# Maryland
# Coastal Management Program
# Assessment and Strategy

## 2026 to 2030

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# Introduction

**Coastal Zone Management Program**

In 1972 Congress responded to the rapid deterioration of coastal areas throughout the nation by passing the Coastal Zone Management Act, or CZMA. The main objectives of CZMA, administered by the National Oceanic and Atmospheric Administration's (NOAA) Office for Coastal Management (OCM), are to "preserve, protect, develop, and where possible, restore or enhance the resources of the nation's coastal zone." The key feature of the Act was the creation of a partnership among federal, state, and local governments and providing funds to coastal states to develop and administer coastal zone management programs.

Maryland's Coastal Zone Management Program (CMP) was federally approved in 1978 and exists within the Maryland Department of Natural Resources (DNR). The CMP operates within Maryland's coastal zone, which is comprised of the land, water and subaqueous land between the territorial limits of Maryland in the Chesapeake Bay, Atlantic Coastal Bays and the Atlantic Ocean, as well as the towns, cities and counties that contain and help govern the thousands of miles of Maryland shoreline. The Maryland coastal zone extends from three miles out in the Atlantic Ocean to the inland boundaries of the 16 counties and Baltimore City that border the Atlantic Ocean, Chesapeake Bay and the Potomac River up to the District of Columbia. This area encompasses two-thirds of the State's land area and is home to almost 70% of Maryland's residents.

**Maryland's Networked Program**

In 2007, the State of Maryland consolidated the administrative and management functions of the CMP, the Environmental Protection Agency (EPA) Section 117 Awards as well as State's Chesapeake and Atlantic Coastal Bays Trust Fund to a single program within DNR. This realignment, in combination with closer cross-Unit partnerships within DNR, has led to increasing opportunities for implementation of coastal public access, beneficial use of dredged materials, state lands planning, and adaptive management projects. Through these alignments, CCS has more successfully leveraged core competencies from different programs, avoiding duplicate efforts and efficiently prioritizing resources to advance the goals of the CZMA.

In addition to internal cross-functional collaboration, CCS has established partnerships with local, regional and state agencies, private, nonprofit, and academic institutions to achieve success. Through this networked approach, no one agency or department is responsible for Maryland's entire coast. Rather, all partners help to ensure its proper management. The other agencies that comprise the original networked program include: Maryland Department of the Environment (MDE), Maryland Department of Planning (MDP), Maryland Department of Agriculture (MDA), Maryland Department of Transportation (MDOT), and the Department of Housing and Community Development (formerly DECD). Since 1978, additional partnerships have been formed with Maryland Environmental Trust (MET), Maryland Emergency Management Agency (MEMA), Maryland Historical Trust (MHT), Maryland Energy Administration (MEA), Maryland Geological Survey (MGS), University of Maryland Center for Environmental Sciences (UMCES), Towson University Center for GIS (TUGIS), Critical Area Commission, Maryland Coastal Bays Program, and University of Maryland Sea Grant Extension.

A close partnership with the Chesapeake Bay National Estuarine Research Reserve in Maryland (CBNERR-MD) has also led to significant progress in CZMA goals related to coastal hazards, public access, and beneficial use of dredged materials. These programs work cooperatively to support land conservation efforts in the coastal zone by applying science, stewardship and innovative technologies to

site management practices at Reserve and local restoration sites. Together, the State's CZMA programs deliver a high level of support and training for local partners via Community Flood and Restoration Programs; the Maryland Coastal Training Program; and long-term coastal habitat change monitoring. Program collaboration supports greater capacity for evaluation and implementation of restoration and conservation practices throughout coastal watersheds while training the next generation of coastal stewards about emerging coastal management issues.

Because of the CMP's networked partner approach to achieving CZMA goals, DNR has successfully played a central role in shaping environmental policy for Maryland, laying the groundwork for the historic Chesapeake Bay Agreement and the creation of Maryland's nationally-recognized Critical Area Program; forming increased partnerships to address ocean management needs; and, securing support and funding for the Chesapeake and Atlantic Coastal Bays Trust Fund and the Restoration Initiative to advance water quality and restoration goals, respectively.

Maryland's CMP will celebrate 50 years during the 2026-2030 Assessment and Strategy, highlighting the Program's longevity and successful networked partner approach. The networked foundation has helped Maryland work to reduce the environmental impacts of coastal development, resolve significant conflicts between competing coastal uses, and provide critical assistance to local governments in coastal planning and resource protection. DNR conducts research, provides technical services, and distributes federal and state funds to enable on-the-ground projects that benefit Maryland's coastal communities. Whether it's helping communities address hazards, restore local waterways, protect habitats, foster clean coastal industries, or encouraging citizens to become caring stewards, DNR constantly seeks ways to improve coastal management.

**CZMA Section 309 Assessment and Strategy Process**

Section 309 of the CZMA is known as the Coastal Zone Enhancement Program. Established with reauthorization of the CZMA in 1990, Section 309 is a voluntary grant program in which federal funds are made available to coastal states with federally approved coastal management programs. To receive funds, programs must assess nine specified areas of coastal zone management as they relate to the state and identify which are of highest priority. The nine priority enhancement areas are: Wetlands, Coastal Hazards, Public Access, Marine Debris, Cumulative and Secondary Impacts, Special Area Management Planning (SAMP), Ocean/Great Lakes Resources, Energy and Government Facility Siting and Aquaculture.

Every five years, Section 309 offers states the opportunity to enhance their current CMP by conducting a needs assessment of the nine coastal policy enhancement areas and considering improvements to core law authorities, creating new programs, and designing new funding sources. This is the seventh Assessment and Strategy that the Maryland Program has submitted under CZMA Section 309.

**2026-2030 Assessment & Strategy Summary**

Maryland's 2026-2030 Coastal Zone Enhancement Plan includes assessment of progress in the nine enhancement areas over the period January 1, 2021 through December 31, 2024. Strategies were also developed for priority enhancement areas (Hazards, Wetlands, and Oceans) to guide program enhancement efforts over the next five years, from 2026-2030. As a key partner in Atlantic Ocean coordination and Chesapeake Bay restoration, much of Maryland's work in these nine enhancement areas is regional in scope. Therefore, in each of the nine assessments we not only characterized efforts that enhance Maryland, but also those efforts in which we participate that enhance a multi-jurisdictional region.

There are more activities included in this document than there is funding available through Section 309 and not all components proposed in Maryland's Coastal Zone Enhancement Plan are eligible for this source of NOAA funding. Projects will be chosen from the Plan annually as part of federal grant applications and leveraged with efforts in Section 306 and other funding sources. We pledge to fully draw upon all state and federal resources available to us to complete these projects, and to explore additional funding sources through grants and other arrangements.

**Enhancement Area Priorities**

| Enhancement Area | 2025 Priority | 2020 Priority | 2015 Priority | 2010 Priority | 2005 Priority | 2000 Priority | 1997 Priority |
|---|---|---|---|---|---|---|---|
| Wetlands | High | Medium | Medium | Medium | Medium | Medium | High |
| Coastal Hazards | High | High | High | High | High | High | High |
| Public Access | Medium | Medium | Medium | Medium | Medium | Medium | High |
| Marine Debris | Medium | Medium | Low | Low | Low | Low | Low |
| Cumulative and Secondary Impacts | Medium | Medium | Medium | High | High | High | High |
| Special Area Management Planning | Low | Low | Low | Low | Medium | Medium | Medium |
| Ocean resources | High | High | High | High | High | Medium | Medium |
| Energy and Government Facility Siting | Medium | Medium | Medium | Medium | Low | Low | Low |
| Aquaculture | Low | Low | Medium | Medium | Medium | Medium | Medium |

**Justification for Priorities**

Priority rankings have been assigned to coastal management enhancement areas by considering: 1) the results of assessments developed for each coastal enhancement area; 2) opportunities for development of new or enhanced management approaches considered eligible for and best suited for CZMA Section 309 funding; 3) the contribution to the overall priorities of the program; 4) whether the issue is more appropriately addressed through existing management programs; and 5) the track record of addressing the topic in previous enhancement efforts.

For the 2026-2030 Assessment and Strategy period, Maryland's CMP developed strategies for the following enhancement areas: Hazards, Wetlands, and Oceans.

**Stakeholder Engagement and Public Comments**
Beginning in October 2024, the CMP initiated Assessment and Strategy development by engaging State and Local partners. Draft assessments were completed in January 2025. Needs and gaps identified in the draft assessments, and subsequent Strategies were developed with considerable input from partners, including individual outreach to:

- Maryland Department of the Environment
- Maryland Department of Planning
- Maryland Energy Administration
- Maryland Department of Transportation
- Maryland's Department of Emergency Management
- The State's Office of the Attorney General
- Maryland Geological Survey
- Critical Area Program
- Maryland DNR Fishing & Boating Service
- Maryland DNR Forestry Service
- Maryland DNR Land Acquisition & Planning Programs
- Maryland DNR Office of Outdoor Recreation
- The Maryland Coastal Bays Program
- Mid-Atlantic Regional Council on the Ocean

Maryland's Coastal Zone Enhancement Plan was developed with the guidance provided by Maryland's NOAA OCM Coastal Program Specialist. CMP staff also consulted a number of additional resources outlining coastal management needs and program recommendations to identify strategy connections.

Upon submitting Maryland's Coastal Zone Enhancement Plan as a draft to NOAA Office of Coastal Management (OCM) on June 23, 2025, the CMP plans to coordinate public review and comment through the DNR website (http://dnr.maryland.gov/ccs/ ) and a stakeholder survey. The public comment period for Maryland's Draft Section 309 Assessment and Strategy will be held between July and August 2025.

## Summary of Recent Section 309 Achievements

Maryland's CMP has worked over the past five years to support coastal management through the 2021-2025 309 Assessment and Strategy. Significant accomplishments and program changes are listed below:

1. **Community Flood and Restoration Grants**
   The CMP grew community flood and restoration grant portfolios through the Department's annual Grants Gateway solicitation. These grant programs assist local communities with understanding their flood risk, planning to address that risk, and implementing nature-based solutions. Between 2021 and 2025 the annual solicitation resulted in 25 community flood grants to help protect communities from erosion, flooding, and other coastal hazard impacts. Additionally, 18 nature-based design grants and 13 nature-based construction projects were implemented to help address coastal and stormwater flooding across Maryland's coastal communities. These projects addressed topics such as: nuisance flooding, stormwater and drainage assessment, comprehensive planning, watershed master plans, and the design,

construction and adaptive management of living shorelines and green infrastructure best management practices.

2. **Community-Based Organization - Capacity Building Initiative**
   A Community-Based Organization - Capacity Building Initiative (CBO-CBI) was launched to bridge the resource gap between mainstream established organizations and community-based organizations and partners. This initiative helped build local capacity for historically under-engaged community-based organizations to apply for watershed restoration focused grant programs. Through Connector and Technical assistance groups, this initiative identified new applicants and provided the technical assistance necessary to facilitate robust applications for restoration projects that address water quantity and water quality. This partnership led to collaborations with 50 community-based organizations and technical assistance providers and 22 grant applications.

3. **Maryland Flood Mapping and Guidance**
   To inform local planning and implementation for flood mitigation projects, the CMP led interagency efforts to update state nuisance flood plan guidance while expanding local use of the MyCoast Maryland website and phone app. This citizen science platform allows users to document and analyze flooding and storm damage in their community, informing nuisance flood planning and development of flood mitigation projects. To expand on this momentum, the CMP led the development of the Maryland Coastal Flood Explorer, a statewide flood visualization reflecting the best available coastal hazards science. This non-regulatory tool displays areas prone to high tide flooding, as well as areas impacted by historic flooding events. This tool allows for further evaluation of flood depth at any given location in the coastal zone.

4. **State Lands Vulnerability Assessment and Planning**
   The CMP worked with a NOAA Coastal Management Fellow to develop Action Plans for three state land units, detailing specific impacts from coastal hazards impacts and potential solutions. Collaborating with the Maryland Park Service, Maryland Forest Service, and other units across DNR, these plans are meant to empower land managers and allow for continuity of operations on public lands. This work was expanded at two additional state land units - Newtowne Neck State Park and Chesapeake Forest Lands. CMP staff are using these plans and collaboration to identify opportunities for nature-based solutions that can enhance conservation, wetlands, and public access. Additionally, the CMP worked with Salisbury University's Eastern Shore Regional GIS Cooperative (ESRGC) to update a GIS-based vulnerability assessment of state recreational lands, including State Parks, Forests, Wildlife Management Areas, and Fishery Management Areas. This analysis highlighted public lands that are most at-risk to coastal hazards and wildfire. This assessment is informing planning and implementation of hazard mitigation solutions on state lands.

# Phase I Assessment

## Wetlands

Section 309 Enhancement Objective: Protection, restoration, or enhancement of the existing coastal wetlands base, or creation of new coastal wetlands. §309(a)(1)

> *Note: For the purposes of the Wetlands Assessment, wetlands are "those areas that are inundated or saturated at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions." [33 CFR 328.3(b)]. See also pg. 14 of the CZMA Performance Measurement Guidance[1] for a more in-depth discussion of what should be considered a wetland.*

**Phase I (High-Level) Assessment:** (Must be completed by all states.)
*Purpose: To quickly determine whether the enhancement area is a high-priority enhancement objective for the CMP that warrants a more in-depth assessment. The more in-depth assessments of Phase II will help the CMP understand key problems and opportunities that exist for program enhancement and determine the effectiveness of existing management efforts to address those problems.*

**Resource Characterization**

1. Using the tables below as a guide, provide information on the status and trends of coastal wetlands. Be as quantitative as possible using state or national wetland trend data.[2] The tables are information presentation suggestions. Feel free to adjust column and row headings to align with data and time frames available in your state or territory. If quantitative data is not available for your state or territory, provide a brief qualitative narrative describing wetlands status and trends and any significant changes since the last assessment.

   Current state of wetlands in 2024 (acres): ____866,280.84____

**Coastal Wetlands Status and Trends**

| Change in Wetlands | from 2011-2016 | from 2016-2023 |
|---|---|---|
| Percent net change in total wetlands (% gained or lost)* | -0.06% | -0.11% |
| Percent net change in freshwater (palustrine wetlands) (% gained or lost)* | -0.18% | -0.15% |
| Percent net change in saltwater (estuarine) wetlands (% gained or lost)* | 0.37% | 0.03% |

[1] coast.noaa.gov/data/czm/media/czmapmsguide.pdf

[2] National data on wetlands status and trends include NOAA's Land Cover Atlas (coast.noaa.gov/digitalcoast/tools/lca.html), the U.S. Geological Survey's National Land Cover Database (usgs.gov/centers/eros/science/national-land-cover-database), and the U.S. Fish and Wildlife Service's National Wetland Inventory data (fws.gov/program/national-wetlands-inventory).

**How Wetlands Are Changing**

| Land Cover Type | Area of Wetlands Transformed to Another Type of Land Cover between 2016-2023 in Sq. Miles (acres) |
|---|---|
| Development (21-24) | 0.83 (531.7) |
| Agriculture (81-82) | 0.55 (349.4) |
| Barren Land (31) | 0.16 (103.0) |
| Water (11) | 4.64 (2,972.5) |
| Emergent Herbaceous Wetlands (95) changing to Woody Wetlands (90) | 1.73 (1,104.6) |
| Woody Wetlands (90) changing to Emergent Herbaceous Wetlands (95) | 3.67 (2,351.6) |

Wetlands in Maryland have been quantitatively analyzed using the Multi-Resolution Land Characteristics Consortium (MRLC) and United States Geological Survey (USGS) yearly product of the National Land Cover Database (NLCD). Our previous 309 Assessment for Maryland wetlands quantified change in wetlands from 2011-2016, and this analysis expanded that analysis to quantify changes from 2016-2023 (the most recent year of land cover data available) and make comparisons to previous changes. Wetland changes are still trending in the same direction (gain or loss) as they were when last assessed; however, the magnitude of these trends has changed. Wetland loss has accelerated (from 0.06% lost to 0.11% lost), and emergent herbaceous wetland gains are slowing (From 0.37% gained to 0.03% gained). Change (all loss) in woody wetlands has remained fairly consistent over the two assessment periods. To showcase changes within wetland classes, two new categories were considered (emergent herbaceous wetlands and woody wetlands).

The greatest amount of change from wetlands to another classification is represented by wetland transition to open water (4.64 square miles). This loss of wetlands is likely due to changing sea levels, erosion, and ponding related losses (to name a few), but this analysis was not performed herein. The second highest change in wetlands is represented by woody wetland transition to emergent herbaceous wetlands (3.67 square miles), and the third highest is emergent herbaceous wetlands changing to woody wetlands (1.73 square miles). This change points towards the potential landward migration of emergent herbaceous wetlands, with a much higher amount of woody wetlands changing to emergent herbaceous than vice versa. The next highest loss of wetlands is due to the expansion of developed lands (0.83 square miles), which primarily shifted to low intensity developed lands and developed open space.

