	2028	Potential Partners
b. Establish and adopt appropriate wetland-specific designated uses to be achieved and protected	DEP/BMP	Designated uses for other surface waters apply to wetlands, including tiered aquatic life uses.								
c. Establish and adopt narrative criteria that qualitatively describe the condition or suite of functions that must be achieved to support a designated use.	DEP/BMP	Narrative criteria for other surface waters apply to wetlands, including narrative biological criteria.								
d. Establish and adopt numeric criteria representing wetland specific values for chemical, physical and biological parameters that may not be exceeded, must be exceeded, or some combination to protect or restore designated uses.	DEP/BMP	Provisional numeric criteria established (macroinvertebrates and epiphytic algae).	Initiate rulemaking to incorporate wetland-specific numeric criteria for wetland macroinvertebrates and algae into Maine's biological criteria rules (Chapter 579)	X	X	X				multiple stakeholders
	DEP/MEMP	Incorporated water quality parameters directly pertaining to health of seagrass to develop proposed marine nitrogen criteria via EPA contractor data analysis.	Continue developing proposed criteria to address maintenance of sensitive marine life (seagrass) leading to numeric nutrient criteria.	X	X	X	X	X	X	USEPA, CBEP multiple stakeholders

Actions	Responsible agencies	Completed Activities	Planned activities	2023	2024	2025	2026	2027	2028	Potential Partners
e. Better define state/tribal antidegradation policies for wetlands, requiring full protection of existing uses (functions and/or condition), maintenance of functions/condition in high quality wetlands, and a prohibition against lowering functions/condition in outstanding national resource waters	DEP/BMP	State anti-degradation policy applies to wetlands.	Review anti-degradation policy as part of numeric criteria rulemaking process and clarify/better define issues for wetlands as needed	X	X	X				

Objective 3: Incorporate wetland-specific water quality standards into agency decision making

Actions	Responsible agencies	Completed Activities	Planned activities	2023	2024	2025	2026	2027	2028	Potential Partners
a. Use water quality standards as basis for regulatory decisions	DEP/BMP, DEP/MEMP	ongoing	Provide technical support and wetland water quality class attainment information to state and federal regulatory programs as requested to inform permit/license decisions, compliance issues and monitoring requirements	X	X	X	X	X	X	Various agency programs
b. Use water quality standards as basis for evaluating restoration/protection projects and mitigation/compensation projects	DEP/BMP	Completed pilot study focused on permittee-responsible mitigation sites using biological monitoring to evaluate mitigation success, including attainment of aquatic life criteria.	Conduct follow-up monitoring on study sites as time and resources allow. Include additional restoration/mitigation project sites in annual monitoring as resources allow.	X	X	X	X	X	X	

Actions	Responsible agencies	Completed Activities	Planned activities	2023	2024	2025	2026	2027	2028	Potential Partners
	DEP/BMP	Completed pilot study focused on MNRCP mitigation sites using biological monitoring to evaluate mitigation success, including attainment of aquatic life criteria.	Conduct follow-up monitoring on study sites as time and resources allow. Include additional restoration/mitigation project sites in annual monitoring as resources allow, include preservation sites in long term reference site network.	X	X	X	X	X	X	
c. Incorporate water quality standards into monitoring and assessment program	DEP/BMP	Wetland aquatic life use attainment reported in Integrated Report since 2010 based on narrative biocriteria and macroinvertebrate data.	Continue reporting wetland aquatic life use attainment in Integrated Report. Conduct follow-up monitoring for listed impaired/threatened wetlands and for wetlands lacking sufficient information to determine attainment. Incorporate additional water quality criteria (algae, plants) into monitoring programs as available.	X	X	X	X	X	X	
	DEP/MEMP	Aquatic (marine) life use attainment reported in Integrated Report since 2012 based on narrative criteria	Continue reporting aquatic (marine) life use attainment in Integrated Report. Conduct follow-up monitoring, as resources allow, for listed impaired/threatened seagrass populations.	X	X	X	X	X	X	