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EPA Resource Guide for Managers of Coastal Watersheds with Coral Reefs



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Background

Coral reefs are among the most diverse and biologically complex ecosystems in the world. One-quarter of all marine life depend on coral reefs for food and shelter. Healthy coral reefs benefit communities in many ways. People around the world depend on coral reef ecosystems for food and income from tourism and fisheries. Additionally, coral reefs slow storm surge by over 90%, protecting coastal development and, thus, local economies.

The Environmental Protection Agency (EPA) protects coral reefs by implementing the Clean Water Act programs that protect water quality in watersheds and coastal zones where coral reefs are located. EPA also support efforts to monitor and assess the conditions of U.S. coral reefs and conducts research into the causes of coral reef deterioration. Much of the EPA's work to protect coral reefs is conducted in partnership with other federal agencies, states, and territories. For example, EPA is an active member of the U.S. Coral Reef Task Force (USCRTF).

The USCRTF is instrumental in building partnerships and strategies for on-the-ground action to conserve coral reefs. The USCRTF is co-chaired by the National Ocean and Atmospheric Administration (NOAA) and the Department of Interior (DOI) with regular participation from 12 federal agencies, two states, five U.S. Trust Territories, and three freely associated states. EPA co-chairs several working groups of the USCRTF and provides direct support to watershed coordinators managing land-based sources of pollution that threaten water quality around coastal coral reefs.

How to use this guide

This guide provides a general overview of the most relevant EPA programs and tools that can help watershed managers address land-based sources of pollution that impact coral reefs. The guide is intended primarily for watershed managers that participate in the USCRTF but can serve as a resource for others. It is broken into three categories: Financial Resources, Technical Resources, and Tools.

Financial Resources

FINANCIAL RESOURCE	DESCRIPTION
Clean Water State Revolving Fund	The Clean Water State Revolving Fund (CWSRF) program is a low-cost source of financing for a wide variety of water quality protection efforts. The program is a powerful partnership between EPA and the states. States have the flexibility to fund a range of projects that address their highest priority water quality needs. Using a combination of federal and state funds, CWSRF programs provide loans to eligible recipients to construct municipal wastewater facilities, control nonpoint sources of pollution, build decentralized wastewater treatment systems, create green infrastructure projects, protect estuaries, and fund other water quality projects. To be eligible for assistance, a project must meet one of the eleven CWSRF criteria. As outlined in Section 603(c) of the Clean Water Act (CWA), the CWSRF can provide assistance:

FINANCIAL RESOURCE	DESCRIPTION
	(1) to any municipality, intermunicipal, interstate, or state agency for construction of publicly owned treatment works (as defined in section 212); *(2) for the implementation of a management program established under section 319;* *(3) for the development and implementation of a conservation and management plan under section 320;* *(4) for the construction, repair, or replacement of decentralized wastewater treatment systems that treat municipal wastewater or domestic sewage;* *(5) for measures to manage, reduce, treat, or recapture stormwater or subsurface drainage water;* *(6) to any municipality, intermunicipal, interstate, or state agency for measures to reduce the demand for publicly owned treatment works capacity through water conservation, efficiency, or reuse;* *(7) for the development and implementation of watershed projects meeting the criteria set forth in section 122;* *(8) to any municipality, intermunicipal, interstate, or state agency for measures to reduce the energy consumption needs for publicly owned treatment works;* *(9) for reusing or recycling wastewater, stormwater, or subsurface drainage water;* *(10) for measures to increase the security of publicly owned treatment works;* *(11) to any qualified nonprofit entity, as determined by the Administrator, to provide assistance to owners and operators of small and medium sized publicly owned treatment works;* *(A) to plan, develop, and obtain financing for eligible projects under this subsection, including planning, design, and associated preconstruction activities; and* *(B) to assist such treatment works in achieving compliance with this Act.* In addition, each state program may have its own statutes, rules, and regulations that guide project eligibilities. Within these parameters, each state program will determine what projects and borrowers are eligible to receive assistance. The twelve eligibilities allow CWSRFs to fund a variety of project types. Eligible projects exist under all of the following categories. This list is not meant to be exhaustive as it is possible that there are other eligible project types that are not listed here. • Centralized Wastewater Treatment • Energy Conservation • Water Conservation • Stormwater • Agricultural Best Management Practices • Decentralized Wastewater Treatment • Resource Extraction • Contaminated Sites • Landfills • Habitat Protection and Restoration • Silviculture

FINANCIAL RESOURCE	DESCRIPTION
	• Desalination • Groundwater Protection and Restoration • Surface Water Protection and Restoration • Planning/Assessment **Additional Information:** An overview of the CWSRF guideline for eligibilities are at: www.epa.gov/sites/production/files/2016-07/documents/overview_of_cwsrf_eligibilities_may_2016.pdf CWSRF Green Projects are at: www.epa.gov/cwsrf/green-project-reserve-guidance-clean-water-state-revolving-fund-cwsrf CWSRF Estuary Protection and Restoration information is at: www.epa.gov/cwsrf/clean-water-state-revolving-fund-cwsrf-estuary-protection-and-restoration Allotments by jurisdiction: www.epa.gov/cwsrf/clean-water-state-revolving-fund-cwsrf-allotments-federal-funds-states
Decentralized Wastewater Management Systems	Decentralized wastewater systems (septic or onsite systems) eligible for CWSRF funding include individual septic systems (conventional septic tank and drainfield), alternative systems (such as elevated sand mound), advanced systems (such as aerobic treatment units), and community cluster systems. These systems are used to collect, treat and disperse relatively small volumes of wastewater. Under federal statute, the upgrade and replacement of publicly and privately-owned decentralized systems is eligible for CWSRF assistance. Many states that cannot lend directly to private entities, such as homeowners, have had success with CWSRF pass-through loans or linked deposit loans. In a pass-through loan, the CWSRF program provides financing to a local government entity, which in turn provides loans or grants to homeowners or other entities. In a linked deposit arrangement, a state CWSRF program purchases a reduced-rate certificate of deposit from a private financial institution. The financial institution then loans out the deposited funds (at a below market interest rate) to individuals for smaller-scale water quality projects. Many states have used linked deposits to successfully fund projects such as septic replacements, agricultural best management practices, or environmentally-friendly forestry equipment. **Additional Information**: General information is at: www.epa.gov/septic EPA provides technical information on decentralized wastewater management systems at: www.epa.gov/septic/technical-resources-about-septic-systems

