**Natural Resources – Stewardship Objectives and Actions-**

**Working Draft May 2018** – subject to updates, changes and reorganization

**Goal: Protect valuable natural communities, habitats, biodiversity, and water resources of the York River watershed.**

The objectives and actions in this Stewardship Plan are intended to complement, reinforce and build upon important work already being undertaken by watershed towns of York, Kittery, South Berwick and Eliot, as well as conservation organizations, community groups, and public agencies. Several ongoing actions are included in this plan to emphasize their importance to achieving long-term resource protection goals. A list of studies and plans related to understanding and implementing actions to protect the natural resources of the York River Watershed is included at the end of this section.

**WATERSHED LANDS: LAND USE, CONSERVATION AND STEWARDSHIP**

**Objective 1: Preserve large undeveloped habitat blocks and wildlife corridors.**

*Key Actions:*

* Conduct surveys and research to help identify and define highly valued natural resources and important large habitat blocks for priority conservation efforts.
* Prioritize the protection of large undeveloped habitat blocks, wildlife corridors, and salt marsh migration areas in local planning documents and regulatory and non-regulatory approaches to protect natural resources.
* Utilize existing information and resources such as habitat areas designated for Maine Species of Great Conservation Need and Beginning with Habitat Focus Areas to guide conservation and protection efforts.

**Objective 2: Support land conservation and stewardship efforts by communities, land trusts, and other conservation organizations to protect and maintain important resource values.**

*Key Actions:*

* Develop and implement stewardship plans for conservation lands that address resource protection measures, public access, sustainable recreation uses, invasive species management, and monitoring.
* Help facilitate opportunities for land conservation projects located in Beginning with Habitat Focus Areas, as well as habitat areas likely to provide key functions and support biodiversity in the future.
* Promote the Mt. Agamenticus to the Sea Conservation Initiative to implement public-private approaches to preserve large undeveloped habitat blocks, wildlife corridors and regional biodiversity and build public interest and support for habitat conservation.
* Assist towns, land trusts, and conservation organizations in implementing priority actions and achieving the goals and targets included in open space plans and local and regional land conservation plans.

**Objective 3: Encourage continued agriculture and forestry uses of suitable watershed lands, using practices that help maintain and preserve natural resources, scenic resources and rural character.**

*Key Actions:*

* Maintain town policies and practices that promote enrollment in current use tax incentive programs such as Tree Growth and Farm Open Space.
* Promote workshops, training, and resources that encourage landowners to utilize sustainable forestry and agricultural practices that enhance wildlife habitat and minimize negative impacts on natural resources.
	+ Technical resources for sustainable forestry - Maine Department of Inland Fisheries and Wildlife’s regional biologists, species specialists, and Beginning with Habitat program, Maine Natural Areas Program, Maine Department of Agriculture, Conservation and Forestry’s State Foresters, Maine Cooperative Extension, US Forest Service
	+ Technical resources for sustainable agricultural practices - Department of Agriculture, Conservation and Forestry, Natural Resources Conservation Service programs

**Objective 4: Promote local planning and zoning strategies to protect shoreland buffer zones, wildlife corridors, large undeveloped habitat areas, and predicted marsh migration and flooding areas.**

*Key Actions:*

* Assist towns with evaluating and implementing recommendations from the Southern Maine Planning and Development Commission’s 2018 *York River Watershed Study: Regulatory and Non-regulatory Recommendations Report* related to conservation subdivisions, land conservation, general zoning, shoreland zoning, and stormwater management (currently being drafted).
* Promote conservation subdivision design or cluster development through local ordinances to reduce overall development footprint, reduce impervious surfaces, and protect natural resource values.
* Review and enhance Shoreland Zoning strategies to ensure protection of water quality, wildlife habitat, vegetated buffers, and future marsh migration areas. Promote provisions that go beyond the state of Maine’s Mandatory Shoreland Zoning Act.
* Review and update local zoning to ensure lot sizes are large enough to minimize the potential negative impacts of development on water quality and other natural resources in rural areas of the watershed.
* Consider creating a ‘watershed’ based overlay among the four York River watershed communities to promote regional conservation strategies while still allowing each town to determine specific land-use regulations within their community.
* Consider creating a Sea Level Rise / Marsh Migration Overlay and associated standards to accommodate future conditions, direct development away from areas at risk from future inundation, reduce density in those areas, promote open space, and enhance resource protection.