**Management Characterization**

1. Indicate any significant changes at the state or territory level (positive or negative) since the last assessment that could impact the future protection, restoration, enhancement, or creation of coastal wetlands.

**Significant Changes in Wetland Management**

| Management Category | Significant Changes Since Last Assessment (Y or N) |
|---|---|
| Statutes, regulations, policies, or case law interpreting these | Y |
| Wetlands programs (e.g., regulatory, mitigation, restoration, acquisition) | Y |

2. For any management categories with significant changes, briefly provide the information below. If this information is provided under another enhancement area or section of the document, please provide a reference to the other section rather than duplicate the information.
    a. Describe the significance of the changes;
    b. Specify if they were 309 or other CZM-driven changes; and
    c. Characterize the outcomes or likely future outcomes of the changes.

**Critical Area Chesapeake and Atlantic Coastal Bays Critical Area Protection Program – Coastal Hazard, Growth Allocation, and Administrative Provisions**

Following the 2024 legislative session, the Critical Area Commission was authorized to update its program to develop and adopt regulations regarding - among other things - addressing coastal hazards and evaluating growth allocations. The CMP is actively working with the Critical Area team to understand which CMP-developed tools and guidance documents could support these efforts. CMP staff are the Department of Natural Resources' representative on the Commission and expect to engage in discussions about topics and priorities for this program's efforts that align with overall efforts to reduce the impacts of coastal hazards in communities across the coastal zone.

**Coastal Easements**

CMP staff participated in a project led by The Nature Conservancy to establish a framework for coastal easements on Maryland's Eastern Shore. In areas where farming and other traditional land uses are no longer feasible given changing environmental conditions and marsh migration, the CMP is exploring land conservation mechanisms. A major piece of this work centers on landowner outreach and generating ideas to incentivize action. Recommendations from these efforts include securing diverse revenue streams and establishment of an authority that could work across municipalities to fund conservation easements. Within the Department of Natural Resources, CCS is collaborating with the Land Acquisition and Planning unit to target parcels for easements. Using new Future Wetland Area maps, along with social vulnerability metrics and the wave attenuation capabilities of existing marsh, we aim to identify lands with the greatest potential for wetland conversion that will enhance hazard mitigation along the coast. In June 2024, staff visited Change Point Farm, the Department's first coastal easement with a management plan, and observed changes in vegetation and increasing extent of saltwater intrusion on farm fields.

**Chesapeake Bay Program Wetlands Strategic Plan**

The Chesapeake Bay Trust is leading an effort, supported by the Environmental Protection Agency, to develop new goals around tidal wetlands throughout the watershed. The vision for this new plan is to collaboratively protect wetlands to support communities, aquatic systems, wildlife, coastal hazard mitigation, carbon sequestration, water quality, and the economy of the Bay. Major themes include: largescale marsh restoration, living shorelines, landowner engagement, conservation/protection of marshes and migration pathways, cross-collaboration and innovative funding.

**Maryland Wetland Strategy**
Leveraging prior DNR work on mapping and prioritizing Future Wetland Areas, Maryland is working to develop a statewide wetland strategy to address habitat change due to sea level rise and saltwater intrusion. Multiple state agencies are collaborating on this effort to assess the current and future state of wetlands in Maryland, with a focus on vulnerability to both coastal and inland wetlands. The strategy will identify areas in the state to prioritize for protection and opportunities for restoration.

**Marshes for Tomorrow**
Partners at the US Fish and Wildlife Service and Audubon have undertaken an effort to protect and restore high marsh habitat for saltmarsh sparrow in five focal geographic areas throughout the state. The initiative, Marshes for Tomorrow, is a collaborative process to maintain a balanced salt marsh ecosystem by slowing and, where possible, reversing the conversion of high marsh to low marsh. State and federal data were compiled to identify marsh condition across the landscape and two models were created to prioritize areas and identify restoration actions. After providing feedback on the mapping tool and prioritization process, CMP staff anticipate using the models to plan and target marsh restoration activities. The great majority of two focal areas, Blackwater-Fishing Bay and Deal Island, are state-owned land managed by Maryland DNR.

**Large Scale Marsh Persistence and Restoration in the Chesapeake Bay (SeaGrant)**
In October 2022, Maryland SeaGrant and the Chesapeake Bay Sentinel Site Cooperative hosted a free one-day workshop to bring together local experts for the purpose of discussing large-scale marsh conservation and restoration. Participants discussed the ecosystem services, vulnerabilities or stressors, and best management strategies for seven marsh geomorphologies (tidal fresh marsh, island marsh, back barrier marsh, embayed/pocket marsh, headland/point marsh, mainland fringe marsh, and urban cluster marsh). A matrix was produced that shows the priority level for each marsh type to maximize a given ecosystem service, such as bird habitat or carbon sequestration. Summaries for each marsh type, compiled by Maryland SeaGrant, can serve as guides in evaluating sites for possible conservation.

**TNC Marsh Management Decision Tool**
In 2023, CMP staff provided feedback and guidance to The Nature Conservancy on the development of a marsh management decision tool. This web resource uses publicly available datasets to determine recommended management strategies for marshes throughout the Chesapeake Bay. Indicators and thresholds were identified in four categories (geomorphology, hydrology, ecology, and stressors). After answering a series of questions and selecting a geographic area, a report is generated based on the available data. The tool also determines if proposed management techniques might qualify for blue carbon or other crediting. Staff plan to use this decision tool to guide restoration efforts on state lands; for instance, at Point Lookout State Park.

**Marsh Mapper and Project Identification**
The CMP worked with the Chesapeake Bay Program to compile and analyze relevant datasets for a marsh web mapper. The mapper overlays data on existing marsh habitat, marsh health, projected sea level rise, protected lands, social vulnerability metrics, and marsh migration corridors. Consultation with experts led to the identification of six focus areas, which were then narrowed down to two: Middle Peninsula, Virginia and the Wicomico River-Monie Bay, Maryland. This project resulted in a virtual workshop held in January 2024, which was attended by 75 stakeholders. The focus of the workshop was to discuss opportunities for marsh restoration efforts in tidal regions of Maryland and Virginia. Main challenges discussed were difficulty in long-term planning, working with communities, coordinating project pipelines, incentivizing action/funding, and planning and permitting issues.

**Tidal Shoreline Project Review Team**
The Maryland Department of the Environment and US Army Corps of Engineers Baltimore District established a multi-agency project review team of state and federal regulatory and resource staff to provide reviews and feedback for living shoreline projects in the earliest stage of the permitting process. This team was developed to address permitting challenges for projects that are addressing coastal hazard impacts or living shorelines that will impact submerged aquatic vegetation or lead to habitat conversion. The goal of this team is to facilitate more efficient permit review once projects are submitted for Joint Permit Applications. Participants meet bi-monthly to discuss projects and facilitate cross-agency communication about impact avoidance and other permitting challenges.

**Living Shoreline Permit Guidance**
Supplemental living shoreline guidance was developed to assist living shoreline permit applicants in developing complete applications and thinking through design goals and alternative designs that minimize resource impacts. Guidance addresses impacts to submerged aquatic vegetation, designing for sea level rise, use of coarse woody debris, contributions to total maximum daily load (TMDL) goals, and beneficial use of dredged material.

**Maryland Shoreline Stabilization Mapper**
The Maryland Shoreline Stabilization Mapper was developed to inform the living shoreline waiver process and justify implementation of living shorelines in areas that are suitable due to site characteristics such as severe erosion, high energy conditions, water depth, waterway width and bottom substrate. The mapper hosts Maryland Shoreline Stability Layers that indicate whether or not the shoreline is suitable for a living shoreline or structural measure, or whether the site is undetermined. This tool is not a replacement for on-the-ground site assessment.

**Coastal Training Program**
The Maryland Coastal Training Program is executed in partnership with the Chesapeake Bay National Estuarine Research Reserve System and has reached over 300 decision makers through trainings. In 2023, the CMP partnered with Chesapeake Conservation Landscaping Council to adapt their Chesapeake Bay Landscape Professional Living Shoreline Training certificate (CBLP-Shorelines) for Maryland audiences. The workshop content focuses on foundational knowledge, site assessment, planning and design, permitting, construction, monitoring, and maintaining living shorelines projects. This four-day training built on the robust curriculum developed for Virginia, but adapted it to reflect the types of living shorelines typically implemented in Maryland as well as the very different permitting landscape in Maryland. The pilot course was held in August 2024. The 2024 class included 31 participants and 22 instructors. The course had 31 people on the waitlist demonstrating a great need to continue supporting this effort.

The CMP is working to build a skilled workforce for adaptation-related industries to plan, design, operate and maintain natural- and nature-based solutions and other coastal systems. Training sessions and workforce development will focus on marine contractors that design and install coastal habitat and shoreline restoration projects and restoration crews to perform management and support restoration implementation and maintenance. The purpose of these training programs will be for participants to develop skills around designing, building and maintaining habitat and shoreline practices that address coastal hazards. Related activities include landscape design and installation, elevation, equipment operation, plant identification and selection, and monitoring/management activities, including irrigation

schedules and invasive species control. These training sessions will apply NextGen principles to ensure that workforce development efforts reach all communities.

**Enhancement Area Prioritization**

1. What level of priority is the enhancement area for the coastal management program?

   **High** __X___
   **Medium** _____
   **Low** _____

2. Briefly explain the reason for this level of priority. Include input from stakeholder engagement, including the types of stakeholders engaged.

   Wetlands provide a host of ecosystem services, including improved water quality, wildlife habitat, carbon sequestration, and buffering of wave energy and storm surge. In Maryland, development and sea level rise threaten these key habitats. At both the state and watershed level, wetland protection and restoration have emerged as pressing priorities, along with the conservation of lands that are projected to be wetland migration corridors. The CMP is participating in several partnership-focused initiatives, as mentioned above, to effectively prioritize geographies that need management interventions. Working with nonprofit partners to engage communities on Maryland's Eastern Shore has also advanced on-the-ground wetland enhancement and monitoring. Staff serve on multiple work groups under the Chesapeake Bay Program, including the Protected Lands Workgroup (whose goal is to protect two million acres within the Bay watershed, including 225,000 acres of wetlands) and the Wetlands Workgroup, among others. Additionally, the CMP routinely funds project proposals from nonprofits and municipalities to protect and enhance wetland habitat through a Restoration Initiative, with a focus on shoreline work that will directly safeguard communities vulnerable to coastal hazards. Launched in 2016, this initiative selects projects based on the vulnerability of the habitat and community, targeted areas, level of community engagement, and broader ecosystem services. Over the years, more ambitious projects have been funded, including thin layer placement (TLP) marsh restoration projects at the Chesapeake Bay Environmental Center and a neighborhood waterfront in Ocean City.

## Coastal Hazards

**Section 309 Enhancement Objective:** Prevent or significantly reduce threats to life and property by eliminating development and redevelopment in high-hazard areas, managing development in other hazard areas, and anticipating and managing the effects of potential sea level rise and Great Lakes level change. §309(a)(2)

*Note: For purposes of the Hazards Assessment, coastal hazards include the following traditional hazards and those identified in the CZMA: flooding; coastal storms (including associated storm surge); geological hazards (e.g., tsunamis, earthquakes); shoreline erosion (including bluff and dune erosion); sea level rise; Great Lake level change; land subsidence; and saltwater intrusion.*

**Phase 1 (High-level) Assessment:** *(Must be completed by all states.)*

*Purpose: To quickly determine whether the enhancement area is a high-priority enhancement objective for the CMP that warrants a more in-depth assessment. The more in-depth assessments of Phase II will help the CMP understand key problems and opportunities that exist for program enhancement and determine the effectiveness of existing management efforts to address those problems.*

**Resource Characterization:**

1. In the table below, indicate the general level of risk in the coastal zone for each of the coastal hazards. The following resources may help assess the level of risk for each hazard. Your state may also have other state-specific resources and tools to consult. Additional information and links to these resources can be found in the "Resources" section at the end of the Coastal Hazards Phase I Assessment Template:

    - The state's multi-hazard mitigation plan
    - Coastal County Snapshots: Flood Exposure
    - Coastal Flood Exposure Mapper
    - Sea Level Rise Viewer/Great Lakes Lake Level Change Viewer

**General Level of Hazard Risk in the Coastal Zone**

| Type of Hazard | General Level of Risk[3] (H, M, L) |
|---|---|
| Flooding (riverine, stormwater) | High |
| Coastal storms (including storm surge) | High |
| Geological hazards (e.g., tsunamis, earthquakes) | Low |
| Shoreline erosion | Medium |
| Sea level rise | High |
| Great Lakes level change | N/A |
| Land subsidence | High |
| Saltwater intrusion | High |
| Other: winter storm | High |
| Other: tornado | Medium |
| Other: wind | High |
| Other: thunderstorm | High |
| Other: wildfire | Medium |
| Other: drought | Medium |

[3] Risk is defined as "the estimated impact that a hazard would have on people, services, facilities and structures in a community; the likelihood of a hazard event resulting in an adverse condition that causes injury or damage." *Understanding Your Risks: Identifying Hazards and Estimating Losses. FEMA 386-2. August 2001*

2. If available, briefly list and summarize the results of any additional data or reports on the level of risk and vulnerability to coastal hazards within your state since the last assessment. The state's multi-hazard mitigation plan or risk assessment or plan may be a good resource to help respond to this question.

The responses above were determined through a combination of information from the following state and regional assessments/plans.

**State Hazard Mitigation Plan (2021)**
The Maryland Department of Emergency Management (MDEM) is responsible for putting together the State Hazard Mitigation Plan. The 2021 update builds on the previous hazard mitigation plan completed in 2016 and will carry the state through 2026. This plan is designed to advise local jurisdictions on resources, coordination activities, and elements that should be included in the updates to their hazard mitigation plans. The plan also serves as a commitment to the hazard mitigation process and continually improving its strategies and programs. Information contained in the plan was used to guide the risk levels identified in this assessment

**Sea Level Rise Projections for Maryland (2023)**
The University of Maryland Center for Environmental Science (UMCES) is charged with updating the Sea Level Rise Projections for Maryland every five years. In 2023, they published updated projections of the amount of sea-level rise relative to Maryland's coastline. There were several updates to the process this year including shifting the baseline in Maryland's guidance from 2000 to 2005 and incorporating updated projections of relative sea-level rise at tide gauges. Seven tide gauges located in Maryland and the District of Columbia indicate that sea level rise will likely be between 1 and 1.6 feet by 2050. These projections do not include the inevitable compounding effects of high tides and storm surges which must be accounted for when using these projections in planning. Using the intermediate sea level rise scenario, minor flooding events that are currently predicted at 2-5 events per year are estimated to increase to 50 events per year in 2050.

**Maryland Coastal Flood Explorer**
The Maryland Coastal Program led the development of statewide flood visualizations reflecting the best available science from the state's 2023 sea level rise projections. This non-regulatory tool was developed to display areas prone to sea level rise and high tide flooding, display areas impacted by historic flooding events, and evaluate depth of flooding at any given location in the coastal zone. Sea level rise data are available at 6-inch vertical increments and provide higher horizontal resolution than flood visualization data available at the national-level. Future updates will correspond with state sea level rise estimates, which are currently updated every 5 years by University of Maryland Center for Environmental Science.

**Coast Smart Ready Action Boundary (CRAB)**
The Coast Smart Ready Action Boundary (CRAB) is a tool designed to support the implementation of Maryland's Coast Smart law. Application of this tool to projects that must be considered under Coast Smart was required in 2020. This map layer takes the FEMA 100-year flood map and adds 3 feet vertically to account for future sea level rise, subsidence, and other future impacts. The Newly Inundated area shows how 3 additional feet of water moves across new areas of the landscape based on the land elevation profile or Digital Elevation Model (DEM). Thus, the CRAB map is a valuable tool to help communities identify future potential risk more conservatively than FEMA's flood map.

**Maryland Department of Transportation State Highway Administration Vulnerability Mapper**
During this last assessment period, the Maryland Department of Transportation State Highway Administration (MDOT SHA), with partners, continued to maintain and expand the agency's Vulnerability Viewer, a platform of geospatial datasets showcasing sea level changes, to Maryland's 3,930 miles of coastline. The MDOT SHA Vulnerability ArcGIS Online web application highlights sea level change and other potential impacts on Maryland's roadways, including roadway assets & infrastructure. The utilization of this resource has expanded beyond the initial use by MDOT SHA senior management, leadership & planning. Through outreach, partnership and coordination, the SHA Vulnerability Viewer is used across MDOT modes, state agencies, and partners to inform planning and project delivery, across the state as they make efforts to avert and mitigate potential impacts of sea level rise. This forecasted intelligence is for the years 2015, 2050, & 2100 scenarios, helping to mitigate and protect Maryland's long-term investments.

