

Appendix A - Objectives and Actions for Water Quality

- Timeframe – The timeframe from adoption of the CCMP in which the action should be completed. Short (S) indicates a completion within 1-2 years, Medium (M) actions are completed within 3-5 years, and Long (L) actions take 5 or more years. On-going actions are considered Long.
- Costs – The anticipated costs of action components: \$ < \$100,000, \$\$ \$100,000 - \$500,000, \$\$\$ \$500,000 - \$1,000,000, \$\$\$\$ > \$1,000,000.

<i>Goal - To protect and improve water quality throughout Barnegat Bay and its watershed by addressing the causes of water quality degradation to achieve swimmable, fishable and drinkable water, and to support aquatic life.</i>					
WQ Objectives	WQ Action ID	CCMP Action	Partners, Leads, and Identified Appropriate Funding Sources	Time-frame	Cost?
1. Reduce sources of nutrients, contaminants, debris and other pollutant loadings from point and nonpoint source pollution.					
	WQ 1-1	<p><u>Support development and implementation of a Barnegat Bay TMDL(s) (Total Maximum Daily Load), including the development and use of a Barnegat Bay validated biological indices of water quality, to address nutrient and other pollutant loadings and to guide science based future management decision.</u></p> <p>METRICS: Nitrogen & other pollutant reductions to be determined by NJDEP TMDL process.</p>	<p>Partners: NJDEP, USEPA, USGS, BBP</p> <p>Lead(s): NJDEP</p> <p>Funding Sources: EPA CWA 104(b)(3) and 319; DEP State Revolving Funds, EIT; Other TBD</p>	M	\$-\$\$\$

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		<p>MILESTONES:</p> <p>1-1a: Review relevant nutrient and other pollutant loadings and other information as available and make recommendations to establish and implement TMDL based on best available science;</p> <p>1-1b: Promote information exchange & consensus building on implementation priorities and make recommendations based on best available science;</p> <p>1-1c: Promote, support and conduct monitoring, and planning to help inform and guide decision making</p> <p>1-1d: Promote adaptive, ecosystem-based management using best available science and giving due consideration to climate change to achieve nutrient reductions and ecosystem targets.</p>			
	<p>WQ 1-2</p>	<p><u>Develop/revise and implement Watershed Plans (i.e. WQMP/319 and Watershed Based Plans) at the sub watershed level.</u></p> <p>METRICS: Number of plans developed, funded, and implemented together with estimated nutrient reductions.</p> <p>MILESTONES:</p> <p>1-2a: Using NJDEP WQ and other data, develop WQMP/319 and Watershed Based Plans</p> <p>1-2b: Identify, promote and support funding of plan development.</p> <p>1-2c: Implement plans and estimate nutrient and other pollutant reductions.</p>	<p>Partners: Counties, Municipalities, Utility Authorities (208 Plan), BBP, NJDEP (approval)</p> <p>Lead(s): Counties, Municipalities, Utility Authorities (208 Plan), BBP, NJDEP (approval)</p> <p>Funding Sources: CWA Section 319 and 320; DEP State Revolving Funds, EIT; Stormwater Utilities; Other TBD</p>	<p>M/L</p>	<p>\$\$\$\$</p>

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	<p>WQ 1-3</p>	<p><u>Fully implement the Soil Restoration Law and associated comprehensive soil restoration procedures for various land use activities.</u></p> <p>METRICS: Numbers of inspections performed and percent compliance</p> <p>MILESTONES: 1-3a: Implement existing and/or develop revised (county or statewide) soil restoration standard with supporting assessment and cost-benefit justification. 1-3b: Work with partners to promote review and consideration of soil restoration standard. 1-3c: Once adopted, assist with implementation of soil restoration standard. 1-3d: Reassess program after 5 years.</p>	<p>Partners: NJDA, NJDEP, NJDOT, Counties, Municipalities, Soil Conservation Districts</p> <p>Lead(s): Soil Conservation Districts</p> <p>Funding Sources: NJDA Section 251; DEP State Revolving Funds, EIT; Stormwater Utilities; Other TBD</p>	<p>M</p>	<p>\$\$</p>
	<p>WQ 1-4</p>	<p><u>Support implementation and enforcement of stormwater rules and ordinances at state, county and municipal levels.</u></p> <p>METRICS: Increase and improve compliance with rules and MS4 permits through NJDEP Municipal Stormwater Compliance Assistance Program (MSCAP); DEP, BBP, and municipalities review compliance annually to develop priority list for subsequent actions by municipalities.</p> <p>MILESTONES: 1-4a: Develop Municipal Stormwater Compliance Assistance Program with Toms River as the pilot (include Objectives 1-5 to 1-7 below, where feasible).</p>	<p>Partners: NJDEP, Counties, Municipalities, Soil Conservation Districts, Others TBD</p> <p>Lead(s): NJDEP, NJDOT, municipalities</p> <p>Funding Sources: CWA Section 319; DEP State Revolving Funds, EIT; Stormwater Utilities; Other TBD</p>	<p>L</p>	<p>\$\$\$</p>