FINANCIAL RESOURCE	DESCRIPTION
	Information on types of Septic Systems is at: www.epa.gov/septic/types-septic-systems
Wetlands Program Development Grants	Wetlands Program Development Grants (WPDG) assist state, tribal, local government (S/T/LG) agencies and interstate/intertribal entities in building programs to protect, manage and restore wetlands. The WPDG give eligible applicants an opportunity to conduct projects that promote the coordination and acceleration of research, investigations, experiments, training, demonstrations, surveys, and studies relating to the causes, effects, extent, prevention, reduction, and elimination of water pollution. The goals of the EPA's wetland program include increasing the quantity and quality of wetlands in the U.S. by conserving and restoring wetland acreage and improving wetland condition. In pursuing these goals, the EPA seeks to develop the capacity of all levels of government to develop and refine effective, comprehensive programs for wetland protection and management. States, tribes, local governments, interstate associations, intertribal consortia, and national nonprofit, non-governmental organizations are eligible to apply. **Examples:** 1) American Samoa EPA used a wetland's grant to develop an ecosystem health index using water quality and coral reef monitoring protocols that can be used to assess the status of streams and coral reefs, pinpoint specific sources of degradation, and provide spatially-explicit threat models highlighting areas where these stressors occur. Main tasks include: development of a framework to assess ecosystem health, training workshops on field monitoring and analyses methods, field surveys of coral reef and watershed sites, and assessment of ecosystem health at the watershed level. 2) The University of Hawaii developed protocols to evaluate, rank and prioritize watersheds and coastal waters for protection and restoration in the Hawaiian Islands, and laid the groundwork for application of continuous digital mapping and interpretation of reef and watershed resources throughout Region 9 and in other EPA Regions. Further, they developed indices of biological integrity in relation to stressors along ecological gradients of anthropomorphic disturbance. The major tasks are: (1) coral reef field surveys and data processing, (2) watershed condition modeling, (3) reef condition modeling, and (4) prioritization of watersheds and coastal reefs. **Additional Information**: General information about this grant program is at: www.epa.gov/wetlands/wetland-program-development-grants-and-epa-wetlands-grant-coordinator Examples of projects funded in fiscal years 2017/2018 are at: www.epa.gov/sites/production/files/2018-01/documents/grantees_list_for_web_2017.pdf

FINANCIAL RESOURCE	DESCRIPTION
Five Star and Urban Waters Grant Program	The Five Star and Urban Waters Grant program seeks to establish nation-wide community stewardship of local natural resources, preserving these resources for future generations and enhancing habitat for local wildlife. The program focuses on the stewardship and restoration of coastal, wetland and riparian ecosystems across the country. This grant program is managed by the National Fish and Wildlife Foundation with funding provided by EPA, the US Forest Service, the US Fish and Wildlife Service (USFWS), other federal agencies and private sector partners. Projects include a variety of ecological improvements along with targeted community outreach, education and stewardship. Ecological improvements may include one or more of the following: wetlands, riparian, forest and coastal habitat restoration; wildlife conservation, community tree canopy enhancement, water quality monitoring and green infrastructure best management practices for managing run-off. **Example:** East Greynolds Park Mangrove Habitat Restoration (FL) Grantee: Miami Science Museum Miami Science Museum will restore 3.44 acres of degraded mangrove habitat critical to native fauna, including the endangered American crocodile and West Indian manatee, at Greynolds Park in Miami-Dade County. The grantee and project partners will engage 400 volunteers to restore natural ground elevation by removing large invasive plants and replanting native saltwater wetland plants, enhancing public green spaces and mitigating against coastal erosion. Project partners include Miami-Dade County, The Mission Continues, Overtown Youth Center, the Patricia and Phillip Frost Museum of Science, and Palmer Trinity School. **Additional Information:** www.nfwf.org/fivestar

FINANCIAL RESOURCE	DESCRIPTION
Nonpoint Source Management Grants (Section 319 Grants)	Nonpoint source management grants support states, territories, and tribes with a wide variety of activities including technical assistance, financial assistance, education, training, technology transfer, demonstration projects, and monitoring to assess the success of specific nonpoint source implementation projects, some of which include coastal wetland restoration projects. A state/territory/tribe's Nonpoint Source Management Program serves as the basis for how funds are spent. Watershed Coordinators should work with the 319 Grants Program Manager in their jurisdiction to understand how this funding may be available to support key watershed projects. **Example:** Bacteria from livestock enterprises, communities without sanitary systems, urban runoff, landfills and wastewater discharges contaminated Puerto Rico's Río Grande de Manatí sub-basin. As a result, the Environmental Quality Board (EQB) listed the Río Grande de Manatí's sub-basin on Puerto Rico's 2002 Clean Water Act (CWA) section 303(d) list of impaired waters. Using 319 funds and funds from other sources, the EQB acted. Because of community outreach and education projects, implementation of the Animal Waste Management Plan, and key enforcement actions, EQB found that water quality had significantly improved. More information on this project is at: www.epa.gov/sites/production/files/2015-10/documents/pr_riogrande.pdf **Additional Information:** General information is at: www.epa.gov/nps/319 Watershed planning resources are at: www.epa.gov/nps/watershedplan Find Nonpoint Source Success Stories at: www.epa.gov/nps/success
Water Finance Clearinghouse	The Water Finance Clearinghouse is an easily navigable web-based portal to help jurisdictions locate information and resources that will assist them in making informed decisions for their drinking water, wastewater, and storm water infrastructure needs. The Water Finance Clearinghouse includes two searchable databases: one contains available funding sources for water infrastructure and the second contains resources (such as reports, web links, webinars) on financing mechanisms and approaches that can help communities access capital to meet their water infrastructure needs. **Additional Information:** https://ofmpub.epa.gov/apex/wfc/f?p=165:1:13416684299303:::::