**Projected Intensity-Duration-Frequency (IDF) Curve Data Tool for the Chesapeake Bay Watershed and Virginia**
During the last Assessment period, progress was made towards better understanding changes in precipitation patterns and direct impacts to stormwater quantity. Researchers at Carnegie Mellon University (CMU), the Northeast Regional Center (NRCC) at Cornell University, and the Community Health and Environmental Policy Program within RAND Social and Economic Well-Being updated intensity-duration-frequency (IDF) curves for the Chesapeake Bay watershed to inform stormwater design standards. Data are available through an online interactive tool at the county scale.

**Advancing Stormwater Regulations in Maryland (ASTORM)**
In 2021, the Maryland General Assembly passed Senate Bill 227 requiring the Maryland Department of the Environment (MDE) to develop plans to evaluate current flooding risks and update regulations to improve urban stormwater flood management. To date, MDE has 1) gathered data on local flooding to inform future watershed assessments; 2) planned to implement new watershed plans; and 3) proposed updates to state stormwater standards that incorporate precipitation data reflecting more common extreme rainfall and intense precipitation.

**Maryland's Plan to Adapt to Saltwater Intrusion and Salinization (2024)**
The Maryland Department of Planning released the 2024 update to Maryland's Plan to Adapt to Saltwater Intrusion and Salinization. This plan is updated at least once every five years to guide the state's saltwater intrusion adaptation by compiling data, policies, and actions. While a comprehensive understanding of impacted areas does not exist, impacts to agricultural lands, coastal forests, and wetlands are continually growing. The plan recommends "research, modeling, and monitoring to strategically focus on priority [areas…and establishment of] a Salinity Network (SRN) within the university system or nonprofit sector, or within existing entities addressing hazard mitigation. The following sectors are addressed: Aquifers, Surface Waters, Agriculture, Wetlands, Coastal Forests, and Infrastructure. Expanding research is represented through the Salinity Affected Lands in Transition Conference and the resulting Saltwater Intrusion and Sea Level Rise (SWISLR) Research Coordinating Network.

**Shoreline Rates of Change**
In the last assessment, the Maryland Geological Survey (MGS) developed an ArGIS Online shoreline feature class as part of a project to calculate updated shoreline rate of change information for Anne Arundel, Baltimore, Harford and Prince George's Counties. This shoreline data set spans the time period

1932-2010 and was used as input to the U.S. Geological Survey (USGS) Digital Shoreline Analysis System (DSAS) v4.3 program to calculate long-term and short-term rates of change (erosion and accretion). Two Projects of Special Merit (CZM # 14-14-1868 CZM 143 and CZM # 14-15-2005 CZM 143) provided funding for this data, which is now available via the Maryland Coastal Atlas. Since the last assessment, MGS has completed the shoreline rate of change information for Charles County, which is currently in final review. MGS also completed the shoreline rates of change information for Dorchester County, published in May 2025. MGS has not yet determined the next county to update shoreline rate of change information.

**Management Characterization**

1. In the tables below, indicate if the approach is employed by the state or territory and if significant state- or territory-level changes (positive or negative) have occurred that could impact the CMP's ability to prevent or significantly reduce coastal hazards risk since the last assessment.

**Significant Changes in Hazards Statutes, Regulations, Policies, or Case Law**

| Topic Addressed | Employed by State or Territory (Y or N) | CMP Provides Assistance to Locals that Employ (Y or N) | Significant Changes Since Last Assessment (Y or N) |
|---|---|---|---|
| Elimination of development/redevelopment in high-hazard areas[4] | N | N | Y |
| Management of development/redevelopment in other hazard areas | Y | Y | Y |
| Sea level rise or Great Lakes level change | Y | Y | Y |

**Significant Changes in Hazards Planning Programs or Initiatives**

| Topic Addressed | Employed by State or Territory (Y or N) | CMP Provides Assistance to Locals that Employ (Y or N) | Significant Changes Since Last Assessment (Y or N) |
|---|---|---|---|
| Hazard mitigation | Y | Y | Y |
| Sea level rise or Great Lakes level change | Y | Y | Y |

**Significant Changes in Hazards Mapping or Modeling Programs or Initiatives**

| Topic Addressed | Employed by State or Territory (Y or N) | CMP Provides Assistance to Locals that Employ (Y or N) | Significant Changes Since Last Assessment (Y or N) |
|---|---|---|---|
| Sea level rise or Great Lakes level change | Y | Y | Y |
| Other hazards | N | N | N |

2. Briefly state how "high-hazard areas" are defined in your coastal zone.

   Maryland's State Hazard Mitigation Plan (2021) defines hazards as "Unlikely", "Likely", or "Highly Likely," which correspond with Low, Medium, and High hazards respectively. The 2021 plan draws

[4] Use the state's definition of high-hazard areas.

on presidentially declared disasters, Insured losses, and national and state plans and assessments, including Maryland's 2016 Coastal Assessment. According to the State Hazard Mitigation Plan, the state of Maryland has received 31 Presidential Disaster Declarations since 1962. Twelve of those declarations were made in the last 10 years (prior to 2021), while seven were made between the release of the 2016 and 2021 state hazard mitigation plans. Coastal hazards in particular can include many different types of events such as tropical storms, hurricanes, and coastal flooding among others that are defined in the State Hazard Mitigation Plan.

3. For any management categories with significant changes, briefly provide the information below. If this information is provided under another enhancement area or section of the document, please provide a reference to the other section rather than duplicate the information:
    a. Describe the significance of the changes;
    b. Specify if they were 309 or other CZM-driven changes; and
    c. Characterize the outcomes or likely future outcomes of the changes.

**Maryland Coast Smart Council**
Maryland's Coast Smart Council, facilitated and managed by CCS, was established in 2014 to address impacts associated with sea level rise and coastal flooding on state funded structures. In 2024 the Coast Smart law was amended by SB299 to give the Council the ability to recommend regulations for adoption and to codify exemptions. This amendment will be used to encourage adherence to the Coast Smart siting and design criteria while at the same time acknowledging there are situations in which an exemption from the criteria should be granted.

**Maryland Department of Emergency Management Office**
In 2022, the Maryland General Assembly passed legislation establishing a new Office within the Maryland Department of Emergency Management. It also created a position to coordinate statewide efforts to meet the challenges of coastal hazards and natural disasters. The new office and officer are engaging with Maryland Commissions and Work Groups and present an opportunity for the CMP to integrate its work into these coordinated efforts and address coastal hazards at a larger scale.

**Critical Area Chesapeake and Atlantic Coastal Bays Critical Area Protection Program – Coastal Hazard, Growth Allocation, and Administrative Provisions**
Following the 2024 legislative session, the Critical Area Commission was authorized to update its program to develop and adopt regulations regarding - among other things - addressing coastal hazards and evaluating growth allocations. The CMP is actively working with the Critical Area team to understand which CMP-developed tools and guidance documents could support these efforts. CMP staff are the Department of Natural Resources' representative on the Commission and expect to engage in discussions about topics and priorities for this program's efforts that align with overall efforts to reduce the impacts of coastal hazards in communities across the coastal zone.

**Next Generation Plan**
The Next Generation (NextGen) Plan is a 10-year roadmap to increase Maryland's ability to prepare for, respond to, and recover from coastal hazards and related impacts. This plan was put together by a statewide workgroup and was driven by input and feedback from experts including state agencies, local governments, academics, and nonprofit partners. The NextGen Plan builds off a previously published Framework and prioritizes a subset of actions from that plan that Maryland should advance over the next 10 years. These priorities are subdivided into three overarching focus areas (including Local

Government and State Service Delivery and Jobs Training) and five different sectors (Water Resources, Human Health, Working Lands and Natural Resources-Based Economies, Natural Resources and Ecosystems, and Protecting Critical Infrastructure). NextGen was created to be used as a prioritization tool to inform annual work plans and strategy implementation in the short (0-2 years), mid (2-5 years), and long term (5+ years) as Maryland continues improving state programs and policies. These milestones will allow flexibility to maneuver and adjust with new research to provide an effective management strategy across all sectors. In doing so, the NextGen Plan seeks to prioritize actions within vulnerable populations and communities by building in strategies that require additional funding and efforts to be directed to these areas. Through implementation, the NextGen Plan will help Maryland become better adapted to the impacts of coastal hazards.

**Guidance for Using Maryland's 2023 Sea Level Rise Projections**

Every five years the University of Maryland Center for Environmental Sciences leads a panel of scientific experts to update the sea level rise projections for the state of Maryland. The last update was in 2023. The latest report finds that sea levels along Maryland's shorelines are rising, and they are rising faster than in the past. The CMP, in collaboration with Maryland Sea Grant Extension, developed guidance for using the 2023 Maryland Sea Level Rise projections in planning, regulatory and site specific projects. The guidance document and planning worksheet were released in July of 2024. The Coastal Training Program (see below) hosted a series of virtual trainings on Planning for Coastal Flood Impacts which walked participants through using the new guidance document in their planning efforts.

**Nuisance Floodplain Guidance Update (2024)**

In response to HB1350/SB1006 (2018) and HB1427 (2019), all counties and municipalities that experience nuisance tidal flooding are required to adopt and update a nuisance flood plan every five years. To support local hazard mitigation and legislative requirements, the CMP led interagency efforts with Maryland Department of Planning, Maryland Department of the Environment, and Maryland Department of Emergency Management to update nuisance flood plan guidance and inform local plan updates through October 1, 2025. The guidance addresses new recommendations, plan development, and resources.

**Ecological Effects of Sea Level Rise & Future Wetland Mapping**

Rising waters and sinking land have led to more common flooding and storm impacts across Maryland communities and ecosystems. In collaboration with George Mason University, The Nature Conservancy, and DNR's Resource Assessment Service, the CMP completed a four-year research project to better understand how natural and nature-based features can help protect Maryland communities from storm and flood impacts, and how those protection benefits may change with sea level rise. The Sea Level Affecting Marshes Model (SLAMM) was re-run with 2018 Sea Level Rise projections to predict coastal habitat transitions and tradeoffs within an altered coastline. Coupled local-regional hydrodynamic modeling was conducted with three representative storms (Hurricane Isabel, Hurricane Irene, and a December 2020 Winter Blizzard) to predict changes in coastal protection benefits due to sea level rise. The resulting data informed updates to Maryland's future wetland area data and the Marsh Protection Index to assist with prioritizing management actions, including coastal easements, conservation, and restoration work to preserve tidal wetlands and their migration corridors.

**Coastal Training Program**

The Maryland Coastal Training Program is executed in partnership with the Chesapeake Bay National Estuarine Research Reserve System and has reached over 300 decision makers through trainings. The

Coastal Training Program promotes informed decision-making among coastal decision maker audiences within the coastal counties of Maryland through capacity building, technical assistance, and community engagement. In 2023, two initiatives were launched to inform the strategic direction of the Coastal Training Program. First, a Market Analysis/Needs Assessment (MA/NA) was undertaken to understand the current state of training and technical assistance offerings by our peers in Maryland and identify gaps which DNR and the CMP could help to fill. The MA/NA included two surveys and a series of interviews. The MA/NA findings were used to assess and inform CCS broadly as well as the Coastal Training Program, specifically. Second, a series of Listening sessions were held with a majority of Maryland's coastal counties to hear from local staff about what's important in their communities, the challenges they're facing, and to identify areas of needed support. These sessions provided an opportunity to (re)introduce the CMP and the Coastal Training Program which help communities prepare for and respond to sea level rise and coastal flood impacts.

**Capacity Building**

The Community-Based Organization - Capacity Building Initiative (CBO-CBI) was launched during this assessment period. This initiative was designed to bridge the resource gap between mainstream established organizations and community-based organizations and partners by building capacity. Historically under-engaged community-based organizations are engaged as potential applicants to watershed restoration focused grant programs. These organizations are providing necessary technical assistance to facilitate robust applications for restoration projects that address water quantity and water quality, as well as training to build their knowledge and capacity to initiate and lead future restoration efforts. Connector groups conduct prioritized outreach to eligible organizations to receive technical assistance in applying to grant programs and serve as liaisons between community-based organizations and technical assistance providers. Through this partnership, as of July 2024, connectors effectively collaborated with 50 community-based organizations and technical assistance providers submitted 22 grant applications. The CMP has also worked to evaluate and make adjustments to long-standing partnership networks to ensure adequate and targeted capacity for communities to identify, advance and develop projects that address a variety of coastal hazards.

**MyCoast: Maryland**

My Coast: Maryland is a portal that allows users to document and analyze flooding and storm damage in their community. Through the MyCoast: Maryland website portal or the free cell phone application, users are able to submit photos and report flooding as one of three categories: High Tide Flooding, Storm Reporter (precipitation-caused flooding), and Coastal Storm Damage. MyCoast then links user reports to precipitation, riverine, and tidal data to show under what conditions flooding occurs. These reports allow government agencies to understand flood impacts to communities and advance actions to reduce localized flooding. Flood reports and data from MyCoast: Maryland have been used to develop local nuisance flood plans throughout the state. Using MyCoast can also provide evidence of flooding for grant applications, help analyze flooding trends, and serve as a pre- and post-restoration monitoring tool through the Restoration Tracker feature. MyCoast also promotes citizen science among users and raises awareness of flooding in the community. My Coast: Maryland currently has over 1800 users and received twice as many reports in 2024 as the previous years combined (2021-2023).

**Enhancement Area Prioritization**

1. What level of priority is the enhancement area for the coastal management program?

| | |
|---|---|
| **High** | __X___ |
| **Medium** | _____ |
| **Low** | _____ |

2. Briefly explain the reason for this level of priority. Include input from stakeholder engagement, including the types of stakeholders engaged.

Maryland's Chesapeake and Atlantic coastal bays and Atlantic Ocean have 3,100 miles of tidal shoreline that is highly vulnerable to coastal hazards such as sea level rise, flooding, and erosion. These hazards affect natural and human communities in both urban and rural environments. As sea levels rise, impacts from high tide flooding, coastal storms and saltwater intrusion are expected to increase in severity and geographic scale. Between 2021 and 2024, vulnerable communities submitted 1,475 reports to Maryland MyCoast, documenting high tide flooding, stormwater flooding and storm damage across the coastal zone.

Coastal hazards is a high priority enhancement area because of the high level of risk these events pose to Maryland's coastal communities. The level of risk posed by coastal hazards is demonstrated in the numerous state laws, plans, policies, workgroups and tools that exist to draw attention to coastal hazard risk and enhance the state's ability to prepare for, respond to and recover from coastal hazards. Maryland's Coastal Zone Management Program (CMP) is a critical nexus in a state agency network committed to helping Maryland build capacity and address hazards at the local level where coastal hazards are most dramatically experienced. The CMP routinely participates in stakeholder engagement and planning through workgroups and partnerships. Impacts of and responding to coastal hazards are a key theme that tie together all of these stakeholders and the work they undertake.

In addition to state-level engagement, the CMP is uniquely positioned to build relationships with local communities at the neighborhood, municipality, county, and watershed scale. During this assessment period the CMP held local listening sessions with floodplain managers, environmental planners, land use planners, town administrators, economic development planners, and emergency managers across the Coastal Zone. Local planners consistently requested assistance with long- and short-term planning related to tidal flooding, stormwater flooding, flood visualizations, shoreline erosion, nature-based solutions, public outreach, and local capacity. Additionally, the CMP's annual grant solicitation continues to showcase local demand for financial and technical assistance with understanding local risk, coastal hazard planning, and implementing nature-based solutions.

## Public Access

Section 309 Enhancement Objective: Attain increased opportunities for public access, taking into account current and future public access needs, to coastal areas of recreational, historical, aesthetic, ecological, or cultural value. §309(a)(3)

**Phase 1 (High-level) Assessment:** *(Must be completed by all states.)*
*Purpose: To quickly determine whether the enhancement area is a high-priority enhancement objective for the CMP that warrants a more in-depth assessment. The more in-depth assessments of Phase II will help the CMP understand key problems and opportunities that exist for program enhancement and determine the effectiveness of existing management efforts to address those problems.*

**Resource Characterization**

1. Use the table below to provide data on public access availability within the coastal zone.

**Public Access Status and Trends**

| Type of Access | Current number[5] | Changes or Trends Since Last Assessment[6] (↑, ↓, -, unknown) | Cite data source |
|---|---|---|---|
| Beach access sites | Beach access sites are not specifically tracked, but they are captured under recreational amenities on the Maryland Park Service website | **Unchanged** | Maryland Park Service Recreational Amenities https://dnr.maryland.gov/publiclands/Pages/activities.aspx?activity=Swimming |
| Shoreline (other than beach) access sites | The State of Maryland does not maintain a comprehensive list of shoreline access sites (other than beach) since these sites are generally captured under recreational boating access and/or fishing access data. | **Unknown** | Maryland Park Service<br><br>Maryland DNR Public Access, Water Trails, and Recreation Planning Program<br><br>Maryland DNR Fishing & Boating Services |
| Recreational boat (power or non-motorized) access sites | There are 401 public water access sites for recreational boating in Maryland's coastal zone. | **Decreased** | Maryland DNR Public Access, Water Trails, and Recreation Planning Program https://dnr.maryland.gov/Boating/Pages/water-access/boatramps.aspx |

[5] Be as specific as possible. For example, if you have data on many access sites but know it is not an exhaustive list, note "more than" before the number. If information is unknown, note that and use the narrative section below to provide a brief qualitative description based on the best information available.