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		<p>As part of the program, identify possible sources of nutrient loading and other water quality stressors and work with township officials toward solutions.</p> <p>1-4b: Develop recommendations for Toms River compliance/improvement.</p> <p>1-4c: Develop schedule to conduct compliance assistance visits in municipalities within the watershed to improve overall compliance with MS4 requirements and achieve nutrient loading reductions throughout the watershed.</p> <p>1-4d: Initiate review and recommendations to make improvements.</p> <p>1-4e: Reassess MSCAP after 5 years.</p>			
	<p>WQ 1-5</p>	<p><u>Encourage municipalities to (1) inventory and map [using DEP DWQ online mapping tool] the following stormwater facilities: storm drain inlets, stormwater basins, subsurface infiltration/detention systems, culverts, manufactured treatment devices (MTDs), and green infrastructure) together with NJDEP- required outfall mapping; (2) develop process/program to assess, prioritize, and implement basin/other stormwater infrastructure repairs and/or retrofits to reduce nutrient and sediment loadings to the bay.</u></p> <p>METRICS: Increase in 1) comprehensive mapping (see above) of stormwater facilities by municipalities and other SW reporting entities; 2) stormwater assessment, prioritization, and implementation plans by those same entities; and 3) elimination of recognized impairments</p>	<p>Partners: NJDEP, Counties, Municipalities, Schools & other entities for public complexes, Soil Conservation Districts, BBP</p> <p>Lead(s): NJDEP, municipalities, public complexes with SW permits</p> <p>Funding Sources: CWA Section 319; DEP State Revolving Funds, EIT; Stormwater Utilities; Other TBD</p>	<p>L</p>	<p>\$\$- \$\$\$\$</p>

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		<p>by reducing stormwater loadings of nitrogen, phosphorus, TSS, pathogens, and other pollutants</p> <p>MILESTONES: 1-5a: Work with counties, municipalities and their partners and volunteers to increase comprehensive mapping of stormwater facilities (those noted above, mapped using DEP DWQ online tools).</p> <p>1-5b: Develop assessment program (<i>e.g.</i>, infiltration, nutrient management) and schedule for stormwater basins; identify other problematic stormwater infrastructures or areas of concern (<i>e.g.</i>, repetitive flooding)</p> <p>1-5c: Promote and assist development of municipal plans and proposals to address stormwater problems, especially in areas with recognized downstream impairments.</p>			
	<p>WQ 1-6</p>	<p><u>Identify sources and reduce pollution inputs from roadways and yard maintenance (pesticides, herbicides, fertilizer, deicer and automotive waste).</u></p> <p>METRICS: Reductions in chemical usage and/or increases in green alternatives via regular reporting by responsible stormwater entities; annual reporting and review of required maintenance operations (<i>e.g.</i>, roadside sweeping) and identification of pollution hotspots or other problems</p> <p>MILESTONES: 1-6a: Regular reports of chemical usage and application policies and green alternatives by stormwater permittees</p>	<p>Partners: Municipalities, Counties, Schools/other entities with public complex permits, NJDOT, NJDEP</p> <p>Lead(s): Municipalities, Counties, Schools/other entities with public complex permits, NJDOT, NJDEP</p> <p>Funding Sources: CWA Section 319; DEP State Revolving Funds, EIT;</p>	<p>L</p>	<p>\$\$-\$\$\$</p>