**WILDLIFE, HABITAT AND BIODIVERSITY**

**Objective 5: Maintain, improve and restore habitat to support unique, rare, endangered and threatened wildlife and plants.**

*Key Actions:*

* Target habitat conservation and protection efforts toward:
	+ Endangered and Threatened Species
	+ Maine Species of Greatest Conservation Need
	+ Federal Trust Species
	+ Rare plants and exemplary natural communities identified by the Maine Natural Areas Program
* Utilize the Maine Department of Inland Fisheries and Wildlife’s Beginning with Habitat resources to ensure that the most up to date information about valuable wildlife and plants in the watershed is incorporated into open space, conservation and comprehensive planning efforts.
* Conduct species and habitat surveys and integrate information into local regulatory and non-regulatory resource protection approaches.
* Identify suitable habitat for viable populations of key species and work with landowners to maintain habitats and connectivity.
* Evaluate options for requiring specific plantings in ordinances governing shoreland permits for vegetation removal. Create educational materials to promote use of native plants and removal of invasive plants to achieve habitat restoration priorities when revegetating areas.
* Maintain and improve protections for tidal and inland wading bird and waterfowl habitat through shoreland zoning.
* Encourage communities to seek botanical review by biologists at the Maine Natural Areas Program when a development proposal potentially conflicts with a mapped resource.
* Conduct a survey of the lower York River estuary to determine the presence and extent of eelgrass beds. Identify and pursue conservation strategies as needed.

**Objective 6: Maintain habitat and water quality to support fish Species of Greatest Conservation Need as well as the overall diversity of native fish species in the York River and its tributaries.**

*Key Actions:*

* For Species of Greatest Conservation Need, further assess populations, spawning habitat locations, habitat quality, and stream flow conditions, and identify opportunities to improve habitat conditions and access to spawning habitats in watershed streams.
* Protect riparian habitat surrounding alewife and rainbow smelt spawning habitat from development impacts through land conservation, preservation of natural buffer areas, and low impact development measures.
* Integrate known spawning habitat for Species of Greatest Conservation Need as a priority resource in local planning and regulatory approaches to protect natural resources.
* Implement additional recommendations outlined in *An Assessment of Spring Fish Communities in the York River, Maine (J. Aman, WNERR, 2018).*

**Objective 7: Protect, enhance and restore high quality salt marsh habitats to preserve ecological functions.**

*Key Actions:*

* Identify salt marsh habitat and adjacent buffers and uplands as priorities for land conservation.
* Maintain limits to development, building expansion, clearing activities, and habitat alterations in salt marsh buffer areas through town zoning and shoreland ordinances.
* Monitor and control invasive species that are degrading salt marsh habitat.
* Improve stormwater management practices to minimize impacts to salt marshes adjacent to developed areas.
* Identify and pursue opportunities for salt marsh restoration projects to improve habitat and functions.
* In coordination with the towns and Maine Department of Transportation, integrate tidal flow considerations into road-stream crossing designs to maintain and improve salt marsh habitats.
* Evaluate impacts to salt marsh habitats from sea level rise and increasingly intense storm events.
* Determine whether sediment being exported from marsh is indicative of erosive processes or a healthy marsh.