[6] If you know specific numbers, please provide. However, if specific numbers are unknown but you know that the general trend was increasing or decreasing or relatively stable or unchanged since the last assessment, note that with a ↑ (increased), ↓ (decreased), - (unchanged). If the trend is completely unknown, simply put "unknown."

| Type of Access | Current number[5] | Changes or Trends Since Last Assessment[6] (↑, ↓, -, unknown) | Cite data source |
|---|---|---|---|
| Designated scenic vistas or overlook points | There are 13 designated scenic byways in Maryland's coastal zone, which provide access to scenic vistas. | **Unchanged** | State Highway Administration Maryland Scenic Byways https://www.roads.maryland.gov/mdotsha/pages/index.aspx?PageId=97 |
| Fishing access points (i.e. piers, jetties) | There are 353 fishing access points in the coastal zone. This number does not include sites already counted as recreational boating access sites. | **Increased** | Maryland DNR Fishing & Boating Services Angler Access guide<br><br>https://maryland.maps.arcgis.com/apps/webappviewer/index.html?id=b5fae27a1a91411eba3b65538770ece6 |
| Coastal trails/ boardwalks *(Please indicate number of trails/boardwalks and mileage)* | Maryland has approximately 554 miles of water trails in the coastal zone.<br><br>Maryland has approximately 850 miles of land trails in the coastal zone.<br><br>Boardwalks and waterfront promenades can be found throughout Maryland, but the state does not track the number of "boardwalks" because they are considered trail components and are captured in the state's recreational land trails data. | **Decreased number of water trail miles**<br><br>**Unknown land trail miles** | Maryland DNR Public Access, Water Trails, and Recreation Planning Program https://dnr.maryland.gov/Boating/Pages/water-access/boatramps.aspx<br><br>Maryland Park Service<br><br>Maryland DNR Land Acquisition and Planning |

| Type of Access | Current number[5] | Changes or Trends Since Last Assessment[6] (↑, ↓, -, unknown) | Cite data source |
|---|---|---|---|
| Acres of parkland/open space | The Maryland Department of Planning maintains a Protected Lands database and dashboard. As of September 2024, there are 1,203,852 acres of protected land in Maryland's coastal zone. | **Decrease** | Maryland Protected Lands Dashboard https://maryland.maps.arcgis.com/apps/opsdashboard/index.html#/0f3ffd3350b24b17bd3b8e1705af3df5 |
| Access sites that are Americans with Disabilities Act (ADA) compliant[7] | Maryland is making a special effort to ensure that all DNR-funded living shorelines, facilities, and programs are accessible to visitors with disabilities. The cited webpage provides a link to an alphabetical listing of state public lands that provide accessible amenities and links to accessible outdoor recreational opportunities on public lands, listed by activity. | **Increase** | DNR Advisory Council on Disability Issues Access for All website https://dnr.maryland.gov/Publiclands/Pages/accessforall.aspx |
| Other (please specify) | | | |

2. Briefly characterize the demand for coastal public access and the process for periodically assessing demand. Include a statement on the projected population increase for your coastal counties. There are several additional sources of statewide information that may help inform this response, such as the Statewide Comprehensive Outdoor Recreation Plan,[8] the National Survey on Fishing, Hunting, and Wildlife Associated Recreation,[9] and your state's tourism office.

Maryland's Land Preservation Parks and Recreation Plan (LPPRP) is prepared every five years. It represents a vision and strategy developed by the Department, with state, federal, and local organizations, to provide public outdoor recreation opportunities in Maryland. The LPPRP incorporates

[7] For more information on ADA see *ada.gov.*

[8] Most states routinely develop "Statewide Comprehensive Outdoor Recreation Plans", or SCROPs, that include an assessment of demand for public recreational opportunities. Although not focused on coastal public access, SCORPs could be useful to get some sense of public outdoor recreation preferences and demand. Download state SCROPs at*.recpro.org/resources--reports/scorp-resources.*

[9] The National Survey on Fishing, Hunting, and Wildlife Associated Recreation produces state-specific reports on fishing, hunting, and wildlife associated recreational use for each state. While not focused on coastal areas, the reports do include information on saltwater and Great Lakes fishing, and some coastal wildlife viewing that may be informative and compares 2016 data to 2011, 2006, and 2001 information to understand how usage has changed. The most recent survey was conducted for 2022 but due to a change in methodology, results cannot be compared to previous reports. See *fws.gov/program/national-survey-fishing-hunting-and-wildlife-associated-recreation-fhwar.*

public input gathered through surveys, stakeholder meetings, and a thorough analysis of national, state, and local issues impacting recreation and natural resource conservation. Information from the local LPPRPs guides land conservation, parks and recreation planning, and decision-making within each county, City of Baltimore, and the Maryland Department of Natural Resources. It is essential to the work of the Maryland Department of Planning. The preparation and/or regular update of an LPPRP is a prerequisite for county participation in Maryland's Program Open Space Local program [per Section 5-905(b) (2) of the Natural Resources Article – Annotated Code of Maryland], which provides annual grants for the acquisition of land for conservation and park purposes as well as for the development of public recreation facilities. A Technical Advisory Committee was convened in December 2024 to inform the LPPRP update. The first meeting provided an overview of the drafting process and discussed key opportunities and challenges for each region of the state. The second meeting addressed overarching themes like changing environmental conditions, changing recreation trends, and demographics of park visitors. By August 2025, the team expects to have a completed statewide plan.

According to the 2020 census, Maryland's population is 6.177 million, estimated to be 6.263 million in 2024 (census.gov). The state has seen a growth rate of 7% in the last decade (2010-2020). Per the 2020 census, populations by county, the population in the coastal zone is around 4.1 million (msa.maryland.gov). The population percent change from 2020 to 2024 is 1.3%. Maryland is ranked 18th in the nation and the 22nd fastest-growing state relative to its population. It is the most diverse state on the East Coast and the third-most diverse state in the nation, according to the 2020 Census Diversity Index.

3. If available, briefly list and summarize the results of any additional data or reports on the status or trends for coastal public access since the last assessment.

**Maryland Public Access, Water Trails, and Recreation Planning Program**
The Public Access, Water Trails, and Recreation Planning Program provides technical and design assistance to project partners statewide to develop and enhance public water access sites and water trails. This program also creates and maintains data and information related to Maryland's boating infrastructure, which supports emergency response, law enforcement activities, and recreational use.

**Maryland Park Service Activities & Amenities Website**
In 2024, the Maryland Park Service managed 75 State Parks on 140,761 acres of land. More than 18.4 million visitors enjoyed adventures exploring history, hiking, biking trails or horseback riding on trails, canoeing or kayaking in our lakes, rivers, and the Chesapeake Bay, swimming in our beach and parks, and attending nature-based staff-led programs. The Maryland Park Service maintains a clickable website of outdoor activity amenities managed by DNR.

**Office of Outdoor Recreation**
The Office of Outdoor Recreation (OOR) was established in 2021 by the MORE Commission to support and enhance outdoor recreation opportunities across the state. OOR strives to expand outdoor recreation activities throughout the state, include all communities in recreation, and expand access to current outdoor recreation opportunities. The office's work is guided by the tasks outlined in the MORE Report, which can be categorized into five priorities: Environmental Conservation & Stewardship, Education & Workforce Development, Economic Development, Exercise Health & Wellness. OOR has worked towards these goals with various initiatives.

OOR has worked through various avenues to increase accessibility to the outdoors for all. For example, OOR partnered with Together Outdoors, a national organization, to provide Outdoor Grants to nonprofit organizations that engage underserved communities in outdoor recreation experiences. Through this and other initiatives, OOR is bringing attention to the role of outdoor recreation in creating long-term stewards of nature. Additionally, OOR has worked with local partners, including the Maryland Department of Agriculture, to highlight how outdoor recreation can support statewide tourism and local economies. In October of 2024, OOR hosted the inaugural Maryland Outdoor Recreation Summit, where over 150 recreation enthusiasts, small business owners, and students joined to learn from each other, network, and create community within outdoor recreation.

**Management Characterization:**

1. Indicate if the approach is employed by the state or territory and if there have been any significant state- or territory-level management changes (positive or negative) that could impact the future provision of public access to coastal areas of recreational, historical, aesthetic, ecological, or cultural value.

**Significant Changes in Public Access Management**

| Management Category | Employed by State or Territory (Y or N) | CMP Provides Assistance to Locals that Employ (Y or N) | Significant Changes Since Last Assessment (Y or N) |
|---|---|---|---|
| Statutes, regulations, policies, or case law interpreting these | N | N | Y |
| Operation/maintenance of existing facilities | N | N | N |
| Acquisition/enhancement programs | Y | Y | Y |

2. For any management categories with significant changes, briefly provide the information below. If this information is provided under another enhancement area or section of the document, please provide a reference to the other section rather than duplicate the information:
    a. Describe the significance of the changes;
    b. Specify if they were 309 or other CZM-driven changes; and
    c. Characterize the outcomes or likely future outcomes of the changes.

**Great Maryland Outdoors Act**

In 2022, the Great Maryland Outdoors Act (GMOA) was put into statute. GMOA called for long-range planning in recreation and parks, provided a one-time investment of funds to support critical maintenance projects, and called for planning for access to nature and parks. The Department of Natural Resources met its 2025 water access site targets for the Bay Program Access Goal, and work is underway at the Bay watershed scale to evaluate and set new goals moving forward. Additionally, the Office of Outdoor Recreation is supporting the Department's ADA Transition Plan, 5-year Land Preservation, Parks, and Recreation Plans (LPPRP) and Angler R3 workgroup.

**State Lands Vulnerability Assessment**

In 2018/2019, The CMP worked with Salisbury University's Eastern Shore Regional GIS Cooperative (ESRGC) to develop a GIS-based vulnerability assessment of state recreational lands, including State

Parks, Forests, Wildlife Management Areas, and Fishery Management Areas. This analysis highlighted public lands that are most at-risk to coastal hazards and wildfire. The results directly informed the work of a 2020-2022 NOAA Coastal Management Fellow who developed Action Plans for Assateague State Park, Pocomoke State Forest, and Brown's Branch Wildlife Management Area. In 2024, ESRGC began an update to this assessment to include newly acquired state lands and more comprehensive hazards data. This updated vulnerability analysis will review existing models and inform parcel level hazards planning, including identifying solutions and pursuing funding opportunities.

**Mallows Bay-Potomac River National Marine Sanctuary**

During this assessment period, the CMP maintained a connection to Mallows Bay-Potomac River National Marine Sanctuary by participating in the Sanctuary Advisory Committee. The CMP supported outreach and education efforts by hosting activities at Bioblitz days and reviewing and providing comments on virtual paddles. In the summer of 2024, the CMP provided an advisory role to Charles County's visitor center feasibility study, which helped prepare the sanctuary for the upcoming NEPA process in 2025.

**Multilingual Public Engagement**

The DNR Human Resource Service and Maryland Park Service launched the Es Mi Parque program in 2016 as a pilot project to improve customer service and reduce access barriers for the Hispanic community at state parks. Since then, the program has thrived and grown into a cross-unit collaborative effort. In 2021, the program celebrated Hispanic Heritage Month by hosting the Hispanic Heritage Environmental Festival, featuring boat rides and fishing demonstrations. DNR effectively bridges communication gaps with parents, other adults, and community members by engaging children in environmental education programs, outreach activities, and outdoor recreation opportunities. Additionally, the program showcases Maryland's diverse fishing opportunities and provides education on water safety and recreational fishing regulations. Through partnerships with other state agencies, community organizations, bilingual volunteers, and outdoor industry partners, DNR connected with multi-generational families through interactive activities, such as fish identification games, marine debris reduction initiatives, and hands-on fishing demonstrations and lessons.

**State Lands Vulnerability Plans**

From 2020-2022, a NOAA Coastal Management Fellow developed Action Plans for three state land units, detailing specific impacts from coastal hazards impacts and potential solutions. Collaborating with the Maryland Park Service, Maryland Forest Service, and other units across DNR, these plans are meant to empower land managers and allow for continuity of operations on public lands. This work has been continued at two additional state land units - Newtowne Neck State Park and Chesapeake Forest Lands. CMP staff are also identifying opportunities for nature-based solutions that can enhance the longevity of state assets.

**Assateague Island - PALS**

Assateague Island is a 37-mile-long barrier island along the coasts of Maryland and Virginia and is part of a chain of barrier islands stretching from Maine to Texas. The island borders the Atlantic Ocean on the east and the Sinepuxent Bay on the west. The landscape is characterized by sandy beaches, salt marshes, maritime forests, and coastal bays inhabited by waterfowl, deer, clams, and, famously, a herd of approximately 150 wild horses. Coastal Hazard models predict that by 2040 the island will experience temperature and extreme weather increases, rising water of 3.5–9 inches, and altered precipitation patterns. As a result of these changes, the rate of overwash—the washing of water and deposition of sand toward the island interior—is expected to increase, new breaches and inlets will form, and sand

will be carried southward more quickly via longshore currents. Assateague Island is not just a landscape in flux—it is a place of intensifying change as natural coastal processes, storms, and rising water shape and shift the island. The Maryland Department of Natural Resources partnered with the UMD School of Architecture to design a new Ranger's Station (3,100 square feet) at the Assateague Island State Park and develop a Master Plan for the Park and larger island. In addition to funding from MDNR, an Assateague Island studio was run as a UMD PALS project (Partners in Action Learning), challenging students to work as a team to develop architecture and landscape architecture designs that respond to coastal hazards and their effects on this dynamic landscape, its vulnerable ecologies, and its multi-species inhabitants.

3. Indicate if your state or territory has a publicly available public access guide. How current is the publication and how frequently it is updated?[10]

**Publicly Available Access Guide**

| Public Access Guide | Printed | Online | Mobile App |
|---|---|---|---|
| State or territory has? (Y or N) | N | Y | Y |
| Web address (if applicable) | | Maryland Online Public Water Access Guide https://dnr.maryland.gov/Boating/Pages/water-access/boatramps.aspx<br><br>Recreation Atlas https://geodata.md.gov/recreationatlas/<br><br>Trail Atlas https://maryland.maps.arcgis.com/apps/webappviewer/index.html?id=242debcc18ae4057827834b78ddbb83a | Maryland Online Public Water Access Guide https://dnr.maryland.gov/Boating/Pages/water-access/boatramps.aspx |
| Date of last update | | The Maryland Online Public Water Access Guide - January 2025<br><br>Recreation Atlas - Unknown<br><br>Trail Atlas - Unknown | The Maryland Online Public Water Access Guide - January 2025<br><br>Recreation Atlas - Unknown<br><br>Trail Atlas - Unknown |
| Frequency of update | | The Maryland Online Public Water Access Guide is updated daily/weekly. | The Maryland Online Public Water Access Guide is updated daily/weekly |

[10] Note some states may have regional or local guides in addition to state public access guides. Unless you want to list all local guides as well, there is no need to list additional guides beyond the state access guide. You may choose to note that the local guides do exist and may provide additional information that expands upon the state guides.

| Public Access Guide | Printed | Online | Mobile App |
|---|---|---|---|
| | | Recreation Atlas - Unknown<br><br>Trail Atlas - Unknown | Recreation Atlas - Unknown<br><br>Trail Atlas - Unknown |

**Enhancement Area Prioritization**

1. What level of priority is the enhancement area for the coastal management program?

   **High** _____
   **Medium** __X___
   **Low** _____

2. Briefly explain the reason for this level of priority. Include input from stakeholder engagement, including the types of stakeholders engaged.

Promoting public access to the shoreline and expanding opportunities for outdoor recreation is a CCS goal. While public access is a high priority in Maryland, there are a number of robust programs that address this enhancement area. Ongoing activities within DNR include projects with the Waterway Improvement Program, Fishing & Boating Services, Land Acquisition & Planning, and the Chesapeake Bay National Estuarine Research Reserve. Additionally, CCS is actively working to integrate public access considerations into restoration projects. CCS also works with the Chesapeake Bay Program, Maryland Coastal Bays Program, National Park Service, NOAA Office of National Marine Sanctuaries, and local governments to create public access opportunities through land acquisition and water trail development and to enhance public access for boating and fishing access and through CZMA Section 306A construction and acquisition projects.

The CMP will continue to partner with many groups to identify opportunities to increase or enhance public access and ADA opportunities, support communication efforts, and incorporate public access priorities in decision-making. CZMA Section 306A presents an opportunity for the CMP to support public access stewardship and creation opportunities.