FINANCIAL RESOURCE	DESCRIPTION
Water Pollution Control Grants and Monitoring Initiative Grants under Section 106 of the CWA	Section 106 of the CWA authorizes the EPA to provide federal assistance to states (including territories and the District of Columbia), tribes qualified under CWA Section 518(e), and interstate agencies to establish and maintain adequate measures for the prevention and control of surface and groundwater pollution from point and nonpoint sources. Prevention and control activities supported through these grants include providing permits, ambient water quality monitoring and assessment, water quality standards development, Total Maximum Daily Load (TMDL) development, surveillance and enforcement, water quality planning, advice and assistance to local agencies, training, and public information. Section 106 grants also may be used to provide "in-kind" support through an EPA contract, if requested by a state or tribe. Each year EPA provides additional Section 106 funding to states, tribes, eligible interstate agencies, the District of Columbia and US Trust Territories to enhance and expand ambient water quality monitoring programs and implement a multi-year statistically valid survey of the conditions of the nation's waters to track changes over time. Territories can use these funds to enhance their monitoring program activities and conduct statistically valid surveys of their water resources. **Additional Information:** General information about water pollution grants is at: http://www.epa.gov/water-pollution-control-section-106-grants Specific information about Monitoring Initiative Grants under Section 106, CWA is at: www.epa.gov/water-pollution-control-section-106-grants/monitoring-initiative-grants-under-section-106-clean#addguidlines

Technical Resources

TECHNICAL RESOURCE	DESCRIPTION
404 Discharge and Fill Program (Corals are considered "Special Aquatic Sites")	Section 404 of the CWA established a program to regulate the discharge of dredged and fill material into waters of the United States, including marine waters that are home to coral reefs, a "special aquatic site". EPA and the U.S. Army Corps of Engineers (ACOE) jointly administer the Section 404 program. The ACOE administers the day-to-day program, including the Section 404 permit decisions. EPA has the responsibility for the development and interpretation of environmental criteria (CWA Section 404(b)(1) Guidelines) to be used by the ACOE in evaluating Section 404 permit applications. Executive Order 13089 (E.O. 13089) on Coral Reef Protection, signed on June 11, 1998, recognizes the significant ecological, social, and economic values provided by the Nation's coral reefs and the critical need to ensure that Federal agencies are implementing their authorities to protect these valuable ecosystems. E.O. 13089 directs Federal agencies, including the EPA and the ACOE, whose actions may affect U.S. coral reef ecosystems, to take the following steps: 1. Identify their actions that may affect U.S. coral reef ecosystems; 2. Utilize their programs and authorities to protect and enhance the conditions of such ecosystems; and 3. To the extent permitted by law, ensure that any actions they authorize, fund, or carry out will not degrade the conditions of such ecosystem **Additional Information:** www.epa.gov/cwa-404/memorandum-field-special-emphasis-given-coral-reef-protection-under-clean-water-act-marine
A Practitioner' Guide to the Biological Condition Gradient: A Framework to Describe Incremental Change in Aquatic Ecosystems	The Biological Condition Gradient (BCG) is a conceptual, scientific framework for interpreting biological response to anthropogenic stress. The framework is based on common patterns of biological response to stressors that have been observed by aquatic scientists across the United States. It supports consistent interpretation of biological condition regardless of the methods used to collect or analyze the data, the type of waterbody being assessed, or the location of the waterbody. The conceptual framework can be calibrated into a numeric model for an aquatic system by using expert knowledge to build decision-rules and thresholds that are reflective of the system being assessed. These decision-rules and thresholds are then used to assign sites to a level of condition, ranging from 1 (undisturbed or natural) to 6 (highly degraded). In conjunction with other environmental data and information, the BCG can be used to: • Determine and communicate the current existing environmental conditions relative to natural, undisturbed conditions.

TECHNICAL RESOURCE	DESCRIPTION
	• Describe what environmental conditions are attainable either through protection or restoration. Plan how to achieve these goals for protection or restoration by tracking incremental changes in condition and assessing trends due to management actions. • Communicate what is biologically predicted to be gained, or lost, with different management decisions. The BCG can be applied to all waterbody types. A quantitative BCG is being developed for coral reef ecosystems in the nearshore waters of Puerto Rico and U.S. Virgin Islands. **Additional information:** General information is at: www.epa.gov/wqc/practitioners-guide-biological-condition-gradient-framework-describe-incremental-change-aquatic. Technical assistance for coral reefs is at: www.epa.gov/wqc/biological-assessment-technical-assistance-documents-states-tribes-and-territories#coralreefs
2010 Coral Reefs Biological Criteria: Using the Clean Water Act to Protect a National Treasure	The document, *2010 Coral Reefs Biological Criteria: Using the Clean Water Act to Protect a National Treasure* provides assistance to coral reef managers on how to use the Clean Water Act and coral reef biological criteria as part of a comprehensive framework to organize their protection efforts. **Additional information:** The coral reef biological criteria guide is at: www.epa.gov/wqc/coral-reef-biological-criteria-using-clean-water-act-protect-national-treasure. Field Manual for Coral Reef Assessments is at: https://cfpub.epa.gov/si/si_public_record_report.cfm?Lab=NHEERL&dirEntryId=233225
Coastal Nonpoint Pollution Control Program	The Coastal Nonpoint Pollution Control Program seeks to address nonpoint pollution problems in coastal waters. Coastal Zone Management Act (CZMA) Section 6217 requires states and territories with approved Coastal Zone Management Programs to develop Coastal Nonpoint Pollution Control Programs. Each state or territory must implement pollution control measures, known as management measures, across its coastal nonpoint management area for all categories of nonpoint source pollution (e.g., agriculture, forestry, marinas, urban and hydromodification). This program is administered by the states, subject to federal approval and oversight by EPA and the NOAA. **Additional Information:** General information about EPA's NPS program is at: www.epa.gov/nps General information on the CZM program is at: www.epa.gov/nps/coastal-zone-act-reauthorization-amendments-czara-section-6217 Guidance specifying management measures and tools for addressing sources of nonpoint