**Objective 8: Improve conditions for aquatic organism passage and tidal flow at road-stream crossings and other man-made structures.**

*Key Actions:*

* Identify and prioritize improvements and/or replacement of road-stream crossings that are potential barriers to flow and aquatic organism passage. Use road-stream crossing data on the Maine Stream Habitat Viewer with habitat data, Maine Department of Transportation work plans, and community culvert-related plans and needs.
* In coordination with the watershed towns and Maine Department of Transportation, integrate tidal flow considerations into road-stream crossing designs to promote fish passage.
* Update ordinance language to require consideration of more extreme storm events, tidal flows and aquatic organism passage in planning for local development projects.
* Integrate data on the cumulative impact of sea level rise scenarios, storm surge, and increased freshwater flows from stronger precipitation events into infrastructure designs.
* Integrate design improvements for terrestrial and riparian species passage in conjunction with aquatic organism passage, when feasible.
* Work with Maine Department of Inland Fisheries and Wildlife fisheries biologists to determine potential impacts of enhanced passage opportunities on aquatic habitats and native species, including impacts of invasive species.
* Explore opportunities with Kittery Water District and other large landowners in the watershed to enhance fish passage and spawning habitat.

**Objective 9: Protect valuable wildlife and habitat by addressing invasive species in the watershed.**

*Key Actions:*

* Provide information and workshops for landowners on how to identify, control and remove invasive species.
* Encourage site-based research, removal, and monitoring projects to improve invasive species detection, control, and eradication methods, and encourage landowner coordination with neighboring landowners to undertake larger-scale projects for greater success and effectiveness.
* Promote awareness of invasive species, efforts to manage their spread, and reporting opportunities through the Maine Natural Areas Program.

**WATER RESOURCES**

**Objective 10: Evaluate and track water quality and quantity conditions in the York River Watershed.**

*Key Actions:*

* Develop and implement a water quality monitoring program in the York River Watershed to build upon the 2017 survey conducted by the Maine Department of Environmental Protection. Ensure dry and wet weather sampling to capture impacts during varied weather conditions and coordinate with any monitoring conducted through local stormwater management programs.
* Coordinate with the Maine Department of Environmental Protection, Marine Unit to identify potential future opportunities to collaborate with state water quality sampling efforts.
* Evaluate nutrient levels and nutrient-related impacts such as algal blooms in the York River Watershed. Monitor nutrient characteristics of Smelt Brook to investigate the extent and sources of pollution issues identified during 2017 water quality sampling.
* Install additional stream gages to expand understanding about in-stream water flow in the York River.
* Promote adequate stream flow by evaluating and addressing the impact of unregulated water withdrawals in the York River watershed.
* Ensure that results from monitoring programs are used to help identify problems and inform efforts to resolve them.

**Objective 11: Protect and maintain natural vegetated buffers and forested areas around water resources to sustain water quality, instream habitat, and riparian habitat.**

*Key Actions:*

* Continue to identify the protection of headwater streams, forested wetlands, and riparian zones as high priorities for conservation.
* Identify and pursue opportunities to restore or enhance degraded shoreline or buffer areas through replanting, shoreline stabilization and reducing stormwater runoff.
* Maintain or enhance shoreland zoning requirements that include protective measures for water resources including streams, wetlands and vernal pools. Include wetlands less than four acres and vernal pools in shoreland zoning.
* Review shoreland zoning approaches for buffers and setbacks from all waterbodies to identify gaps in protection and opportunities for additional protections.
* Maintain and support local capacity of town code enforcement offices to proactively implement shoreland protection regulations.

**Objective 12: Promote sustainable practices by property owners to help protect natural resources and water quality.**

*Key Actions:*

* Support implementation of the Lawns to Lobsters program (York) and YardScaping program (Kittery, Eliot and South Berwick) to increase the number of watershed property owners taking action to reduce the use and impacts of pesticides and fertilizers on water quality and wildlife in the York River Watershed. These programs also encourage low impact techniques such as rain gardens and vegetated buffers to reduce runoff from lawns and yards into the river.
* Provide training and information on best management practices such as low-impact landscaping, stream/wetland buffer management and plantings, septic system maintenance, and proper disposal options for household hazardous waste and pharmaceuticals.
* Conduct outreach to increase understanding of existing regulations that govern vegetated buffers, setbacks from wetlands, and septic system maintenance.