CCS is cognizant of the threat that coastal hazards pose to the longevity of many public access projects, especially those along the coast. Additionally, conflicts often arise between flood mitigation and public access. The CMP is increasingly challenged to design waterfront public access with flooding, storm surge, and other factors in mind while preserving public access. While a strategy will not be developed solely for this enhancement area, enhancing public access remains a key component of CCS's work. As a result, the CMP will include public access as a component of coastal hazards work to further identify, coordinate, and support public access projects and work to maintain water-dependent use access.

## Marine Debris

Section 309 Enhancement Objective: Reducing marine debris entering the nation's coastal and ocean environment by managing uses and activities that contribute to the entry of such debris. §309(a)(4)

**Phase 1 (High-level) Assessment:** *(Must be completed by all states.)*
*Purpose: To quickly determine whether the enhancement area is a high-priority enhancement objective for the CMP that warrants a more in-depth assessment. The more in-depth assessments of Phase II will help the CMP understand key problems and opportunities that exist for program enhancement and determine the effectiveness of existing management efforts to address those problems.*

**Resource Characterization**

1. In the table below, characterize the existing status and trends of marine debris in the state's coastal zone based on the best-available data.

**Existing Status and Trends of Marine Debris in Coastal Zone**

| **Source of Marine Debris** | **Significance of Source** (H, M, L, unknown) | **Type of Impact**[11] (aesthetic, resource damage, user conflicts, other) | **Change Since Last Assessment** (↑, ↓, -, unknown) |
|---|---|---|---|
| Beach/shore litter | M | Aesthetic, habitat and wildlife impacts | Increased based on data from biannual beach surveys |
| Land-based dumping | unknown | Aesthetic, habitat and wildlife impacts, other | Unknown |
| Storm drains and runoff | H | Aesthetic, habitat and wildlife impacts, other | Unknown |
| Land-based fishing (e.g., fishing line, gear) | M | Aesthetic, habitat and wildlife impacts Unknown | Unknown |
| Ocean/Great Lakes-based fishing (e.g., derelict fishing gear) | H | Resource damage, user conflicts, habitat and wildlife impacts | |
| Derelict vessels | H | Resource damage, user conflicts, | Increase |
| Vessel-based (e.g., cruise ship, cargo ship, general vessel) | H | Resource damage, user conflicts, habitat and wildlife impacts | |
| Hurricane/Storm | M | Resource damage, user conflicts, habitat and wildlife impacts | Same |
| Tsunami | L | Resource damage, user conflicts, habitat and wildlife impacts | Same |
| Other (please specify) Conowingo Dam | H | Resource damage, user conflicts, habitat and wildlife impacts | Same |

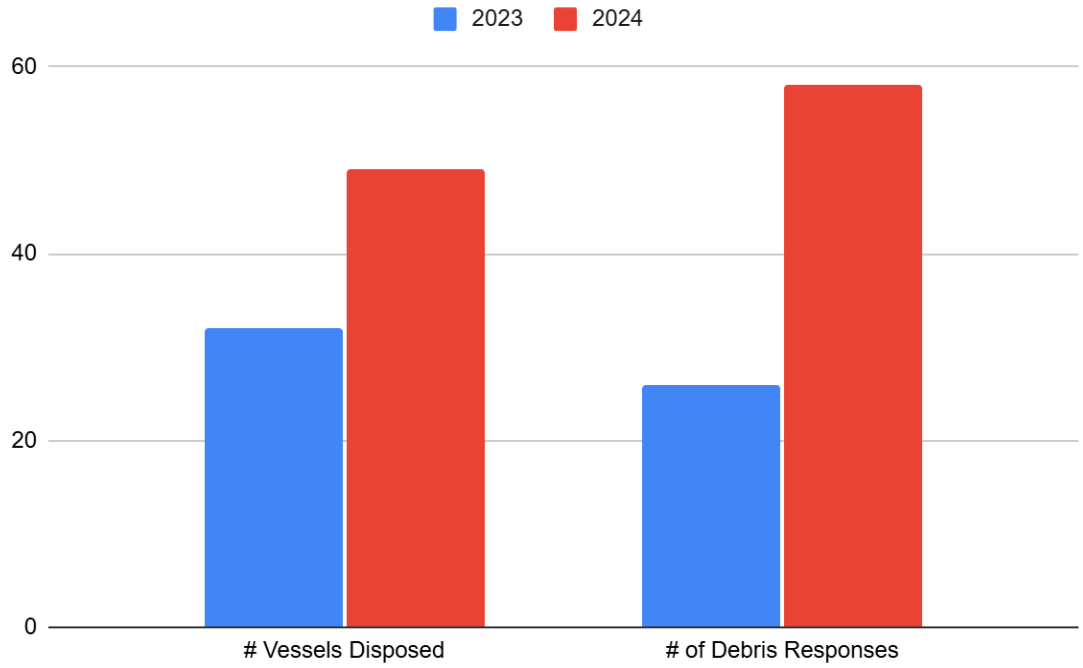
2. If available, briefly list and summarize the results of any additional state- or territory-specific data or reports on the status and trends or potential impacts from marine debris in the coastal zone since the last assessment.

   - **Mid Atlantic Regional Council on the Ocean Marine Debris Surveys–**As part of a NOAA Marine Debris Prevention grant funded project, MARCO's Marine Debris Work Group incorporated biannual beach surveys for marine debris within the five regional states. Reports and data are

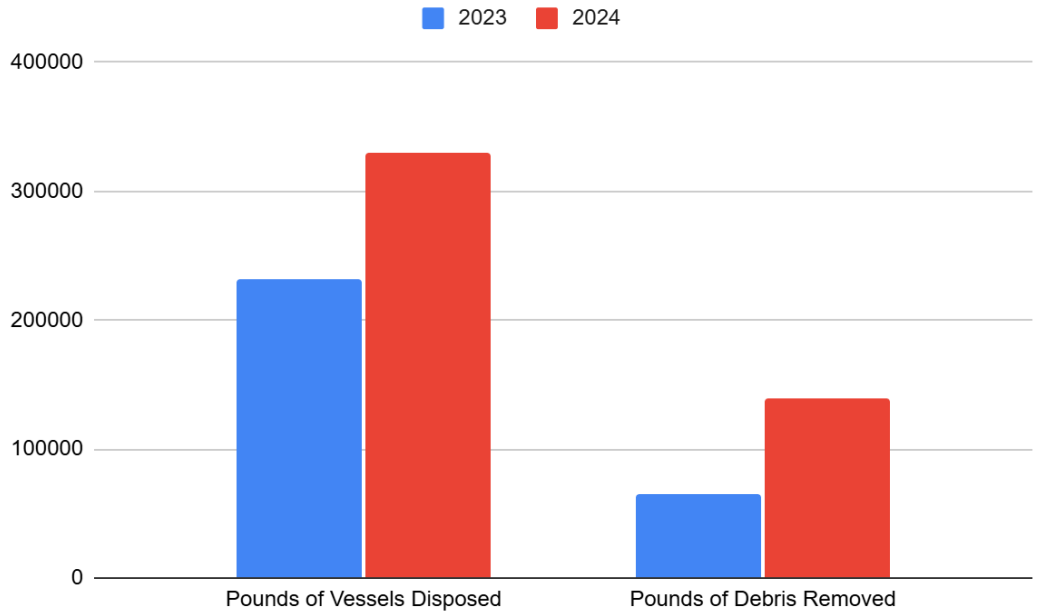
[11] You can select more than one, if applicable.

available at https://portal.midatlanticocean.org/news/maps-track-balloon-litter-and-marine-debris-found-in-marco-beach-sweeps/. Biannual marine debris surveys have continued beyond the project period of the grant. Maryland specific data shows an increasing trend in the amount of all debris types found in surveys.

- **DNR Abandoned Boat and Debris Program–**As part of its commitment to clean, safe and enjoyable recreational boating on Maryland waterways, the Abandoned Boat and Debris Program within the DNR Fishing & Boating Service provides reimbursable grants and expertise to assist public agencies in the removal of abandoned boats and debris from state waters. Funds for the program come from the state Waterway Improvement Fund, which is generated from the one-time 5% excise tax paid to the State when a boat is purchased and titled in Maryland. Based on data obtained from the program manager there has been a slight increase in the number of derelict vessels removed since the last assessment. For the prior assessment, Maryland saw a slow increase in the number of vessels removed from below 20 to over 25 between 2011 and 2018. In 2023 - 2024 the number of ADV removed continued to increase with 32 and 49 vessels removed in the past two years respectively. Additionally, the number of debris responses has grown as well.



**Similarly, the pounds of ADV material removed and the pounds of debris have continued to increase:**




- **Conowingo Dam Settlement Agreement–**In the CMP's 2020-2025 Assessment and Strategy, we noted that Maryland Department of the Environment had entered into an agreement with Exelon Generation Company, LLC, to invest more than $200 million in environmental projects and operational enhancements to improve water quality in the Lower Susquehanna River and the Chesapeake Bay. The agreement included $41 million to increase efforts to remove trash and debris flowing down the Susquehanna River and entrapping behind the Conowingo Dam. Since that time, the agreement and license were vacated by the courts and a new agreement remains to be established.

**Management Characterization**

1. Indicate if the approach is employed by the state or territory and if there have been any significant state- or territory-level management changes (positive or negative) for how marine debris is managed in the coastal zone.

**Significant Changes in Marine Debris Management**

| Management Category | Employed by State/Territory (Y or N) | CMP Provides Assistance to Locals that Employ (Y or N) | Significant Changes Since Last Assessment (Y or N) |
|---|---|---|---|
| Marine debris statutes, regulations, policies, or case law interpreting these | Y | N | Y |
| Marine debris removal programs | Y | Y | N |

2. For any management categories with significant changes, briefly provide the information below. If this information is provided under another enhancement area or section of the document, please provide a reference to the other section rather than duplicate the information:
    a. Describe the significance of the changes;
    b. Specify if they were 309 or other CZM-driven changes; and
    c. Characterize the outcomes and likely future outcomes of the changes.

**Balloon Release Bans**

The Maryland legislature passed a bill such that, effective October 1, 2021, a person may not knowingly and intentionally release or cause a balloon to be released into the atmosphere, and a person may not organize or participate in a mass balloon release. While there is no data on enforcement, we believe that this has reduced the number of intentional balloon releases and will continue to do so. The CMP staff have shared notice of the new law via fact sheet (posted here) and in an exhibit at the 2022 Maryland State Fair.

**Support to Local Government to Prevent Cigarette Litter in City of Annapolis**

In 2021 the CMP provided subgrant funding to the City of Annapolis, to assist in their "No Butts in the Bay" campaign (implemented by "Annapolis Green") to reduce smoking litter across the city. The funding assisted in the study and mapping of cigarette litter hot spots, installation and maintenance of cigarette butt receptacles located at those locations, as well as outreach and education efforts. Volunteers and staff from Annapolis Green emptied the receptacles weekly and sent the collected material to Terra Cycle for recycling.


**Wave of Plastic Curriculum Expansion**
In 2023 the CMP provided a subgrant to the University of Maryland Center for Environmental Science to deliver professional development to eight Charles County Public School (ChCPS) middle school science teachers, two ChCPS environmental educators, and one ChCPS Science Content Specialist during the 2022- 23 school year. The professional development centered around the "Wave of Plastic" (WoP) approved curriculum.

Teachers were asked to rate the students' awareness with issues of marine debris and plastic pollution before and after completing the Wave of Plastic lesson(s). The average jumped from 2.6 to 4.2 (out of 5) showing that students get a lot out of this unit. Three ChCPS staff are now equipped to provide their own professional development training for new and returning teachers in order to continue the WoP implementation after this funding ends.

**Conowingo Dam Water Quality Certification**
The Maryland Department of the Environment (MDE) is continuing its administrative review of the Clean Water Act, Section 401 Water Quality Certification (WQC) 17-WQC-02 issued to Constellation Energy Generation, LLC (Constellation (formerly Exelon)) in 2018. Under this process known as Reconsideration, the Department will be reviewing its 2018 WQC decision and associated conditions as related to Maryland's authority under the Clean Water Act and state law. MDE will make a decision on Reconsideration at the conclusion of the process. Once MDE has completed its review a decision on Reconsideration will be made. The Reconsideration process was initiated in 2018, following issuance of a Water Quality Certification, with the "Protective Petition for Reconsideration and Administrative Appeal" submitted by Constellation and the "Administrative Appeal of Final Decision To Issue Clean Water Act Section 401 Certification for the Conowingo June 2023 Conowingo Dam Hydroelectric Project" submitted by Stewards of the Lower Susquehanna, d/b/a Lower Susquehanna Riverkeeper Association, and Waterkeepers Chesapeake. Both of these submissions requested reconsideration of the certification by the Department in accordance with COMAR 26.08.02.10F(4).

**Enhancement Area Prioritization**

1. What level of priority is the enhancement area for the coastal management program?

| | |
|---|---|
| **High** | _____ |
| **Medium** | __X__ |
| **Low** | _____ |

2. Briefly explain the reason for this level of priority. Include input from stakeholder engagement, including the types of stakeholders engaged.

Marine Debris remains an area of concern throughout the coastal waters of the state and Maryland CMP remains committed to partnerships and independent efforts to prevent and remove marine debris.

CMP staff remain involved in the Chesapeake Bay Program's Plastic Pollution Action Team which, in 2024, submitted a report entitled "Framework for Monitoring Plastic Pollution in the Chesapeake Bay" to the Bay Program Management Board. The report recommended adding the goal of no net increase in microplastic pollution to the Bay Agreement and outlined a monitoring strategy to track progress toward such a goal. The framework makes recommendations on monitoring strategies across various media, such as surface water, sediment, and key living resources, as well as scale, frequency, and

locations for broad application throughout the Chesapeake Bay and its watershed. The framework focuses on leveraging existing programs to limit the resources required.

CMP staff also remain engaged with the regional marine debris community via the NOAA Marine Debris Program, the associated Mid-Atlantic Marine Debris Action Plan (including meetings and communities of practice), and the Mid Atlantic Regional Council on the Ocean's Marine Debris Work Group. The work group has cooperatively secured grants to install water bottle refill stations in the region (including five in Maryland) and will focus on shore-based fishing gear and smoking litter in the coming years (if federal funding allows).

The Maryland Clean Marina Initiative has continued to share information about marina trash capture devices with the marina community via its newsletters and workshops. One marina in Baltimore Harbor installed a fixed trash collector and purchased a hydro-drone to remove trash from the marina basin

Overall, Maryland continues to engage in management measures to prevent and remove marine debris through state programs and regional work groups and plans.

## Cumulative and Secondary Impacts

Section 309 Enhancement Objective: Development and adoption of procedures to assess, consider, and control cumulative and secondary impacts of coastal growth and development, including the collective effect on various individual uses or activities on coastal resources, such as coastal wetlands and fishery resources. §309(a)(5)

**Phase 1 (High-level) Assessment:** *(Must be completed by all states.)*
*Purpose: To quickly determine whether the enhancement area is a high-priority enhancement objective for the CMP that warrants a more in-depth assessment. The more in-depth assessments of Phase II will help the CMP understand key problems and opportunities that exist for program enhancement and determine the effectiveness of existing management efforts to address those problems.*

**Resource Characterization**

1. Using National Ocean Economics Program Data on population and housing,[12] please indicate the change in population and housing units in the state's coastal counties between 2017 and 2021. You may wish to add additional trend comparisons to look at longer time horizons as well (data available back to 1970), but at a minimum, please show change over the most recent five-year period data is available (2017-2021) to approximate current assessment period.

**Trends in Coastal Population and Housing Units**

| | 2017 | 2021 | Percent Change (2017-2021) |
|---|---|---|---|
| Number of people | 3,988,863 | 4,077,039 | 2.21% |
| Number of housing units | 1,664,742 | 1,728,362 | 3.82% |

2. Using the tables below as a guide, provide information on land cover changes and development trends. Be as quantitative as possible using state or national land cover data.[13] The tables are a suggestion of how you could present the information. Feel free to adjust column and row headings to align with data and time frames available in your state or territory. If quantitative data on land cover changes and development trends are not available, provide a brief qualitative narrative describing changes in land cover, especially development trends, including significant changes since the last assessment.

As of November 2024, NOAA's Land Cover Atlas data has not been updated past 2016 C-CAP data. The following data tables are based on the 2023 National Land Cover Database from USGS. The percent impervious calculations are based on 50-100% impervious cover categories.

[12] *www.oceaneconomics.org/*. Enter "Population and Housing" section and select "Data Search" (near the top of the left sidebar). From the drop-down boxes, select your state. Select the year (2021) then select "coastal zone counties." The default comparison year will be 2017 so no need to select a comparison year.

[13] National data on wetlands status and trends include NOAA's Land Cover Atlas (*coast.noaa.gov/digitalcoast/tools/lca.html*) and the U.S. Geological Survey's National Land Cover Database (*usgs.gov/centers/eros/science/national-land-cover-database)*.