TECHNICAL RESOURCE	DESCRIPTION
	pollution in coastal waters is at. www.epa.gov/nps/guidance-specifying-management-measures-sources-nonpoint-pollution-coastal-waters
Coastal Wetlands Initiative	The Coastal Wetlands Initiative was established by the EPA in response to the loss of wetland acreage in coastal watersheds identified by the U.S. Fish & Wildlife Service and the National Oceanic and Atmospheric Administration's National Marine Fisheries Service and document in the report, "Status & Trends of Wetlands in the Coastal Watersheds of the Eastern United States." Coastal wetlands in the eastern United States were lost at an average rate of 59,000 acres per year between 1998 and 2004, and 80,000 acres per year between 2004 and 2009. The initiative addresses the need to enhance conservation of coastal wetlands. The Interagency Coastal Wetlands Working Group, chaired by the EPA and also includes the ACOE, U.S. FWS, U.S. Geological Survey (USGS), NOAA, U.S. Department of Agriculture (USDOA), and U.S. Department of Transportation (USDOT), conducted a series of pilot studies in four coastal watersheds across the country-San Francisco, CA; Galveston, TX; Cape Fear, NC; and Tampa, FL—for the time period of approximately 1996-2010. Using geospatial information from NOAA, Coastal Change Analysis Program (C-CAP), the US FWS' National Wetlands Inventory (NWI) Program, and Google Earth, as well as ACOE' permitting data, and interviews with local-area staff, a deeper understanding of the factors behind coastal wetland loss has been gained. Three main drivers of wetland loss in these watersheds were identified: 1) rapid development, both urban and suburban; 2) some drainage practices that are associated with silviculture; and 3) insufficient restored wetland acres to offset wetland acres lost in coastal watersheds. **Additional Information:** General information on the initiative is at: www.epa.gov/wetlands/coastal-wetlands Coastal wetland loss, pilot study results are at: www.epa.gov/sites/production/files/2017-07/documents/wetlands_loss_analysis_july_2017.pdf
Green Infrastructure	Green infrastructure refers to the range of measures that use plant or soil systems, permeable pavement or other permeable surfaces or substrates, stormwater harvest and use, or landscaping to store, infiltrate, or evapotranspiration stormwater and reduce flows to sewer systems or to surface waters. These methods preserve natural systems and use engineered systems such as green roofs, rain gardens, and vegetated swales to mimic natural functions. Green infrastructure includes approaches that capture and use storm water. Green infrastructure can be applied to new development, redevelopment, or as retrofits to existing development and has been adapted to a range of land uses from ultra-urban settings to more rural settings. The Green Infrastructure Program provides a variety of resources focused on outreach, technical assistance and funding resources.

TECHNICAL RESOURCE	DESCRIPTION
	Example: A collaborative process involving multiple community-based meetings and a final report established customized green infrastructure design solutions for six neighborhood water plazas along the Caño Martín Peña in San Jose, Puerto Rico. The recommended practices include rain gardens, retention ponds, and permeable pavement integrated with pedestrian modes of transportation to reduce runoff and flooding risk while enhancing the aesthetic appeal of the neighborhood. These place-based design solutions help communities implement green infrastructure techniques and strengthen local and regional capacity and opportunities for meeting their community safety, clean water, and economic goals. **Additional Information:** General Information at the following links: www.epa.gov/green-infrastructure www.epa.gov/green-infrastructure/policy-guides www.epa.gov/sustainability/giwiz www.epa.gov/soakuptherain www.epa.gov/sites/production/files/2015-10/documents/chesbay_chap03.pdf www.epa.gov/nps/urban-runoff-low-impact-development www.epa.gov/water-research/national-stormwater-calculator www.epa.gov/water-innovation-tech/innovations-green-infrastructure-stormwater-community-planning-and-design
Environmental Reviews under the National Environmental Policy Act	The National Environmental Policy Act (NEPA) requires EPA to review and assess environmental information related to federally funded grants or projects, including any public review, and to make a determination of a categorical exclusion (CATEX), or the development of an environmental assessment/finding of no significant impact (EA/FONSI), or an environmental impact statement/record of decision (EIS/ROD). If a project does not qualify for a CATEX, NEPA requires EPA to prepare an EA or EIS. EPA provides technical staff and resources to conduct NEPA reviews to identify, analyze and mitigate direct and indirect impacts to coral reefs. NEPA compliance and federal cross-cutter review resources and training materials are provided in the web links below and can assist with both reviewing and preparing an EAs or an EIS. One key component under NEPA is to collaborate early with local, state, and other federal and territory agencies as well as the public, which can help with minimizing the potential environmental impacts to coral reefs. Below are some examples of potential coral reef direct/indirect impacts from federal actions: • Natural stormwater runoff points and non-point sources in watersheds that drain into coastal waters; • New construction of wastewater and stormwater infrastructure, existing system improvements and “new source” discharges; • Marine related vessel operations; • Aquaculture activities and “new source” operations; • Dredging activities for harbor deepening/widening;

TECHNICAL RESOURCE	DESCRIPTION
	• Constructing off-shore terminals for natural gas storage and delivery systems; • Municipal, industrial, and construction stormwater sites; and • Landfill and leachate/stormwater detention basin operations. **Additional Information:** EPA Compliance with the National Policy Act is at: www.epa.gov/nepa/epa-compliance-national-environmental-policy-act Federal Cross-cutter Authorities are at: www.epa.gov/sites/production/files/2015-08/documents/crosscutterhandbook.pdf NEP Assist Tool that Facilitates the Environmental Review Process is at: www.epa.gov/nepa/nepassist
Handbook on Coral Reef Impacts: Avoidance, Minimization, Compensatory Mitigation, and Restoration	This Handbook provides a general summary of current avoidance, minimization, compensatory mitigation, and restoration strategies that may help address physical damage resulting from direct adverse impacts to coral reefs (e.g., dredging, placement of fill, vessel groundings, or accidental discharges like oil spills) and indirect adverse impacts to coral reefs (e.g., beach nourishment, sedimentation from poor land use practices, sedimentation from dredging or vessel movement, or storm water contaminants). EPA co-led development of this document in collaboration with members of the USCRTF. The Handbook provides users the following: • a review of the federal authorities, existing policies, and federal agency, state and territory roles and responsibility; • a compendium of current best practices, science-based methodologies for quantifying ecosystem functions or services; • general overview of basic protocols available for use when assessing impacts to coral reef ecosystems, and mitigation or restoring for unavoidable impacts to coral reef ecosystems, including the use of appropriate compensatory action to replace the lost functions and services. **Additional Information:** https://data.nodc.noaa.gov/coris/library/NOAA/CRCP/other/USCRTF/mitigation_handbook_final_122216.pdf The USCRTF, Mitigation Working Group has other documents that coral reef managers will find helpful at: https://www.coralreef.gov/mitigation/
No-Discharge Zones for Sewage from Vessels	Under section 312 of the CWA, vessel sewage may be controlled through the establishment of areas in which discharges of sewage from vessels are not allowed. These areas are also known as "no-discharge zones" (NDZs). A NDZ is an area in which both treated and untreated sewage discharges from vessels are prohibited. Within NDZ boundaries, vessel operators are required to retain their sewage