**Objective 13: Maintain and reopen additional shellfish harvesting areas in the York River by improving water quality.**

*Key Actions:*

* Continue fixing sources of pollution identified by the Department of Marine Resources 2015 shoreline survey of the area from Route 1 to Sewall’s Bridge in York. Provide information to Department of Marine Resources to inform classification of shellfish growing areas in the York River.
* Continue working with the Maine Department of Marine Resources to conduct detailed inspections and surveys to identify and resolve any additional potential direct discharges into the York River.
* Identify and pursue opportunities to prevent stormwater pollution from faulty septic systems (these actions should be considered to improve water quality throughout the watershed / not just in the shellfish growing areas).
	+ Expand ordinances to require regular pump out of septic systems throughout the watershed.
	+ Consider requiring baseline inspections of septic systems for shoreland properties when ownership changes.
* Pursue designation of York River estuary and nearby coastal areas as a federally designated No Discharge Area for boater waste. This initiative would enhance local protections and increase resources to ensure adequate boat pumpout services.
* Conduct boater outreach to increase awareness about the importance of eliminating boater discharges.

**Objective 14: Protect and improve water quality in the York River and its tributaries by preventing and reducing sources of stormwater pollution.**

*Key Actions:*

* Support and enhance capacity for York, Kittery, Eliot and South Berwick to implement the following six minimum control measures required by the US Environmental Protection Agency’s MS4 General Permit:
	1. Conduct public education on stormwater issues
	2. Ensure public participation in the implementation of the stormwater program
	3. Conduct illicit discharge detection and elimination programs
		+ map the storm drain system
		+ inspecting and correcting illegal discharges
	4. Require construction site runoff controls for sites that disturb one or more acres of land
	5. Require post construction site runoff control for sites that disturb one or more acres of land
	6. Implement pollution prevention good housekeeping for municipal operations
		+ street sweeping
		+ catch basin cleaning
		+ maintenance of the storm drain system
		+ good housekeeping at municipally owned properties
* Apply MS4 permit requirements and stormwater management ordinances to all areas of the York River watershed, not just in designated Urbanized Areas / MS4 areas.
* Utilize results from the York River Watershed Build-Out Study to increase understanding about how future development could impact water quality and other natural resource values in the watershed.
* Implement proactive strategies to minimize polluted stormwater runoff by reducing impervious surfaces such as paved parking and roads associated with new development *(see Key Actions related to sustainable development, cluster development and shoreland zoning under section on Watershed Lands: Land Use, Conservation and Stewardship).*
* Ensure compliance with Maine’s stormwater standards to address both the quantity and quality of stormwater runoff associated with developments of an acre or more.
	+ Require treatment of the first inch of runoff from 95% of a sites impervious area to reduce polluted runoff
	+ Control the total volume of stormwater runoff to retain predevelopment levels in order to reduce erosion and scouring
* Consider adopting a Fertilizer and Pesticide Ordinance or regulations to control and reduce use within the watershed.
* Evaluate road salt application and storage practices to ensure protection of water resources.

**Objective 15: Promote Low Impact Development strategies to manage stormwater while protecting water quality and other natural resource values.**