**Distribution of Land Cover Types in Coastal Counties**

| Land Cover Type | Land Area Coverage in 2023 (Acres) | Gain/Loss Since 1996 (Acres) |
|---|---|---|
| Developed, High Intensity | 55,770 | 12,231 |
| Developed, Medium | 175,996 | 40,037 |
| Developed, Low Intensity | 327,654 | 48,241 |
| Developed, Open Space | 382,987 | 56,304 |
| Grassland | 12,615 | 3,613 |
| Scrub/Shrub | 37,341 | -9,956 |
| Barren Land | 17,863 | 3,400 |
| Open Water | 1,621,863 | 6,078 |
| Agriculture | 1,162,147 | -114,722 |
| Forested | 1,043,736 | -39,642 |
| Woody Wetland | 641,339 | -4,552 |
| Emergent Wetland | 193,103 | -1,033 |

**Development Status and Trends for Coastal Counties**

| | 1996 | 2024 | Percent Net Change |
|---|---|---|---|
| Percent land area developed | 19.4%<br>785,594 acres | 23.3%<br>942,407 acres | 19.9% |
| Percent impervious surface area | 4.4%<br>179,497 acres | 5.7%<br>231,765 acres | 29.1% |

**How Land Use Is Changing in Coastal Counties**

| Land Cover Type | Areas Lost to Development Between 1996-2024 (Acres) |
|---|---|
| Barren Land | 1,987 |
| Emergent Wetland | 176 |
| Woody Wetland | 1,882 |
| Open Water | 1,453 |
| Agriculture | 94,651 |
| Scrub/Shrub | 7,626 |
| Grassland | 194 |
| Forested | 54,074 |

A 2010 Land Use/Land Cover Report by the Maryland Department of Planning reported that between 1973 and 2010 Maryland's total acreage of developed land grew by 154 percent from 654,000 to 1.6 million acres. The study estimated Maryland's population would continue to grow nearly 16 percent over the next 25 years (through 2025), increasing development pressures. Maryland has been challenged to accommodate this growth in a way that does not impact existing land uses, natural resources, communities, air and water quality, and overall quality of life. The report stated an average of 27,630 acres of agriculture and forest lands annually between 1973 and 2010 have been lost, primarily to development. The 2020 follow-up Land Use/Land Cover Report by the Maryland Department of Planning has not yet been published. Observing land-use change from

1996 to 2023 in Coastal Zone counties, developed areas increased by nearly 20%, equating to 157,000 acres and impervious areas increased by nearly 52,000 acres, an increase of 29%.

The loss in resource lands along with the proliferation of large lot development in Maryland has had a significant impact on the viability of our rural resource-based economies, as these lands are becoming increasingly fragmented and are no longer viable for farming or forestry. According to a study published in 2022, in conjunction with Chesapeake Conservancy, Technical Study on Changes in Forest Cover and Tree Canopy in Maryland, there was an observed net loss of 13,164 acres of forest canopy within urban areas between 2013 and 2018. Forest loss has been most associated with land development between 2001 and 2019, according to the study. The 2023 Sea-Level Rise Projections for Maryland Report by UMCES states that from 1984 to 2020, 25,600 acres of forests and 3,500 acres of farmland converted to tidal marsh in Maryland. The Chesapeake Bay Program published that 7% of Maryland's watersheds have an impervious surface coverage of 25% or greater, according to the 2017/2018 Land Use/Land Change (LULC) data.

Large areas of forests and wetlands that are connected to each other through wildlife corridors are critical for maintaining high quality wildlife habitats. Maryland DNR defines the habitat connectivity network as a system of "hubs," large intact areas of natural forest, wetland, and aquatic habitat, and "corridors," the pathways that connect hubs. These hub and corridor areas are vital to maintaining healthy wildlife populations across the state because many species require natural habitat areas above a certain size to thrive as well as natural corridors between habitat areas to find food and mating opportunities. Additionally, these natural areas provide a number of ecosystem service benefits to the citizens of Maryland, including clean water, clean air, carbon sequestration, and coastal hazard mitigation. Maryland's Habitat Connectivity Network, referred to as Green Infrastructure in its prior iteration, was first produced in 2005, with updates to hub areas in 2011. This 2024 update leverages the Chesapeake Bay Program's cutting-edge, high-resolution 2017/2018 land use/land cover mapping produced by Chesapeake Conservancy and partners. The Habitat Connectivity Network data project also provides several additional enhancements, including differentiation of hub and corridor types–forest, wetland, or aquatic, a breakdown of land cover types within corridors, and identification of potentially restorable gaps within corridors. The Habitat Connectivity Network is incorporated in the Targeting System and the Rural Legacy Grant Review System. While it is not the only factor, it is certainly very significant in the Department's efforts to best use its limited land protection funds.

To complement Maryland's Habitat Connectivity Network, the Department is identifying Targeted Areas. DNR has assembled a portfolio of projects focused on mitigating coastal hazard impacts that also leverage habitat, water quality and other benefits. The portfolio comprises a suite of restoration and conservation projects identified in close coordination with affected communities and public/private/nonprofit sectors. These projects will work together to optimize hazard mitigation benefits and leverage important habitat, water quality, and other gains. This approach lends itself to longer budgeting timeframes, beyond a 1-year cycle, for fiscal certainty, generates new financing opportunities with other partners and provides opportunities to better integrate green and grey infrastructure approaches. The Department is piloting this approach by working within two targeted areas with restoration and conservation potential that provide high value hazard mitigation benefits for communities, economies, public lands, and important ecosystems to demonstrate this concept. The pilot project concluded in March 2024.

3. Briefly characterize how the coastal shoreline has changed in the past five years due to development, including potential changes to shoreline structures such as groins, bulkheads and other shoreline stabilization structures, and docks and piers. If available, include quantitative data that may be available from permitting databases or other resources about changes in shoreline structures.

   Land conservation and growth management has long been recognized as a Chesapeake Bay pollution prevention strategy, particularly if those lands are forested, exist as wetlands, or are maintained in agriculture under state of the art best management practices for nutrient and sediment pollution reduction. In recognition that many of the Chesapeake Watershed Agreement goals would not be met by 2025, Chesapeake Bay Program Steering Committee convened its member groups to start developing the *Beyond 2025* plan to determine the next steps and future partnership directions moving forward.

   The CMP coordinates with multiple Department programs to address structural shoreline change. First, the DNR Waterway Improvement Fund funds and tracks shoreline structure improvement projects, such as renovations to groins, bulkheads, docks, piers, and other public boating access structures. The CMP coordinates with program managers to ensure projects are addressing coastal hazards. Second, the CMP implements a Restoration initiative which supports on-the-ground implementation of restoration projects to help protect communities from erosion, flooding, and other coastal hazard impacts through technical assistance and funding for design, construction, and monitoring of restoration projects. Lastly, the CMP provides technical assistance to communities in coordination with the Shoreline Erosion Loan Program, which offers a zero-interest loan to private property owners, community groups, non-profits, and counties. Through the combined efforts of these two programs 30 shoreline projects have received funding and support. While CCS does not directly track shoreline development, the Maryland Department of Environment (MDE) Wetlands and Waterways Program tracks all applications and issued permits for projects that may impact regulated tidal or nontidal wetlands and waterways. Examples of activities that require a tidal wetlands permit from the Wetlands and Waterways Program, Tidal Wetlands Division, include building a new pier, adding a platform or boatlift to an existing pier, dredging a boat slip, putting in a bulkhead or constructing a living shoreline. The number of permits and permit modifications issued by the Tidal Wetlands Division from January 1, 2020, to December 31, 2024, in the Coastal Zone is 7,895 (see table). The BUILD tool (developed with CZM support) on the Maryland Coastal Atlas makes the MDE Wetland & Waterways Program Permitting layer available, which spatially shows pending applications and permitted projects in the coastal zone.

   The Virginia Institute of Marine Science (VIMS) created a Shoreline & Tidal Marsh Inventory dataset for the coastal counties of Maryland, which was recently updated between 2020 and 2023 (county-dependent). VIMS's Center for Coastal Resources Management, William & Mary, used this dataset to create the Maryland Shoreline Stabilization Mapper for use by the Maryland Department of the Environment (MDE). This online mapper displays the various shoreline inventory and stability layers among Maryland's coastal counties. According to the datasets, around 7,085 miles of Maryland's shorelines are classified as suitable for a "living shoreline." Of the shoreline protection structures, there are 673 miles of riprap, 439 miles of bulkheads, and 75 miles of groins. Other structures include marsh toe (86 miles), breakwaters (31 miles), and jetties (15 miles). See the tables below for more detailed information. This tool is strongly encouraged for preliminary planning purposes to assess feasibility of sites for living shoreline projects.

| Licenses and modifications issued from 2020 to 2024 | |
|---|---|
| **2020** | |
| New | 1208 |
| Modifications | 116 |
| **2021** | |
| New | 1469 |
| Modifications | 161 |
| **2022** | |
| New | 1533 |
| Modifications | 200 |
| **2023** | |
| New | 1533 |
| Modifications | 203 |
| **2020** | |
| New | 1260 |
| Modifications | 212 |

| Shoreline Protection Structures | | |
|---|---|---|
| **Category** | **Miles (Sum)** | **Count** |
| Riprap | 673.49 | 8,803 |
| Bulkhead | 439.89 | 6,671 |
| Marsh Toe | 86.01 | 1,625 |
| Groin | 75.69 | 1,986 |
| Marina > 50 slips | 58.25 | 462 |
| Breakwater | 31.59 | 512 |
| Marina < 50 slips | 25.18 | 356 |
| Wharf | 22.14 | 111 |
| Unconventional | 17.47 | 484 |
| Jetty | 15.73 | 507 |
| Debris | 10.52 | 239 |
| Nonfunctional Bulkhead | 7.34 | 211 |

| Maryland Shoreline Stabilization Model* | | |
|---|---|---|
| **Category** | **Miles (Sum)** | **Count** |
| Living Shoreline | 7,085.8 | 112,142 |
| Undetermined | 961.1 | 34,422 |
| Structural Shoreline Stabilization Measure | 146.6 | 4,800 |
| Not Processed | 18.9 | 12 |

*Shoreline recommendations, not on-the-ground practices

| Riparian Land Cover (Shoreline) | | |
|---|---|---|
| **Category** | **Miles (sum)** | **Count** |
| Agriculture | 415.82 | 3,246 |
| Bare | 6.71 | 129 |
| Commercial | 226.6 | 2213 |
| Forested | 20.56 | 1,483 |
| Grass | 62.59 | 961 |
| Industrial | 51.25 | 220 |
| Marsh Island | 961.45 | 1714 |
| NA | 5,326.61 | 36,468 |
| Paved | 200.13 | 2,848 |
| Residential | 739.37 | 11,923 |
| Scrub-Shrub | 46.61 | 344 |
| Timbered | 0.93 | 15 |

4. Briefly summarize the results of any additional state- or territory-specific data or reports on the cumulative and secondary impacts of coastal growth and development, such as water quality, shoreline hardening, and habitat fragmentation, since the last assessment.

   In addition to the routine updates to the programs mentioned above, the following are additional data that have been developed since the last assessment.

   **Cumulative Stress Fish Habitat**
   The Fisheries Ecosystem Assessment Division of DNR's Fishing and Boating Services has investigated the impact of watershed development on fish habitat and fisheries productivity in Maryland's Chesapeake Bay watershed since 2023. Using Maryland property tax map-based counts of structures in a watershed to determine percent of impervious surface in the watershed to

determine how thresholds of development impact recreational fisheries and Chesapeake Bay fishes of special concern. These data are then used to provide recommendations for planning efforts such as county and municipal comprehensive planning. Annual reports and other publications can be found at https://dnr.maryland.gov/fisheries/pages/fhep/pubs.aspx.

**Protecting Chesapeake Bay SAV Given Changing Hydrologic Conditions: Priority SAV Area Identification and Solutions Development**
This project identified high-priority submerged aquatic vegetation (SAV) areas throughout Chesapeake Bay and its tidal tributaries and developed solutions to protect and expand those SAV beds locally. Using existing SAV, flow, land use, water quality monitoring, BMP, and other data in spatial analysis/modeling, the project determined effective combinations of technologies, best management practices (BMPs), and land management policies to protect these high-priority SAV areas from loss during high-flow events/years. With this information, steps can be taken to target high-priority SAV areas for implementation of BMPs and land management policies that will protect or restore those priority SAV habitats.

**Management Characterization**

1. Indicate if the approach is employed by the state or territory and if there have been any significant state-level changes (positive or negative) in the development and adoption of procedures to assess, consider, and control cumulative and secondary impacts of coastal growth and development, including the collective effect on various individual uses or activities on coastal resources, such as coastal wetlands and fishery resources, since the last assessment.

**Significant Changes in Management of Cumulative and Secondary Impacts of Development**

| Management Category | Employed by State or Territory (Y or N) | CMP Provides Assistance to Locals that Employ (Y or N) | Significant Changes Since Last Assessment (Y or N) |
|---|---|---|---|
| Statutes, regulations, policies, or case law interpreting these | Y | Y | Y |
| Guidance documents | Y | Y | Y |
| Management plans (including SAMPs) | Y | Y | Y |

2. For any management categories with significant changes, briefly provide the information below. If this information is provided under another enhancement area or section of the document, please provide a reference to the other section rather than duplicate the information:
    a. Describe the significance of the changes;
    b. Specify if they were 309 or other CZM-driven changes; and
    c. Characterize the outcomes or likely future outcomes of the changes.

**Amendments to Critical Area Regulations**
The Critical Area Commission was first created within the DNR in 1984 (Chapter 794, Acts of 1984). Sixteen counties, Baltimore City, and forty-seven municipalities now have land within the Critical Area. The Critical Area is the first 1,000 feet from all tidal wetlands and tidal waters in Maryland. Today, the Commission is responsible for reviewing and approving proposed changes to local critical area plans; proposals by a State or local government agency which might lead to major development within a

critical area; and State projects on State-owned land within a critical area. The purposes and goals of the Critical Area law are to (1) minimize adverse impacts on water quality from runoff from development; (2) conserve fish, plant and wildlife habitat; and (3) establish land use policies that accommodate growth while addressing environmental impacts to habitat and water quality.

In 2024, the Maryland General Assembly updated the Critical Area law (Chapter 424, Acts of 2024) to incorporate considerations for coastal hazard mitigation and evaluating new growth allocations in the Critical Area and all 64 local Critical Area Programs. The update added two new goals to the law: (1) Reduce vulnerability to the impacts of coastal hazards and incorporate measures to improve the Chesapeake and Atlantic coastal bays and its tributaries; and (2) Ensure fair distribution of the burdens and benefits of development, mitigation, restoration, conservation, and coastal hazard mitigation within the critical area. Additionally, the Commission shall promulgate regulations for development in the Critical Area, with respect to: (1) Assessing and adapting the Critical Area for coastal hazard mitigation; (2) Enhancing the ability of the Critical Area to respond to coastal hazards by protecting, creating, and restoring natural and nature-based features; and (3) Addressing disparate impacts of development and ensure the benefits of development, restoration, hazard mitigation and conservation are shared across communities. The Commission anticipates promulgating new regulations by the end of 2026 and subsequently incorporating those regulations into all 64 local Critical Area programs.

**Sustainable Growth Subcabinet (2024)**
2024's SB 309/HB 225 renamed the Smart Growth Subcabinet to the Sustainable Growth Subcabinet (Subcabinet) to highlight prioritizing growth that balances economic, social, and environmental benefits. The bill also added the Secretary of the Maryland Department of Emergency Management (MDEM) as a voting member of the Subcabinet. Building on the success of smart growth over the past 27 years, the Subcabinet is leading the sustainable growth effort, balancing Maryland's economic growth needs with our environmental responsibilities through community and neighborhood vitality. The shift from smart to sustainable recognizes the need to broaden our land use work to include economic and environmental consideration. Using interagency advisory groups, on which Maryland Department of Natural Resources will serve, the Subcabinet will compile best practices, establish key performance measures, and measure state and local progress, adjusting as needed, to develop an implementation guide for the next generation of sustainable growth in Maryland. The implementation guide will also inform Maryland Department of Planning's annual Coastal Zone Management grant workplans. While not limited to coastal zone growth and resource preservation, the work of the Subcabinet will contribute to and be informed by the cumulative and secondary impacts of coastal zone development.

**Maryland Phase III Watershed Implementation Plan Addendum (2022)**
Maryland amended its Phase III Watershed Implementation Plan (WIP) in January 2022 to account for additional nutrient loads caused by coastal hazards and related impacts in 2025. This additional load allocation requires the removal of an additional 747,828 pounds of nitrogen per year. Maryland's updated plan incorporated precipitation research, sea level rise projections and saltwater intrusion data to develop trends and determine new strategies to achieve reductions. These strategies were informed by legislative changes, new incentives and new programs. CMP staff participated in work groups to evaluate science and research that developed strategies within the addendum.