TECHNICAL RESOURCE	DESCRIPTION
	discharges onboard for discharge at sea (generally beyond three miles from shore) or onshore at a pump-out facility. **Additional Information:** www.epa.gov/vessels-marinas-and-ports/vessel-sewage-discharges-no-discharge-zones-ndzs
National Pollutant Discharge Elimination System Permits	Section 402 of the Clean Water Act prohibits anybody from discharging "pollutants" through a "point source" into a "water of the United States" unless they have a National Pollutant Discharge Elimination System (NPDES) permit. The permit will contain limits on what you can discharge, monitoring and reporting requirements, and other provisions to ensure that the discharge does not hurt water quality or people's health. The permit translates general requirements of the Clean Water Act into specific provisions tailored to the operations of each person discharging pollutants. Federal laws provide EPA and authorized state regulatory agencies with various methods of taking enforcement actions against violators of permit requirements. For example, EPA and state regulatory agencies may issue administrative orders which require facilities to correct violations and that assess monetary penalties. The laws also allow EPA and state agencies to pursue civil and criminal actions that may include mandatory injunctions or penalties, as well as jail sentences for persons found willfully violating requirements and endangering the health and welfare of the public or environment. EPA is the NPDES permitting authority in coral reef Jurisdictions including: America Samoa, Guam, Commonwealth of Northern Mariana Islands and Puerto Rico. Additional Information: www.epa.gov/npdes/npdes-permit-basics
Nutrient Pollution	Nutrient pollution is one of America's most widespread, costly and challenging environmental problems, and is caused by excess nitrogen and phosphorus in the air and water. Numeric nutrient criteria are a critical tool for protecting and restoring a waterbody's designated uses related to nitrogen and phosphorus pollution. These criteria enable effective monitoring of a waterbody for attaining its designated uses; facilitate formulation of NPDES discharge permits; and simplify development of TMDL for restoring waters not attaining their designated uses (i.e., impaired waters). The interactive maps and tables describe progress states are making towards the development of numeric nutrient criteria, the criteria they have developed, and specific details about CWA adopted criteria, including values and parameters. EPA has supported the use of water quality trading, offsets and similar programs for achieving compliance with the regulatory requirements of the CWA for many years. In partnership with stakeholders and other federal agencies, EPA has renewed this effort to leverage emerging technologies and facilitate broader adoption of market-based programs in the near-term.

TECHNICAL RESOURCE	DESCRIPTION
	Additional Information: Information on numeric nutrient water quality criteria is at: www.epa.gov/nutrient-policy-data/state-progress-toward-developing-numeric-nutrient-water-quality-criteria The basics about nutrient pollution is at: www.epa.gov/nutrientpollution www.epa.gov/nutrient-policy-data/collaborative-approaches-reducing-excess-nutrients
Ocean Dumping Management Program	The Marine Protection, Research, and Sanctuaries Act (MPRSA), also known as the Ocean Dumping Act, regulates the disposition of any material into the ocean, unless expressly excluded under the MPRSA. Section 101 of the MPRSA generally prohibits the transportation of any material for the purpose of dumping, unless authorized by permit. The MPRSA prohibits or restricts ocean dumping (primarily in terms of material type, amount, and location) that would adversely affect human health, welfare, or amenities, the marine environment, ecological systems, or economic potentialities. In the United States, the MPRSA implements the requirements of the London Convention, an international treaty of global application to protect the marine environment from pollution caused by the dumping of wastes or other matter into the ocean. Under the MPRSA, EPA is responsible for establishing criteria for reviewing and evaluating permit applications. EPA is responsible for issuing ocean dumping permits for materials other than dredged material. In the case of dredged material, the ACOE is responsible for issuing ocean dumping permits, using EPA's environmental criteria. Permits for ocean dumping of dredged material are subject to EPA review and written concurrence. EPA is also responsible for designating and managing ocean disposal sites for all types of materials. EPA designates ocean disposal sites through rulemaking and sites are published at 40 CFR 228. EPA bases the designation of an ocean disposal site on environmental studies of a proposed site, environmental studies of regions adjacent to the site, and historical knowledge of the impact of disposal on areas similar to the sites in physical, chemical and biological characteristics. EPA must consider the ocean disposal criteria published in the 40 CFR 228.5 and 228.6 when selecting a site for designation. In general, sites are selected in areas where disposal will not have a significant impact on various amenities such as fisheries, coral reefs, endangered species, or other legitimate uses of the ocean. EPA analyzes these impacts through environmental assessments or environmental impact statements for site designations. EPA and the ACOE together develop site management and monitoring plans for each designated ocean dredged material disposal site. EPA's Ocean Dumping Management Program, often in coordination with the ACOE, conducts oceanographic surveys at these ocean disposal sites to evaluate environmental conditions at the site and to determine what management actions may be needed.