*Key Actions:*

* Promote Low Impact Development stormwater management strategies that meet Maine state standards by incorporating the following protections to the maximum extent possible:
	+ Protect as much undisturbed land as possible to maintain pre-development hydrology and allow rainfall infiltration
* Protect natural drainage systems such as wetlands, watercourses, ponds and vernal pools
* Minimize land disturbance including clearing and drainage
* Minimize the decrease in the time of concentration from pre-construction to post-construction
* Minimize soil compaction
* Utilize low-maintenance landscaping that encourages the retention and planting of native vegetation, and minimizes the use of lawns, fertilizers and pesticides
* Minimize impervious surfaces and break up or disconnect the flow of runoff over impervious surfaces
* Provide vegetated open-channel conveyance systems discharging into and through stable vegetated areas
* Provide other source controls to prevent or minimize the use or exposure of pollutants at the site in order to prevent or minimize the release of those pollutants into stormwater runoff
* Incorporate Low Impact Development standards and criteria into site plan and subdivision regulations.
* Require operation and maintenance plans for Low Impact Development infrastructure for projects that exceed a specified threshold.
* Create standards and criteria for developers to implement Low Impact Development stormwater management techniques.
* Develop guidance documents for developers to promote understanding of best practices for Low Impact Development stormwater management strategies.

**Objective 16: Protect quantity and quality of drinking water supply in the York River Watershed.**

*Key Actions:*

* Support proactive watershed conservation strategies being implemented by both the Kittery Water District and the York Water District.
* Support funding and implementation of recommendations outlined in the Kittery Water System Master Plan to ensure adequate management, treatment and transport of drinking water.
* Support and enhance Kittery Water District ownership of lands, or other organizations’ land conservation efforts, in the water supply watershed (currently about 90%).
* Support and ensure continued enforcement of recreational restrictions to protect watershed lands from risks such as fires or negative water quality impacts from swimming.
* Monitor algal blooms and other potential aquatic invasive plants to ensure they don’t cause future problems for drinking water supply.
* Ensure continuation of York watershed protection ordinance.
* Continue ongoing efforts for regional cooperation among water suppliers in the York River Watershed to ensure clean, adequate and resilient water supplies during periods of drought or other water supply stressors.
* Conduct outreach to promote sustainable water conservation strategies for homes, businesses and landscaping practices in the watershed.

**WATERSHED RESILIENCE AND CLIMATE ADAPTATION**

**Objective 17: Increase understanding of current and potential future sea level rise and climate impacts on natural resources in the York River Watershed.**

*Key Actions:*

* Support continued research and studies to enhance understanding of the potential impacts of sea level rise, temperatures, storm surge, and increasingly intense and unpredictable storm events on natural resources in the York River Watershed.
	+ Conduct regular updates of watershed resilience studies to ensure climate adaptation efforts are informed by up to date sea level rise and storm surge projections.
	+ Evaluate how climate conditions will impact key habitats, species and natural communities, and implement measures that protect or enhance habitat resiliency.
* Promote awareness and use of National Oceanic and Atmospheric Administration’s Digital Coast interactive trainings and web-based tools to help coastal communities to assess vulnerabilities and plan for sea level rise, extreme flooding and other anticipated climate impacts.
* Host technical workshops among community planning and emergency response agencies to increase understanding of innovative tools such as National Oceanic and Atmospheric Administration’s National Water Model to help anticipate potential flooding and other impacts associated with increasingly intense coastal storms.

**Objective 18: Identify and implement climate adaptation measures needed to protect natural resources in the watershed.**

*Key Actions:*

* Host workshops to increase awareness among local boards, property owners, and developers about innovative strategies to incorporate coastal resilience strategies into site and building design for new developments in vulnerable areas.
* Incorporate information about storm surge, sea level rise, and increasingly intense rainstorms into community-based resiliency planning efforts. Implement ordinance changes or other strategies to prevent development in areas most vulnerable to future coastal flooding.
* Explore potential for participating in Federal Emergency Management Agency’s Community Rating Program by implementing proactive steps to improve floodplain management while reducing flood insurance rates.
* Utilize the latest information from the Northeast Regional Climate Center about Intensity / Duration / Frequency of rainfall related to extreme precipitation events to inform local ordinances, stormwater management planning and design criteria.
* Regularly update design criteria for infrastructure projects to utilize most recent Federal Emergency Management Agency flood insurance maps.
* Promote funding needed to implement major stormwater infrastructure improvement projects to correct existing flooding problems. In addition to protecting infrastructure, these projects will also reduce stormwater pollution and sediment transport associated with major flooding events.