**Land Preservation and Recreation Plan 2019-2023**
The Land Preservation and Recreation Plan is prepared by DNR every five years to address the demand for and supply of recreation resources (local, state and federal) within a state, identify needs and new opportunities for recreation improvements, and set forth an implementation program to meet the goals

identified by its citizens and elected leaders. The plan for 2027 - 2032 is under development and using public input gathered through surveys, stakeholder meetings, and thorough analyses of national, state and local issues impacting recreation and natural resource conservation. The Land Preservation and Recreation Plan guides land conservation and development of outdoor recreation opportunities over the next five years and addresses critical issues identified in the planning process. CMP staff are advising on the Plan, which includes the acknowledgement that the benefits of outdoor recreation and land conservation are far-reaching and have positive impacts on public health, the environment, and the economy.

**2050 Maryland Transportation Plan**

Every five years, the Maryland Department of Transportation (MDOT) develops a 20-year mission for transportation in the state known as the Maryland Transportation Plan (MTP). The 2050 MTP, also referred to as The Playbook outlines the State's overarching transportation priorities and helps create a larger context for transportation decision-making. An objective of The Playbook is to protect and enhance the natural, historic and cultural environment through avoidance, minimization and mitigation of adverse impacts related to transportation infrastructure, including support for broader efforts to improve the health of the Chesapeake Bay. While CMP staff did not assist in drafting this plan, the CMP is aware that coastal growth and development, especially in the transportation sector, may result in adverse cumulative and secondary impacts on water quality and habitat.

**Mid-Atlantic Council on the Ocean (2022 - 2024)**

Regional Ocean Partnerships (ROPs) are regional organizations convened by governors where states collaborate to advance shared priorities of ocean resources and issues. Established ROPs were formally recognized by the US Congress in the Regional Ocean Partnership Act of 2022, where the Mid-Atlantic Regional Council on the Ocean (MARCO) serves as the Mid-Atlantic ROP with Maryland currently chairing its management board. Also in 2022, MARCO established a subsidiary entity known as the Mid Atlantic Ocean Planning Committee (Mid-A OCP). The purpose of the Mid-A OCP was to convene issue-specific workgroups across federal, state, and tribal sectors. The intergovernmental approach advanced all priority areas of MARCO's mission, including coastal hazard mitigation, marine habitat protection, renewable energy, and water quality. For instance, through significant collaboration, MARCO and the Mid-A OCP have regularly hosted the Marine Debris Summit, sponsored the scientific efforts of the Mid Atlantic Coastal Acidification Network, convened offshore wind transmission workshops, and expanded a publicly accessible online mapping and data visualization platform (The MARCO Data Portal), which hosts over 6,000 spatial data layers.

**Chesapeake and Atlantic Coastal Bays Trust Fund**

Managed by DNR on behalf of the State of Maryland, the Chesapeake and Atlantic Coastal Bays Trust Fund (Trust Fund) issues an annual Grants Gateway solicitation seeking cost-efficient and effective nonpoint source pollution reduction projects in targeted areas of the state. This funding opportunity allocates approximately $20 - $30 million each year (dependent on annual revenue) to local implementation projects. Implementation-ready restoration proposals can be submitted under this outcome. Example projects can include, but are not limited to: wetland restoration, afforestation and other tree planting projects, riparian buffer restoration, stormwater best management practices, stream restoration, meadow plantings, living shorelines, and agricultural best management practices. Projects must address water quality to the mainstem of the Chesapeake Bay or Atlantic Coastal Bays by reducing non-point source pollution, namely nitrogen, phosphorus and sediment. Projects may be implemented on state owned or other public lands as well as on private land. Trust Fund proposals are reviewed and selected based on multiple criteria, including cost per pound of nutrient and sediment reductions to be

achieved, co-benefits targeting, and readiness and ability to proceed. The most competitive proposals include projects that will yield cumulative water quality benefits (as opposed to annual reductions), are able to be credited and reported for annual progress implementation, achieve multiple co-benefits (such as coastal hazard mitigation, carbon sequestration, improvement to recreational opportunities. etc.) and apply natural and nature-based design approaches that also provide habitat and ecological uplift.

In 2024, Maryland passed the Whole Watershed Act (SB 969/HB 1165) which establishes a highly collaborative, science-based approach to watershed restoration across the state promoting innovative, science-based solutions to waterway restoration efforts. The Trust Fund is one source of funding the Whole Watershed program will utilize to create a new Whole Watershed Fund supporting a five-year pilot program targeting five Maryland watersheds that best represent the state's diverse land uses, geographies, and impairments. The purpose of the Whole Watershed Restoration Partnership is to accelerate restoration of the Chesapeake and Atlantic Coastal Bays and their watersheds by equitably focusing assistance on actions and areas that are: cost–effective; likely to demonstrate a rapid systemic response to restoration activity, including rapid delisting of impaired streams identified under § 303(d) of the federal clean water act; and supported by the local government.

**Enhancement Area Prioritization**

1. What level of priority is the enhancement area for the coastal management program?

   **High** _____
   **Medium** __X__
   **Low** _____

2. Briefly explain the reason for this level of priority. Include input from stakeholder engagement, including the types of stakeholders engaged.

   Development pressure continues to be a challenge in Maryland as reflected by increases in impervious areas and developed areas. Rural and forest lands were the most heavily impacted land use types by development pressures throughout the state and these pressures are expected to continue into the future. In addition, in low lying coastal areas such as the eastern shore these lands are also at risk from saltwater intrusion. Thus, the cumulative and secondary impacts enhance area remains a priority for the CMP. New efforts such as MD Whole Watershed Act paired with continued involvement in planning for smart growth through the Sustainable Growth Cabinet will allow the CMP to continue to make progress on cumulative and secondary impacts. The CMP will continue to partner with other agencies such as Maryland Department of Planning, Maryland Department of Environment and the Department of Emergency Management on planning efforts. Additionally, some of these concerns will be addressed in the enhancement strategy for wetlands and coastal hazards.

## Special Area Management Planning

Section 309 Enhancement Objective: Preparing and implementing special area management plans for important coastal areas. §309(a)(6)

The Coastal Zone Management Act defines a special area management plan (SAMP) as "a comprehensive plan providing for natural resource protection and reasonable coastal-dependent economic growth containing a detailed and comprehensive statement of policies; standards and criteria to guide public and private uses of lands and waters; and mechanisms for timely implementation in specific geographic areas within the coastal zone. In addition, SAMPs provide for increased specificity in protecting natural resources, reasonable coastal-dependent economic growth, improved protection of life and property in hazardous areas, including those areas likely to be affected by land subsidence, sea level rise, or fluctuating water levels of the Great Lakes, and improved predictability in governmental decision making."

**Phase 1 (High-level) Assessment:** *(Must be completed by all states and territories.)*
*Purpose: To quickly determine whether the enhancement area is a high-priority enhancement objective for the CMP that warrants a more in-depth assessment. The more in-depth assessments of Phase II will help the CMP understand key problems and opportunities that exist for program enhancement and determine the effectiveness of existing management efforts to address those problems.*

**Resource Characterization**

1. In the table below, identify geographic areas in the coastal zone subject to use conflicts that may be able to be addressed through a SAMP. This can include areas that are already covered by a SAMP but where new issues or conflicts have emerged that are not addressed through the current SAMP.

| Geographic Area | **Opportunities for New or Updated Special Area Management Plans**<br>Major conflicts/issues |
|---|---|
| Atlantic Ocean | Since the last assessment, organizations engaging in ocean use and resource management activities greatly evolved, with higher levels of coordination emerging in several areas. The CMP is engaged with several specific to offshore wind including fisheries through the Responsible Offshore Science Alliance (ROSA), non-fisheries resources through the Regional Wildlife Science Collaborative (RWSC), lease evaluation through the Central Atlantic Task Force and data workshop partnerships. Ongoing work through the Mid-Atlantic Regional Council on the Ocean (Regional Ocean Partnership) and other groups will continue to create opportunities for coordinated and regional-scale planning. |
| Maryland Coastal Bays | With a large seasonable population and extensive development in a relatively small geographic area, there is risk to the ecological integrity of Maryland's coastal bays. That said, the Maryland Coastal Bays Program already has a comprehensive management plan with resource management and coordination actions, but the CMP could assist in implementing the actions in that plan. |
| Landscape Scale Planning | The CMP is focusing efforts on three geographic areas: the Deal Island Peninsula, the Chesapeake Islands, and Southern Maryland. Deal Island and the Chesapeake Islands are subject to a myriad of challenges |

| Geographic Area | Opportunities for New or Updated Special Area Management Plans<br>Major conflicts/issues |
|---|---|
| | including subsidence, nuisance flooding, and saltwater intrusion. Both areas are now seeing more frequent and severe impacts to habitats, communities, and economies as sea levels rise and coastal hazards impact the region. Southern Maryland has many parallel issues of shoreline erosion and nuisance flooding, and it is also seeing increased development pressure expanding out from the DC metro area. The CMP is likely to receive increasing requests for technical and financial assistance to facilitate and ease this transition. |

2. If available, briefly list and summarize the results of any additional state- or territory-specific data or reports on the status and trends of SAMPs since the last assessment.

   Since the last assessment, the CMP completed plans for addressing coastal hazards on state lands for Chesapeake Forest and Newton Neck. Additionally, the CMP has built upon works mentioned in the previous SAMP assessment for 2015-2019. In particular, this included continued efforts to improve response to coastal hazards in Deal Island. Finally, the CMP has set Southern Maryland as a priority area moving forward.

   **Southern Maryland**
   The CMP has supported projects in Southern Maryland by funding planning efforts through the DNR's Grants Gateway Outcome 2 to assess precipitation-based flood risk in Calvert County. Additionally, the CMP plans to support a part time regional coordinator position to support the development and implementation of programs and policies at the local level, integrating community development and natural resource restoration and protection with coastal hazard mitigation. Efforts of the coordinator will be community driven through network building and would assist in the identification of restoration projects throughout the region with an emphasis on local and state public lands to address hazards and demonstrate potential solutions that could be utilized community wide.

   **Charles County Authority**
   The CMP supported the newly created (2020) Charles County Authority through seed funding to develop the Authority and through partnership to develop a competitive federal funding proposal for the Pope's Creek Waterfront Park Living Shoreline Project in Charles County. The project area will address community access needs and is subject to sea level rise, storm surges, and high tide flooding that will increasingly inundate sensitive habitat, a public park, and a public road. The project goal is to utilize nature-based infrastructure to enhance and protect sensitive habitat, increase coastal access, improve water quality, reduce flooding and erosion, and expand the capacity of the surrounding communities.

   **Point Lookout State Park**
   Point Lookout State Park is a particularly vulnerable state park which already experiences extensive flooding resulting in closures of sections of the park, including the camping loop. The CMP will work with state and nonprofit partners to design a living shoreline to protect a major road through the park. This design may also be used as a case study for a Guidebook (under development) to assist land managers with taking action to address coastal hazards. Finally, through the Partnership for Action Learning in Sustainability (PALS) program with the University of Maryland, the CMP is

supporting a virtual reality project to help visualize hazard mitigation projects at Point Lookout State Park in St. Mary's County. This will support efforts for hazard mitigation planning happening across Maryland State Lands.

**Mallows Bay-Potomac River National Marine Sanctuary**
On September 3, 2019, five years after the State of Maryland submitted a community-based nomination to NOAA, designation occurred for the Mallows Bay-Potomac River National Marine Sanctuary. CMP staff worked in partnership with NOAA's Office of National Marine Sanctuaries, Maryland Historic Trust, Charles County, and numerous community partners throughout the nomination and designation process. CMP staff acted as the main point of contact for the Department, which owns the adjoining park property and bottomlands of the Potomac River. Since designation, the CMP's role has evolved to support the growth of the Mallows Bay- Potomac River Marine Sanctuary. The CMP has a role on the Sanctuary Advisory Committee and on the co-managers meetings. The co-management team has initiated the scoping process for a Maritime Heritage Center for MBP NMS and will support the county as it begins to navigate the NEPA process.

**Newtowne Neck**
In April 2024, CMP staff participated in an eight-week course led by the USDA Northern Forests Hub and Northern Institute of Applied Science to develop a plan that identifies coastal hazard threats and appropriate mitigation strategies for Newtowne Neck State Park. This state park is located on a peninsula in St. Mary's County and contains seven miles of waterfront and over 300 acres of agricultural leases. Partnering with the Maryland Park Service, staff determined that temperature increases, changing growing seasons, increasing precipitation, sea level rise, and invasive species are among the most pressing threats at this property. Management goals include improving the quality of the forest (especially the forest buffer), ensuring any continued agriculture at the park is sustainable with saltwater intrusion, and providing a safe and sustainable swimming beach for park visitors.

**Deal Island Peninsula**
Since the last assessment, the CMP supported multiple efforts on the Deal Island Peninsula. The Deal Island Peninsula Partnership (DIPP) is a network of partners including the Deal Island Peninsula communities, researchers, and governmental agencies and non-governmental organizations at local, state, and regional levels with the goal to increase the hazard mitigation in local environments and communities to address coastal flooding, erosion, and other social and environmental changes. In recent years, CBNERR-MD supported the coordinator role through funding and staffing. DIPP is currently working with Somerset County and the Center for Watershed Protection to expand on a CMP-funded drainage assessment and address obstacles to implementation such as procurement of easements. Additionally, in partnership with CBNERR-MD, the CMP supported long term monitoring of the Deal Island Living Shoreline Project which was installed in 2021. Data analysis will directly inform the CMP's Coastal Management Fellow project which will result in site and state-level management resources for living shorelines.

During this assessment period, the US Army Corps of Engineers advanced beneficial use of dredge material projects on the Deal Island Peninsula. The CMP Beneficial Use coordinator facilitated state agency coordination and is developing lessons learned for future beneficial use projects. Additionally, CBNERR-MD staff supported the development of monitoring protocols for this site and facilitated communication with Deal Island residents through the DIPP. Leveraging these relationships, The CMP participated in Audubon's Mid-Atlantic's Marshes for Tomorrow effort,

which identified Deal Island as a priority area (See the Phase I Wetland's Assessment for more details). The CMP also invested in education of the Deal Island community on the use of MyCoast to document the persistent high tide flooding experienced on the peninsula. In response, there are record numbers of reports coming in from the Deal Island Peninsula region. Over 2024, the community captured a majority of the major flood events on the peninsula.

**Chesapeake Islands**

Communities and local governments remain concerned about the vulnerability of the Maryland "Bay Islands," which has led to site visits, projects, and discussions in this region. Bay Islands include some of the low-lying areas of Deal, Janes, Hoopers, Tilghman and Smith islands, as well as the City of Crisfield. These areas are experiencing flood events threatening habitat and infrastructure alike and there is an increasing interest in designing and implementing both restoration projects and comprehensive planning approaches to address the Bay Island needs. The CMP has also worked in and around the City of Crisfield, through collaborations with State Highway and the Department's Somers Cove team, supporting the development of tools and hazard plans to evaluate options for site maintenance and improvements that complement broader city hazard mitigation planning**.** Partnership in these areas will likely continue into the next strategy term.

**Chesapeake Forest**

In 2023, CMP staff assisted the Maryland Forest Service in drafting a hazard mitigation plan for Chesapeake Forest Lands (CFL), in part to meet certification requirements for sustainable forestry. Chesapeake Forest Lands consist of over 75,000 acres of managed forests spread across six counties. Much of this area is at risk of sea level rise, flooding, and saltwater intrusion. Dominated by loblolly pine, the Chesapeake Forest Lands also contain over 6000 acres of wetlands. In collaboration with a collaborative, multi-institutional partnership led by the USDA Forest Service, a workshop was held to gather input from foresters on key challenges and research needs. The resulting plan identifies stressors and recommends actions to continue operations in the CFL. Major mitigation actions include active invasive species management and monitoring, increasing vegetative buffers, redirecting water flow and increasing culvert size to reduce flooding, encouraging regeneration of species that are adapted to future conditions, and maintaining appropriate stand density to address insect pests.

**Maryland's Coastal Bays**

Along Maryland's Atlantic Coast lies a series of embayments known as the Atlantic Coastal Bays, located behind a barrier island system. The Maryland Coastal Bays Program (MCBP) is a National Estuary Program and works with the Environmental Protection Agency to advance goals that are complementary to the CMP and focused on this geographic area. CCS staff participate on the MCBP board and cooperate with MCBP staff to address hazard mitigation, conservation, restoration and planning goals. The Comprehensive Conservation and Management Plan (updated in 2024) includes updated performance measures, funding needs, and timeframes to better identify and track progress of MD DNR goals, as well as other state and local agencies efforts. MD Coastal Bays has applied to the Whole Watershed Act Fund to address specific water quality and quantity needs, as well as several co-benefits, in Newport Bay, which includes the Town of Berlin.