TECHNICAL RESOURCE	DESCRIPTION
	In the MPRSA permitting, site designation and site management processes, EPA carefully considers potential impacts to corals from proposed ocean dumping and strives to take all possible precautions to protect these valuable areas in all regulatory decisions. **Additional Information:** EPA Ocean Dumping Management Program information is at: www.epa.gov/ocean-dumping
Water Quality Standards Academy	To support water quality standards development, EPA offers the Water Quality Standards Academy (WQSA) which presents classroom-based and online courses, along with occasional webinars. Key concept modules are designed to prepare you for the five-day Live Academy and are designed for persons with some familiarity with water quality standards. People with more experience in this subject matter may benefit from taking the online course as refresher training. These topics are covered in further detail in the Classroom WQSA. **Additional Information:** The Water Quality Standards Academy information is at: www.epa.gov/wqs-tech/water-quality-standards-academy
Watershed Academy	The Watershed Academy is a focal point in the Office of Water for promoting watershed approaches. For more than 20 years, the Academy has provided tools and information on watershed management to EPA staff and other federal, state, and local officials as well as private practitioners of watershed management. The Academy continues to develop live training courses, web-based training and webcasts for our partners. **Additional Information:** www.epa.gov/watershedacademy/
Water Quality Monitoring and Reporting	EPA has a variety of options for states and jurisdictions to access information on water quality monitoring: 1) EPA developed fact sheets that help states and other jurisdictions assess and report on water quality conditions. These fact sheets and other information about water quality monitoring, sample design and data management can be found at: www.epa.gov/waterdata/assessing-and-reporting-water-quality-questions-and-answers#1 2) The Water Quality Exchange (WQE) is the mechanism for data partners to submit water monitoring data to EPA. In addition to the WQE, EPA supports the Water Quality Portal, a warehouse where USGS, USDA, EPA, states, territories, tribes, and many other groups publish water quality monitoring data to be reused for water quality research and decision making. The WQX is at: www.epa.gov/waterdata/water-quality-data-wqx. To download and retrieve data,

TECHNICAL RESOURCE	DESCRIPTION
	go to the Water Quality Portal at: www.waterqualitydata.us/portal/. 3) EPA's tool, *Online Water Quality Monitoring* (OWQM) is also available. OWQM uses online instruments for real-time measurement of water quality in source waters and/or distribution systems. OWQM can help utilities optimize treatment processes, improve distribution system operations, and detect contamination incidents. Such resources can be used to design and implement an OWQM system. More information is at: www.epa.gov/waterqualitysurveillance/online-water-quality-monitoring-resources **Additional Information:** Publications by the National Water Quality Council are at: www.acwi.gov/monitoring/pubs/

Tools

TOOL	DESCRIPTION
Adaptation Design Tool	Natural resource managers have communicated a need for methods and tools for effective adaptation of ecosystem-based management activities in the context of climate change. In response to calls for practical support in this area, EPA led an inter-agency team, along with members of the USCRTF, to develop an Adaptation Design Tool that uses a structured approach to break down the adaptation process into tractable steps. The tool guides users through a series of design considerations to (1) adjust their currently-planned management actions to be more climate-smart and (2) brainstorm and craft additional adaptation actions to address remaining vulnerabilities. Developed with partners in Hawai'i and Puerto Rico, the tool and associated reference materials consist of worksheets and instructions as well as an on-line, interactive training module. Expert consultations with stakeholders have produced lessons learned and tool improvements to maximize efficiency, gain the greatest value from the thought process, and deal with issues of scale and uncertainty. While initially created for coral reefs, the tool is also fully transferable to other natural resource systems and sectors. The Adaptation Design Tool advances the practice of assessment and decision-making science, informs higher level strategic planning, and serves as a platform for systematic, transparent and inclusive thought processes to tackle the practical implications of climate change for ecosystem-based management. **Additional Information:** Online training (hosted on TNC Reef Resilience website) is at: https://www.conservationtraining.org/enrol/index.php?id=52 User guide (2017) is at: www.epa.gov/coral-reefs/what-epa-doing-protect-coral-reefs Journal articles on climate-smart design and tool development and testing are at: www.link.springer.com/article/10.1007/s00267-016-0774-3 www.link.springer.com/article/10.1007/s00267-018-1065-y
Assessment and Total Maximum Daily Load and Implementation System	The Clean Water Act requires states, territories, and authorized tribes to monitor water pollution and report to EPA every two years on the waters they have evaluated. This process is called assessment. Part of this process is deciding which waters do not meet water quality standards because they are too polluted. These degraded waters are called impaired (polluted enough to require action) and are placed on a list for future actions to reduce pollution. This information reported to EPA is available in the Assessment and Total Maximum Daily Load and Implementation System (ATTAINS). The ATTAINS web reports provide users with easy access to view the information on the status of waters at the national, state, territory, tribe, and site-specific waterbody levels. **Additional Information:** www.epa.gov/waterdata/attains

TOOL	DESCRIPTION
Climate Ready Estuaries	The Climate Ready Estuaries (CRE) program works with the National Estuary Programs (NEPs) and the coastal management community to assess climate change vulnerabilities, develop and implement adaptation strategies, and engage and educate stakeholders. CRE shares NEP examples to help other coastal managers and provides technical guidance and assistance about climate change adaptation. Risk-Based Tools *Being Prepared for Climate Change* workbook provides much needed guidance for conducting risk-based climate change vulnerability assessments and developing adaptation action plans. It is an ideal tool for organizations that manage places, watersheds, or coastal environments. **Additional Information:** Risk based tool: https://www.epa.gov/cre/risk-based-adaptation General information about CRD is at: www.epa.gov/cre Sea level rise information is at: www.epa.gov/cre/sea-level-rise King Tides and Climate Change information is at: www.epa.gov/cre/king-tides-and-climate-change#what Coastal Adaptation Toolkit is at: www.epa.gov/cre/coastal-adaptation-toolkit
EJSCREEN: Environmental Justice Screening and Mapping Tool	EJSCREEN is an environmental justice mapping and screening tool that provides a nationally consistent dataset and approach for combining environmental and demographic indicators. EJSCREEN allows users to access high-resolution environmental and demographic information for locations in the United States and compare their selected locations to the rest of the state, EPA region, or the nation. The tool may help users identify areas with: • minority and/or low-income populations • potential environmental quality issues • a combination of environmental and demographic indicators that is greater than usual • other factors that may be of interest. EJSCREEN may also be used to support activities such as: • education programs • grant writing • community awareness efforts **Additional Information:** www.epa.gov/ejscreen