**Objective 19: Protect marsh migration corridors and adjacent wetlands to support future salt marsh areas.**

*Key Actions:*

* Periodically update mapping and analysis to identify priority areas where salt marshes are expected to migrate or expand into adjacent upland areas as a result of sea level rise.
* Integrate likely future salt marsh areas as priority habitats in watershed resource protection measures and conservation planning. Update shoreland zone boundaries to include marsh migration areas and amend ordinance language for protection of future marsh areas and buffers.
* Continue to explore a range of regulatory and non-regulatory options to conserve uplands that are expected to become future salt marshes or provide critical buffer areas for future salt marsh habitat *(see Key Actions highlighted under section on Watershed Lands: Land Use, Conservation and Stewardship).*
* Maintain habitat values and resilience of salt marsh migration corridors by preventing stormwater pollution, removing invasive species, and maintaining or improving natural hydrology.

**FUNDING OPPORTUNITIES TO PROTECT NATURAL RESOURCES**

**Objective 20: Identify and pursue funding opportunities, in-kind support, local revenue strategies, and landowner incentives to promote stewardship of natural resources in the York River Watershed.**

*Key Actions:*

* Support designation of the York River watershed as Partnership Wild and Scenic River to expand resources for coordination and implementation of the York River Watershed Stewardship Plan.
* Identify and pursue opportunities for grant funding and in-kind technical support from state and federal programs.
* Explore and identify potential opportunities for funding from the private foundations.
* Identify and pursue potential partnerships with local businesses, waterfront property owners, and marine industry to collaborate on site-specific and watershed wide efforts to protect and restore habitat and water quality.
* Create partnerships with local schools and regional universities to enhance environmental research and studies related to understanding and protecting natural resources in the watershed.
* Explore potential for stormwater user fees or other funding mechanisms to support ongoing implementation of stormwater management services.
* Establish and support annual funding for Conservation/Open Space Funds in each watershed town through annual appropriations, dedicated revenues, or other means.
* Create financial incentives for landowners to promote restoration and conservation, e.g., tax credits, cost-sharing of native plants for habitat restoration, and reduced or waived permitting fees.

**Plans, Studies, and Resources Related to Protecting Natural Resource Values of the York River Watershed**

*Planning Documents*

* Beginning with Habitat: Conserving Maine’s Natural Landscape for Plants, Animals, and People
* Eliot, Kittery, South Berwick & York comprehensive plans
* Eliot and South Berwick open space plans
* Great Works Regional Land Trust’s strategic conservation plan
* Mt. Agamenticus to the Sea Conservation Initiative’s regional land conservation plan
* Town stormwater program plans and reports
* York River Watershed Nonpoint Pollution Management Plan, 2005
* York Water District Master Plan Update, September 2010

*Additional Technical Resources and Studies*

* Beginning with Habitat Focus Areas, resource maps, tools and data
* Maine Department of Environmental Protection water quality data and reports
* Maine Department of Marine Resources Shellfish Program data and reports
* Maine Interagency Climate Adaptation Work Group reports and tool kit
* Maine Natural Areas Program data
* Maine Stream Habitat Viewer
* Maine Wildlife Action Plan
* Maine Geological Survey/Maine Natural Areas Program sea level rise and marsh migration models
* NOAA Digital Coast
* Open Space Institute/Mt. Agamenticus to the Sea Conservation Initiative report
* Refuge management plans for US Fish and Wildlife Service’s Rachel Carson National Wildlife Refuge (York River Division) and Great Thicket National Wildlife Refuge
* The Nature Conservancy coastal resiliency report
* US Forest Service forestry/water supply report
* Wells National Estuarine Research Reserve fish studies – 2001 and 2017
* Town ordinances
* York River Watershed Build-out Study (SMPDC and Spatial Alternatives)
* York River Watershed Study – Regulatory and Non-Regulatory Recommendations (SMPDC)