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		<p>1-6b: Review roadway waste, flooding, and other information (tributary data) to identify problem “hot spots” for each municipality or other responsible agency.</p> <p>1-6c: Develop improvement plans directed at priority areas within each municipality</p>	<p>Stormwater Utilities; Other TBD</p>		
	<p>WQ 1-7</p>	<p><u>Encourage municipalities and counties to map all stormwater BMP facilities/infrastructure within the watershed associated with major development; review mapping of stormwater BMPs as an optional element of NJDEP Municipal SW Compliance Assistance Program and a “preferred ranking element” in appropriate NJDEP funding programs.</u></p> <p>METRICS: County, municipal, and other permittee’s lists of all BMPs associated with major development, with summary information regarding project type, features, <i>etc.</i></p> <p>MILESTONES:</p> <p>1-7a: Develop a plan (<i>i.e.</i>, information gathering process, and summary/descriptive information to be collected) for mapping all stormwater BMPs. Any plan should be consistent with information gathered by the NJDEP’s locational mapping app.</p> <p>1-7b: Collect other pertinent summary/descriptive information and map the BMP using the NJDEP mapping app (or other comparable application tool) for locational information.</p>	<p>Partners: Counties, Municipalities, Other stormwater permittees, Soil Conservation Districts, NJDEP, RCE, BTMUA, BBP</p> <p>Lead(s): Counties, Municipalities, Other stormwater permittees, NJDEP, Soil Conservation Districts, BBP, others TBD</p> <p>Funding Sources: CWA Section 319; DEP State Revolving Funds, EIT; Stormwater Utilities; Other TBD</p>	M	\$-\$\$

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		<p>1-7c: Share the BMP information with the public as a report, online database, interactive website, or in another format.</p>			
	<p>WQ 1-8</p>	<p><u>Identify sources and reduce pollution inputs from marinas and boating activities. Suggest marinas be included as part of 1-1 MSCAP or an element of other programs (e.g., Clean Marina, Clean Vessel). Assess need for enforcement of priority problems</u></p> <p>METRICS: Participation of marinas in pollution source ID and reduction programs and projects; ultimately, a reduction in pollution inputs from marinas and boats.</p> <p>MILESTONES: 1-8 a: Identify marinas identifying pollution sources and their potential improvement projects; 1-8b: Work with marinas, municipalities, and other programs and partners to develop funding mechanisms and implement improvement projects and programs annually. 1-8c: Work with existing programs and partners to reduce pollution from boating (e.g., trash, derelict vessels). 1-8d: Target/fund additional law enforcement, where necessary, at priority problems. 1-8e. Continue to support the designation of Barnegat Bay as a No Discharge Zone.</p>	<p>Partners: NJDEP Clean Marina and Clean Vessel Program partners (NJSG, Marine Trades NJ, OCHD, OCUA, Counties including their Health Depts. & Utility Authorities, BBP, Municipalities, USEPA</p> <p>Lead(s): NJDEP, NJSG</p> <p>Funding Sources: CWA Section 319; DEP State Revolving Funds, EIT; Stormwater Utilities; County Planning Depts. and Utility Authorities; Other TBD</p>	<p>L</p>	<p>\$-\$\$\$</p>

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	<p>WQ 1-9</p>	<p><u>Identify sources and reduce pollution inputs from livestock, agriculture and wildlife.</u></p> <p>METRICS: Reductions in pollution (nitrogen, phosphorus, pathogen) inputs from livestock and nuisance wildlife (<i>e.g.</i>, Canada geese)</p> <p>MILESTONES: 1-9a: Assess nutrient inputs from livestock on farms, ranches, and animal husbandry/other facilities and other hotspots, such as waterbodies that are pathogen-impaired by Canada geese. 1-9b: Develop plans, including cost estimates, to reduce nutrient loading at locations identified in 1-9a with existing USDA, NRCS, NJDEP, NJDA, and other funding sources. 1-9c: Implement plans as funds allow to reduce nutrients and pathogens. 1-9d: Delist waterbodies via state/federal review processes.</p>	<p>Partners: NJDEP (compliance assistance; WMPs); BBP</p> <p>Lead(s): TBD</p> <p>Funding Sources: CWA Section 319; DEP State Revolving Funds, EIT; Stormwater Utilities; County Planning Depts.; Other TBD.</p>	<p>L</p>	<p>\$-\$\$\$</p>
<p>2. Assess status trends of water quality throughout the watershed.</p>					
	<p>WQ 2-1</p>	<p><u>Maintain, review, and revise as necessary the existing comprehensive water quality ambient monitoring program throughout the watershed.</u></p> <p>METRICS: The extent of the bay and its tributaries that are covered by the existing comprehensive water quality monitoring program and the water quality</p>	<p>Partners: USEPA, NJDEP, USGS, BBP, JC NERR, OCHD, Monmouth University, Stockton University, BTMUA</p>	<p>L</p>	<p>\$-\$\$\$\$</p>