TOOL	DESCRIPTION
EPA Guidance for Developing Fish Advisories	In addition to developing information for the public on fish and shellfish consumption, EPA publishes a variety of guidance documents to help state, territorial, and tribal environmental health officials develop fish advisories and safe eating guidelines for fish caught in marine and inland waters. **Additional Information:** www.epa.gov/fish-tech/epa-guidance-developing-fish-advisories#national
Healthy Watersheds – Recovery Potential Screening Tool	Monitoring under the Clean Water Act has identified tens of thousands of polluted US water bodies that need restoration. Many healthy waters without watershed protection strategies are also at risk of becoming degraded. The Recovery Potential Screening (RPS) tool is a systematic, Excel-based comparative method for identifying differences among watersheds (or watershed-based, hydrologic units such as HUC12s) that may influence their relative likelihood to be successfully restored, protected or managed in other ways. RPS tools are available and downloadable for all of the US states and territories. Each tool is pre-loaded with a library of watershed indicators and can be customized with user data to further explore priority watersheds for coral reef protection. Since 2004, RPS users have included over 37 state water quality programs, US Trust Territories, local watershed groups, river basin managers (US and international), tribes, and federal environmental agencies. **Additional Information:** • General information about the RPS is at: www.epa.gov/rps • The Recovery Potential Screening Tool-Screening for Land-Based Sources of Pollution that Stress Coral Reefs o The purpose of The Recovery Potential Screening Tool-Screening for Land-Based Sources of Pollution that Stress Coral Reefs is to illustrate how the Recovery Potential Screening (RPS) Tool can be set up to evaluate and compare watersheds for sediment and nutrient runoff into coral reef ecosystems. This document helps set up the tool, select appropriate indicators for evaluating where conditions promote the likelihood of sediment and nutrient runoff, and interpret the outputs for purposes of prioritizing management activities. • The state specific RSP tool is at: www.epa.gov/wsio/state-specific-recovery-potential-screening-rps-tools
How's My Waterway	How's My Waterway is a web application designed to provide the general public with information about the condition of their local waters based on data that states, federal, tribal, local agencies and others have provided to EPA. The sources of this information are an EPA database of state water quality monitoring reports provided under the Clean Water Act.

TOOL	DESCRIPTION
	Additional Information: The tool, "How's My Waterway" is at: https://mywaterway.epa.gov/ Background information on How's My Waterway is at: www.watersgeo.epa.gov/mywaterway/docs/HMWFactSheet.pdf
National Aquatic Resource Surveys/ National Coastal Condition Assessment	The National Aquatic Resource Surveys (NARS) are made up of four individual surveys that are implemented on a rotating basis: 1) The National Coastal Condition Assessment (NCCA) is a coastal estuary and Great Lakes nearshore waters monitoring program designed to produce national and regional estimates of coastal condition, based upon biological condition, and indices of eutrophication status, sediment quality and ecological fish tissue contamination. 2) The National Lakes Assessment (NLA) surveys the condition of our nation's lakes, ponds, and reservoirs. It is designed to provide information on the extent of lakes that support healthy biological condition and recreation, estimate how widespread major stressors are that impact lake quality, and provide insight into whether lakes are getting cleaner nationwide. 3) The National Rivers and Streams Assessment (NRSA) provides information on the ecological condition of the nation's rivers and streams and the key stressors that affect them, both on a national and an ecoregional scale. 4) The National Wetland Condition Assessment (NWCA) examines the chemical, physical and biological integrity of wetlands through a set of commonly used and widely accepted indicators. **Additional Information:** Find most of the information you need on NARS and the NCCA at: www.epa.gov/national-aquatic-resource-surveys/background-national-aquatic-resource-surveys National Coastal Condition Reports are at: www.epa.gov/national-aquatic-resource-surveys/national-coastal-condition-reports
Nutrient Management Tools and the Water Quality Analysis Simulation Program	EPA maintains numerous tools to assist states and tribes and developing numeric nutrient criteria. Some of these tools are featured below. 1) The *Toolkit of Resources to Assist States with Adopting and Implementing Numeric Nutrient Criteria* presents states, territories, and tribes with the resources to address: criteria and standards development, water quality monitoring, assessment, reporting, and planning, permitting, Water Quality-Based Effluent Limits (WQBELs), and trading, economics and financing, and communications materials. https://www.epa.gov/nutrient-policy-data/toolkit-resources-assist-states-adopting-and-implementing-numeric-nutrient

TOOL	DESCRIPTION
	2) The *Nitrogen and Phosphorus Data Access Tool* (NPDAT) supports states, other partners, and stakeholders in their nitrogen and phosphorus analyses by providing downloadable data layers and key information. https://www.epa.gov/waterdata/epa-nitrogen-and-phosphorus-pollution-data-access-tool#:~:text=The%20EPA%20Nitrogen%20and%20Phosphorus,viewer%20and%20data%20download%20tables. 3) *Causal Analysis/Diagnosis Decision Information System* (CADDIS) is an application to help scientists systematically evaluate the causes of harm to plants and animals in aquatic habitats. CADDIS provides basic information on eight common causes of biological impairment including excess nutrients. The tool enables states to pinpoint causes of impairment and target remedial action. Information is at: https://www.epa.gov/caddis 4) *Water Quality Analysis Simulation Program* (WASP) is a model that helps users interpret and predict water quality responses to natural phenomena and man-made pollution. WASP has been used to examine conditions of many water bodies for excess nitrogen and phosphorus loading. Information on WASP is at: https://www.epa.gov/ceam/water-quality-analysis-simulation-program-wasp
Plastics and Other Marine Debris	EPA's Trash Free Waters program (TFW) aims to reduce and prevent trash from entering U.S. waters and the ocean. The environmental problem of trash in water has become an issue of global importance. Trash is a pervasive pollutant in oceans, along coasts, and throughout inland watersheds, causing aesthetic blight, ecological impacts, and public health risks. The costs of dealing with aquatic trash, in terms of clean-up and impacts on local economies, are severe. Trash in water causes direct impacts on animal life via strangulation, ingestion, or other physical harm. Plastic trash does not degrade but rather breaks into small particles called microplastics, which are widely distributed in surface waters and sediments. Microplastics can convey persistent, bio-accumulative, and toxic chemicals in the aquatic environment. There is growing concern about the potential for micro-plastics and associated toxic chemicals to impact human health as they move through the food web. TFW plays a unique role in helping states, municipalities, businesses, non-governmental organizations, and concerned citizens work together to explore more effective ways to reduce the amount of litter and packaging waste that enters the water. TFW supports and brings together stakeholders to help identify collective actions in communities that enhance trash prevention. The Trash Free Waters program has four focus areas: research, international, public-private partnerships and regional strategies to support state and community trash prevention programs. Through a holistic and strategic national approach with a place-based trash prevention focus, TFW hopes to collaboratively problem-solve the critical issue of trash in waterways.