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		<p>parameters (<i>e.g.</i>, DO, temperature) that are included in the program.</p> <p>MILESTONES: 2-1a: Conduct periodic review of existing comprehensive monitoring plan findings, including identification of monitoring and data gaps and compilation of problem findings (<i>e.g.</i>, exceedance of criteria).</p> <p>2-1b: Develop cost estimation, justification, and schedule of addressing data gaps in revised monitoring plan.</p>	<p>Lead(s): NJDEP</p> <p>Funding Sources: CWA Section 106 and 319; DEP State Revolving Funds, EIT; Stormwater Utilities; Other TBD.</p>		
	<p>WQ 2-2</p>	<p><u>Continue to identify the current status and trends in water quality within the watershed (NJDEP Integrated Report, BBP State of the Bay (SOTB) Report) and identify pollutant sources and magnitudes.</u></p> <p>METRICS: Completion of status and trends reporting in NJDEP Integrated Reports and BBP SOTB reports, including estimation of nitrogen and phosphorus source loading on regular schedule (<i>i.e.</i>, at least every five years).</p> <p>MILESTONES: 2-2a: Assemble BBP SOTB Workgroup one year prior to anticipated date of publication and develop SOTB QAPP. 2-2b: Complete draft SOTB report for external review. 2-2c: Revise report as per review and publish.</p>	<p>Partners: NJDEP, BBP, USGS, BTMUA, others TBD</p> <p>Lead(s): NJDEP and BBP</p> <p>CWA Section 106, 319, and 320; DEP State Revolving and other funds, EIT; Stormwater Utilities; Other TBD.</p>	<p>L</p>	<p>\$\$</p>

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		<p>2-2d: Hold BBP-sponsored SOTB Symposium.</p> <p>2-2e: Review listings of impairments within Barnegat Bay and provide comments to the draft 303(d) list as prepared by NJDEP in accordance with the Clean Water Act</p> <p>2-2f: Review “off-year” report for Barnegat Bay watershed.</p>			
	WQ 2-3	<p><u>Support the existing beach monitoring program. Work with NJDEP, NJDOH, OCHD & LBI Health Department to evaluate possible monitoring strategies for known public recreational areas of high public use e.g., Tice’s Shoal, F-Cove, Pine Lake, Cedar Creek, etc. which are not recreational bathing beaches as defined in NJ State Sanitary Code, Public Recreational Bathing N.J.A.C. 8:26 Chapter IX</u></p> <p>METRICS: Number of areas of high public use where primary contact-recreation is occurring with percentage of those covered by regular/periodic monitoring programs.</p> <p>MILESTONES:</p> <p>2-3a: Generate annual list of known recreational area of high public use, including process to identify those receiving high public use.</p> <p>2-3b: Identify those to be assessed regularly; if 100% of high-use beaches are not monitored, develop justification for those to share with elected officials at state and local levels.</p> <p>2-3c: Work with NJDEP, NJDOH and local municipalities to explore development of agreed-upon</p>	<p>Partners: OCHD, NJDEP</p> <p>Lead(s): NJDEP, OCHD</p> <p>CWA Section 106 and 319; DEP State Revolving Funds, EIT; Stormwater Utilities; Other TBD.</p>	L	\$\$

		signage for non-monitored beaches in impaired waterbodies and/or stream segments.			
3. Conduct studies to improve scientific understanding of new and emerging issues pertaining to the chemical, physical, and biological conditions and dynamics in the Barnegat Bay and its watershed.					
	WQ 3-1	<p><u>Support completion and expansion of source tracking for bacteria, pathogens, and novel and other pollutants.</u></p> <p>METRICS: Number of source-tracking studies conducted for bacterial, pathogenic, novel and other pollutants every 5 years.</p> <p>MILESTONES: 3-1a: STAC periodically reviews available data of bacteria and pathogenic bacterial and novel contaminant “hotspots” and compile into draft report. 3-1b: STAC workgroup develops agreed-upon process (<i>i.e.</i>, QAPP); prioritizes source-tracking problems into report, distributed to partners and local and state officials. 3-1c: Commit STAC funding, when feasible and available.</p>	<p>Partners: USEPA, NJDEP, OCHD, Counties, Utility Authorities, Municipalities</p> <p>Lead(s): NJDEP, OCHD</p> <p>Funding Sources: USGS, USDA, CWA Section 106, 319, 320; DEP State Revolving Funds, EIT; Stormwater Utilities; Other TBD.</p>	L	\$\$-\$