TOOL	DESCRIPTION
	Additional Information: Case studies in prevention, control and reduction of marine debris, including removal of abandoned and derelict vessels can be found at: https://www.epa.gov/trash-free-waters/science-case-studies General information about EPA's Trash Free Waters Program is at: www.epa.gov/trash-free-waters
Tools to Evaluate and Manage Beach Health	The resources below help state and local officials to monitor beach health and to make decisions about when to issue an advisory or close beach due to unsafe environmental conditions. • Beach Sanitary Surveys: EPA has developed routine (e.g., daily, weekly) and annual sanitary surveys for marine and freshwater beaches to help beach managers and public health officials identify sources of beach water pollution, assess the magnitude of pollution, and identify priority locations for water testing. www.epa.gov/beach-tech/beach-sanitary-surveys • Beach monitoring and notification grants: This program provides more than $9 million annually in grants to eligible states, territories, tribes, and local governments to protect beachgoers from contaminated water at coastal beaches, including the Great Lakes. Grant funds are used to develop and implement programs to monitor bacteria levels in the water and notify the public when conditions may be unsafe for swimming. www.epa.gov/beach-tech/beach-grants. • EPA provides technical resources about beaches. Those resources include a Beach Advisory and Closing On-line Notification (BEACON) database that provides longer-term data on beach water quality and beach advisories and closures for coastal recreation waters and the Great Lakes. Current advisory information can be obtained by contacting beach program contacts at: www.epa.gov/beaches/state-territorial-tribal-and-epa-beach-program-contacts. Technical resources are at: www.epa.gov/beach-tech. • Laws and enforcement information that protects our oceans can be found at: www.epa.gov/beach-tech/laws-protect-our-oceans www.epa.gov/enforcement/water-enforcement www.epa.gov/compliance/clean-water-act-cwa-compliance-monitoring • Recreational Water Quality Criteria: EPA issued its current ambient water quality criteria recommendations for recreational waters in 2012 reflecting the latest scientific knowledge, public comments, and external peer review. The criteria are designed to protect the public from exposure to harmful levels of pathogens while participating in water-contact activities such as swimming, wading, and surfing in all water bodies designated for such recreational uses. www.epa.gov/wqc/2012-recreational-water-quality-criteria

TOOL	DESCRIPTION
Urban Waters Learning Network	The Urban Waters Learning Network is a peer-to-peer Learning Network of people and organizations that share practical on-the-ground experience to improve urban waterways and revitalize the neighborhoods around them. The Network offers technical webinars, a resource tool box, and an opportunity to post questions to experts to resolve water protection and restoration issues. The Network is sponsored by EPA but managed by two non-profit organizations, River Network and Groundwork USA. You don't need to be working in a major urban area to benefit from the resources provided by the Network. To join, go to: http://www.urbanwaterslearningnetwork.org/join/ Additional Information: www.urbanwaterslearningnetwork.org/
WATERS GeoViewer	The WATERS GeoViewer tool is an EPA GeoPlatform based web mapping application that provides access to: • Spatial data sets stored in WATERS, such as National Hydrography Dataset Plus (NHDPlus), EPA and Non-EPA Linked Data. • Watershed level reports containing both NHDPlus and Stream-Catchment dataset (StreamCat) information. • Linked Data information, along with hyperlinks to web reports containing additional attribute information. • Interactive Upstream / Downstream Search capabilities supporting Linked Data discovery. • Interactive Watershed Delineation. • Underlying EPA GeoPlatform items that can be used to create other mapping applications.

Key Acronyms

ACOE	Army Corps of Engineers
ATTAINS	Assessment and Total Maximum Daily Load and Implementation System
BCG	Biological Condition Gradient
BEACON	Beach Advisory and Closing On-line NotiCfication
C-CAP	Coastal Change Analysis Program
CRE	Climate Ready Estuaries
CWA	Clean Water Act
CWSRF	Clean Water State Revolving Fund
CZMA	Coastal Zone Management Act
DOI	Department of Interior
EA	Environmental Assessment
EIS	Environmental Impact Statement
HMW	How's My Waterway
MPRSA	Marine Protection, Research, and Sanctuaries Act
NARS	National Aquatic Resource Surveys
NDZ	No Discharge Zone
NEP	National Estuary Programs
NEPA	National Environmental Policy Act
NHDPlus	National Hydrography Dataset Plus
NOAA	National Ocean and Atmospheric Administration
NPDES	National Pollutant Discharge Elimination System
NWI	National Wetlands Inventory
RPT	Recovery Potential Screening
StreamCat	Stream-Catchment dataset
TFW	Trash Free Waters
TMDL	Total Maximum Daily Load
USDA	U.S. Department of Agriculture
USDOT	U.S. Department of Transportation
USCRTF	U.S. Coral Reef Task Force
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
WPDG	Wetlands Program Development Grants
WASP	Water Quality Analysis Simulation Program
WQSA	Water Quality Standards Academy
WQX	Water Quality eXchange

EPA Contacts

Regional Offices: States, territories, and freely associate states are encouraged to contact their EPA Regional representative directly.

Region 2 (**Puerto Rico, US Virgin Islands,** New York, New Jersey)
David Cuevas, 787-997-5856
Izabela Wojtenko, 212-637-3814

Region 4 (**Florida,** Georgia, Alabama, Mississippi, Kentucky, North and South Carolina, Tennessee)
Steve Blackburn, 404-562-9397

Region 6 (**Texas, Louisiana,** New Mexico, Oklahoma, Arkansas)
Michael Daniel, 214-665-8374

Region 9 (**Hawaii, American Samoa, Guam, Northern Marianas Islands**, Nevada, California, Arizona)
Hudson Slay, 808-541-2717
John McCarroll, 415-972-3774

Headquarters: EPA Headquarters' role is to represent EPA on the US Coral Reef Task Force, develop policy and coordinate efforts nationally.

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** Note, bolded states/jurisdictions have coral reefs off their coasts that are the focus of the US Coral Reef Task Force.