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	<p>WQ 3-2</p>	<p><u>Continue to identify and address data gaps and water quality issues of emerging concern (e.g. coastal acidification, watershed salinity increases, etc.)</u></p> <p>METRICS: Number of recognized data gaps and identified issues of emerging concern identified by partners and the public compiled and reviewed every 5 years.</p> <p>MILESTONES: 3-2a: STAC workgroup compiles and reviews available data gaps into draft report. 3-2b: STAC workgroup prioritizes data gaps and issues with funding justification for partners and local and state officials. 3-2c: Commit STAC funding, when feasible and available.</p>	<p>Partners: USEPA, BBP STAC, NJDEP, NJPC, USGS</p> <p>Lead(s): BBP STAC, NJDEP</p> <p>Funding Sources: CWA Section 106, 319, 320; DEP State Revolving Funds, EIT; Stormwater Utilities; Other TBD.</p>	<p>L</p>	<p>\$\$</p>
	<p>WQ 3-3</p>	<p><u>Continue to support research that identifies and quantifies the sources and fates of nutrients within the watershed and bay.</u></p> <p>METRICS: Number of studies of sources and fates of nutrients conducted every 5 years.</p> <p>MILESTONES: 3-3a: STAC workgroup compiles list of published studies of nutrient sources and fates within past 5 years and summarizes data gaps for funding consideration with funding justification. 3-3b: Commit STAC funding, when feasible and</p>	<p>Partners: NJDEP, USGS, USEPA, BBP</p> <p>Lead(s): BBP, NJDEP</p> <p>Funding Sources: CWA Section 106, 319, 320; DEP State Revolving Funds, EIT; Stormwater Utilities; Other TBD.</p>	<p>L</p>	<p>\$\$</p>

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		available.			
4. Increase public education, engagement, and stewardship regarding water quality in the watershed.					
	WQ 4-1	<p><u>Assist training and education/outreach programs to help municipalities meet permit compliance, e.g., Tier A and Tier B MS4 permits at Part IV.B.1.</u></p> <p>METRICS: Number of municipalities fully compliant with training and education/ outreach requirements; number of ancillary/optional programs with other entities (e.g., businesses, schools, etc.)</p> <p>MILESTONES: 4-1a: Identify and review existing stormwater training and education/outreach programs for effectiveness. 4-1b: Use existing and/or develop new training and education/outreach programs for key target audiences, including officials, residences, businesses, and schools.</p>	<p>Partners: USEPA, NJDEP, JC NERR, BBP</p> <p>Lead(s): BBP, JCNERR, Other TBD</p> <p>Funding Sources: Federal (EPA, NOAA), JCNERR Coastal Training Program; CWA Section 319 and 320; DEP State Revolving Funds, EIT; Other state and local funds TBD</p>	M	\$

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	<p>WQ 4-2</p>	<p><u>Share Barnegat Bay-friendly ordinances and establish a Jersey-Friendly Yards certification and training program for homeowners, businesses, and/or landscaping professionals to promote practices that reduce nonpointsource pollution.</u></p> <p>METRICS: Adoption of ordinances, number of certifications, and number of education recipients implementing best practices.</p> <p>MILESTONES: 4-2a: Review model ordinances, revise as needed, and distribute to municipalities. 4-2b: Develop JFY certification and other education/outreach programs. 4-2c: Implement programs with BBP/other funding (e.g., fees)</p>	<p>Partners: BBP, OCSCD, RCE, ANJEC, Municipalities</p> <p>Lead(s): BBP, OCSCD, Other TBD</p> <p>Funding Sources: Clean Water Act Section 319 and 320; DEP State Revolving Funds, EIT; Other state and local funds TBD</p>	<p>M</p>	<p>\$\$</p>
	<p>WQ 4-3</p>	<p><u>Implement components of the BBP Communications Plan related to water quality improvement.</u></p> <p>METRICS: Number of BBP Comm. Plan components implemented and their effectiveness.</p> <p>MILESTONES: N/A: contingent on development of specific programs.</p>	<p>Partners: USEPA, BBP, Save Barnegat Bay, JCNERR, NJDEP</p> <p>Lead(s): BBP</p> <p>Funding Sources: CWA Section 319 and 320; DEP State Revolving Funds, EIT Other state and local funds TBD</p>	<p>L</p>	<p>\$</p>