**Envision the Choptank**

CCS have participated in Envision the Choptank to coordinate environmental work since its inception in 2016. Demonstrating and highlighting progress in the core workgroups has been a large piece of the collaboration. The workgroups include: Local Governments, Breaking Barriers with Agriculture

Partners, Working with Communities, and the newest workgroup, Expanding Large Scale Restoration, which began in 2022. In the Fall of 2023, an update to the Common Agenda was completed and released. This update included information regarding progress, new community priorities, and efforts to address coastal hazards. This network has grown and expanded in an effort to support on-the-ground restoration projects. Envision the Choptank has partnered with ShoreRivers, MD DNR, MD MDE, Caroline Co, UMD SeaGrant Extension, and other stakeholders to plan, design and implement both large- and small-scale restoration projects across the watershed. The network will continue scaling out their programs and efforts for the LEAD the Shore Cohort and the Ambassador Fund. Envision holds an All-Partner Meeting annually to showcase their new and ongoing regional and collaborative work.

**Mid-Atlantic Regional Council on the Ocean**

Regional Ocean Partnerships (ROPs) are regional organizations convened by governors and work in collaboration with federal, state, and tribal governments to advance shared priorities of ocean resources and issues. Established ROPs were formally recognized by the US Congress in the Regional Ocean Partnership Act of 2022, where the Mid-Atlantic Regional Council on the Ocean (MARCO) serves as the Mid-Atlantic ROP with Maryland chairing its management board. Specifically, MARCO focuses on four priorities shared among the five coastal Mid-Atlantic states (Virginia to New York, inclusive): coastal hazard mitigation, marine habitat protection, renewable energy, and water quality. A key resource provided by MARCO is a publicly accessible online spatial data portal. The portal serves as a platform to engage all stakeholders in ocean planning by providing access to over 6,000 spatial data layers through a stream-lined online mapping and visualization tool. It requires no software or GIS experience to utilize effectively, making it particularly useful to a diverse array of stakeholders. MARCO operations are based on annual workplans that are carefully vetted in partnership with NOAA. In 2024, MARCO priorities include convening the Mid-Atlantic Ocean Planning Committee (a revitalized intergovernmental planning entity that connects federal, state, and tribal governments in topic-specific workgroups), expand the Data Portal with enhanced fisheries-relevant data, and support additional regional-scale partnerships that align with the purpose of MARCO (Regional Wildlife Science Collaborative, Mid-Atlantic Coastal Acidification Network).

**Management Characterization**

1. Indicate if the approach is employed by the state or territory and if there have been any significant state- or territory-level management changes (positive or negative) that could help prepare and implement SAMPs in the coastal zone.

**Significant Changes in Special Area Management Planning**

| Management Category | Employed by State or Territory (Y or N) | CMP Provides Assistance to Locals that Employ (Y or N) | Significant Changes Since Last Assessment (Y or N) |
|---|---|---|---|
| SAMP policies, or case law interpreting these | N | N | N |
| SAMP plans | N | N | N |

2. For any management categories with significant changes, briefly provide the information below. If this information is provided under another enhancement area or section of the document, please provide a reference to the other section rather than duplicate the information:
    a. Describe the significance of the changes;
    b. Specify if they were 309 or other CZM-driven changes; and
    c. Characterize the outcomes or likely future outcomes of the changes.

    No significant changes were identified for SAMP management categories.

**Enhancement Area Prioritization**

1. What level of priority is the enhancement area for the coastal management program?

| | |
|---|---|
| **High** | _____ |
| **Medium** | _____ |
| **Low** | __X___ |

2. Briefly explain the reason for this level of priority. Include input from stakeholder engagement, including the types of stakeholders engaged.

The CMP has elected to not use SAMP to address management of coastal areas. The CMP will address management of important coastal areas through other avenues.

## Ocean and Great Lakes Resources

**Section 309 Enhancement Objective:** Planning for the use of ocean [and Great Lakes] resources. §309(a)(7)

**Phase 1 (High-level) Assessment:** *(Must be completed by all states and territories.)*
*Purpose: To quickly determine whether the enhancement area is a high-priority enhancement objective for the CMP that warrants a more in-depth assessment. The more in-depth assessments of Phase II will help the CMP understand key problems and opportunities that exist for program enhancement and determine the effectiveness of existing management efforts to address those problems.*

**Resource Characterization**

1. Understanding the ocean and Great Lakes economy can help improve management of the resources it depends on. Using Economics: National Ocean Watch (ENOW),[14] indicate the status of the ocean and Great Lakes economy as of 2021 (the most recent data) in the tables below. Include graphs and figures, as appropriate, to help illustrate the information. Note ENOW data are not available for the territories. The territories can provide alternative data, if available, or a general narrative, to capture the value of their ocean economy.

**Status of Ocean and Great Lakes Economy for Coastal Counties (2021)**

| | All Ocean Sectors | Living Resources | Marine Construction | Ship & Boat Building | Marine Transportation | Offshore Mineral Extraction | Tourism & Recreation |
|---|---|---|---|---|---|---|---|
| Employment (# of Jobs) | *115,105* | *2,277* | *1,516* | *412* | *49,127* | *473* | *61,299* |
| Establishments (# of Establishments) | *4,729* | *211* | *121* | *30* | *358* | *44* | *3,965* |
| Wages (Millions of Dollars) | *$5,100.0* | *$140.7* | *$105.9* | *$25.2* | *$3,100.0* | *$31.0* | *$1,600.0* |
| GDP (Millions of Dollars) | *$10,200.0* | *$376.2* | *$226.6* | *$58.3* | *$5,700.0* | *$86.7* | *$3,700.0* |

[14] *coast.noaa.gov/digitalcoast/tools/enow.html*. If you select any coastal county for your state, you are directed to various data displays for that county. In the upper left of the screen, click the "State" box, to the left of the county box so that the state name will be highlighted. Now the data will reflect statewide data for all of the state's coastal counties. Make sure "2021" is selected for the year (top right corner). You can then click through the sector types by selecting the icons along the top and the type of economic data (employment, wages, GDP, etc.), by clicking through the icons on the left.

**Change in Ocean and Great Lakes Economy for Coastal Counties (2005-2021)[15]**

| | All Ocean Sectors | Living Resources | Marine Construction | Ship & Boat Building | Marine Transportation | Offshore Mineral Extraction | Tourism & Recreation |
|---|---|---|---|---|---|---|---|
| Employment (# of Jobs) | *+30,584* | *+122* | *-44* | *-782* | *+30,575* | *-100* | *+814* |
| Establishments (# of Establishments) | *+537* | *+25* | *-39* | *-26* | *+110* | *-23* | *+490* |
| Wages (Millions of Dollars) | *+$2,564.0* | *+$85.1* | *+$48.1* | *-$14.6* | *+$1,841.3* | *+$1.9* | *+$602.5* |
| GDP (Millions of Dollars) | *+$5,804.0* | *+$229.2* | *+$121.2* | *-$22.0* | *+$3,886.1* | *-$4.2* | *+$1,594.7* |

2. Understanding existing uses within ocean and Great Lakes waters can help reduce use conflicts and minimize threats when planning for ocean and Great Lakes resources. Using Ocean Reports,[16] indicate the number of uses within the ocean or Great Lakes waters off of your state. To avoid duplication, energy uses (including pipelines and cables) are reported under "Energy and Government Facility Siting" in the following template. However, feel free to include energy uses in this table as well if listing all uses within ocean and Great Lakes waters in one place is preferred. Add additional lines, as needed, to include additional uses that are important to your state. Note: The Ocean Reports tool does not include data for the Great Lakes states. Great Lakes states should fill in the table as best they can using other data sources.

**Uses within Ocean or Great Lakes Waters**

| Type of Use | Number of Sites |
|---|---|
| Federal sand and gravel leases *(Completed)* | 3 |
| Federal sand and gravel leases *(Active)* | 0 |
| Federal sand and gravel leases *(Expired)* | 0 |
| Federal sand and gravel leases *(Proposed)* | 0 |
| Beach Nourishment Projects | 13 |
| Ocean Disposal Sites | 85 |
| Principle Ports *(Number and Total Tonnage)* | 1 - 39,403,768 tons |
| Coastal Maintained Channels | 122 |
| Designated Anchorage Areas | 19 |
| Danger Zones and Restricted Areas | 5 |
| Other (please specify) | N/A |

3. In the table below, characterize how the threats to and use conflicts over ocean and Great Lakes resources in the state's or territory's coastal zone have changed since the last assessment.

[15] Trend data is available at the bottom of the page for each sector and type of economic data. Mouse over the data points for 2005 and 2021 to obtain the actual values and determine the change by subtracting 2005 data from 2021.

[16] *coast.noaa.gov/digitalcoast/tools/ort.html*. Select the "view quick reports" button and enter the name of your state or territory in the search bar. Some larger states may have the "quick reports" for their state waters broken into several different reports. Click on the "state waters" reports to view. Note the Ocean Reports tool also generates "quick reports" for national estuarine research reserve boundaries in your state. These reports are just a subset of the "state waters" report(s) so you can ignore the reserve "quick reports." Use the icons on the left hand side to select different categories: general information, energy and minerals, natural resources and conservation, oceanographic and biophysical, transportation and infrastructure, and economics and commerce. Scroll through each category to find the data needed to complete the table. The top six categories in the table above are in the "energy and minerals" section while the other information to complete the table can be found under the "transportation and infrastructure" section.

**Significant Changes to Ocean and Great Lakes Resources and Uses**

| **Resource/Use**<br>**Change in the Threat to the Resource or Use Conflict** | **Since Last Assessment**<br>(↑, ↓, -, unknown) |
|---|---|
| Benthic habitat (including coral reefs) | unknown |
| Living marine resources (fish, shellfish, marine mammals, birds, etc.) | Increase |
| Sand/gravel | Unchanged |
| Cultural/historic | Increase |
| Other (please specify) | N/A |
| Transportation/navigation | Increase |
| Offshore development[17] | Unchanged |
| Energy production | Increase |
| Fishing (commercial and recreational) | Increase |
| Recreation/tourism | Increase |
| Sand/gravel extraction | Unchanged |
| Dredge disposal | Increase |
| Aquaculture | Unchanged |
| Other (please specify) | N/A |

4. For those ocean and Great Lakes resources and uses in the table above that had an increase in threat to the resource or increased use conflict in the state's or territory's coastal zone since the last assessment, characterize the major contributors to that increase. Place an "X" in the column if the use or phenomenon is a major contributor to the increase.

[17] Offshore development includes underwater cables and pipelines, although any infrastructure specifically associated with the energy industry should be captured under the "energy production" category.

**Major Contributors to an Increase in Threat or Use Conflict to Ocean and Great Lakes Resources**

| | Land-based development | Offshore development | Pollutedrunoff | Invasive species | Fishing (Commercial and Recreational) | Aquaculture | Recreation | Marine Transportation | Dredging | Sand / Mineral Extraction | Ocean Acidification | Other (Specify) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Living marine resources (fish, shellfish, marine mammals, birds, etc.) | X | X | X | X | X | | | | | | X | X* |
| Cultural/historic | | X | | | X | | | | | | X | X * |
| Transportation/navigation | | X | | | | | | X | | | | |
| Recreation/tourism | X | X | | X | | | | | X | | | |
| Dredge disposal | X | | | | | | | | X | | | |
| Living marine resources (fish, shellfish, marine mammals, birds, etc.) | X | X | X | | | | | | | | X | |

*Coastal hazards, communities

5. If available, briefly list and summarize the results of any additional state- or territory-specific data or reports on the status and trends of ocean and Great Lakes resources or threats to those resources since the last assessment to augment the national data sets.

    1) The Shallow-Draft Channel Dredging and Restoration Assessment (SDCDRA) will address the increasing sedimentation and dredging challenges facing Maryland's coastal communities. With over 53 state and federally maintained navigation channels identified as areas of concern, maintaining navigability is critical for recreational boating, commercial access, and emergency response operations. Without a strategic plan, sediment buildup continues to restrict navigation, increase maintenance costs, and limit beneficial use opportunities for dredged material. This assessment will provide a comprehensive, data-driven approach to identifying dredging needs, improving sediment management strategies, and leveraging cost-saving techniques such as beneficial use to support shoreline stabilization and habitat restoration efforts.
    2) Maryland continues to explore the use of thin-layer placement (TLP) as an innovative sediment management strategy to enhance marsh health and restore degraded habitats. Based on insights gained from past and ongoing TLP projects across the state, there is an opportunity to develop formal guidance to improve the effectiveness, permitting, and implementation of TLP. This guidance would provide best practices for site selection, material placement, and monitoring, ensuring that future projects maximize ecological benefits while aligning with regulatory requirements.

3) The Maryland Port Administration's 2024 Annual Report
    a) The 2024 Maryland Port Administration (MPA) Dredged Material Management Program (DMMP) Annual Report highlights ongoing efforts to maintain the Port of Baltimore's navigation channels while prioritizing sustainability, innovative reuse, and community engagement.
4) Several reports and strategies in the past five years have identified how the State's cultural assets are exposed to impacts when they are physically located in an area that could be negatively affected by coastal hazards. Maryland is working with partners to prioritize investments in and support local projects and programs that provide new and ongoing access to natural and cultural resources in communities across the coastal zone. Priority actions have been identified in reports to increase how communities incorporate their own unique cultural heritage is into outreach programs and events.
5) Offshore Wind - Commercial/Recreational Morgan State University report
    a) Coastal commercial and recreational fishing industries are both important economic drivers and historical uses of Maryland's ocean resources. Identifying and quantifying short- and long-term interactions between fishing industries and energy development of the Mid-Atlantic Ocean are critical for natural resource managers to understand so that these impacts can be well-represented in decision making. From 2022-2024, economic researchers at Morgan State University quantified economic baseline profiles of coastal ocean Maryland commercial and for-hire fishing industries. This report detailed the economic significance of these fisheries annually from 2007 to 2022 using both federally collected data and electronic vessel trip reports (eVTRs). Between 2007-2022, surf clams, sea scallops, and black sea bass were the most economically significance MD coastal ocean fisheries in the commercial sector, representing an annual average of approximately $3.8 million, collectively.
6) MD Tourism Annual Report
    a) In 2022, the Mid-Atlantic Regional Council on the Ocean (MARCO) released the "New Perspectives on the Ocean Economy of Mid-Atlantic States" report, which detailed economic activity related to coastal and ocean resources of the coastal Mid-Atlantic states (Virginia, Maryland, Delaware, New Jersey, and New York). The report examined the economic contributions of six sectors and 21 industries, of which "tourism and recreational" is the most significant economic sector in coastal Maryland. In 2018, the most recent year of available data at the time of the report, the Maryland tourism and recreation sector contributed approximately $3.63 billion to the Gross Domestic Product.

**Management Characterization**

1. Indicate if the approach is employed by the state or territory and if any significant state- or territory-level changes (positive or negative) in the management of ocean and Great Lakes resources have occurred since the last assessment?

**Significant Changes to Management of Ocean and Great Lakes Resources**

| Management Category | Employed by State or Territory (Y or N) | CMP Provides Assistance to Locals that Employ (Y or N) | Significant Changes Since Last Assessment (Y or N) |
|---|---|---|---|
| Statutes, regulations, policies, or case law interpreting these | Y | N | N |
| Regional comprehensive ocean/Great Lakes management plans | Y | N | Y |
| State comprehensive ocean/Great Lakes management plans | N | N | N |
| Single-sector management plans | Y | Y | Y |

2. For any management categories with significant changes, briefly provide the information below. If this information is provided under another enhancement area or section of the document, please provide a reference to the other section rather than duplicate the information:
    a. Describe the significance of the changes;
    b. Specify if they were 309 or other CZM-driven changes; and
    c. Characterize the outcomes or likely future outcomes of the changes.

**Program Change (PC)**

The Maryland CMP will finalize a CZM-led PC submission in early 2025, reflecting updated enforceable coastal policies reflective of current statutes, regulations and policies since the last RPC was finalized in 2020. This will reflect significant program updates such as clarifying the language of 14 Critical Area Policies for greater resource protection and overall citation updates of 22 policies. This work was CZM-driven and will ensure that coastal policies are current. Since the last RPC, the program has also entered into a Memorandum of Understanding with FEMA to streamline some of its consistency reviews. The state is also working to develop a Geographic Location Descriptor (GLD) to reflect ocean coastal policy reviews for renewable energy activities. The state also has plans for a second program change submission in 2025, which will include substantive policy updates for enhanced fisheries protections and other state interests.

**Regional Partnership Coordination.**

Since the last assessment, there have been several significant developments on issue-specific collaboration around offshore wind and updates related to the CMP's participation in Regional Ocean Partnerships (ROPs). Specifically, during the last assessment period the state helped to develop and advance work with the Regional Wildlife Science Collaborative for Offshore Wind (RWSC), the Responsible Offshore Science Alliance (ROSA), and an 11-state collaboration for establishing a Regional Fund Administrator (RFA) for fisheries compensation. These efforts were CZM-driven collaborative efforts in Maryland through partnerships with other state agencies. The outcomes of this work are greater consistency across the regional- and Atlantic Ocean-scale on monitoring, science and research priorities for fisheries, wildlife, and fisheries compensation for offshore wind.

**Beneficial Use**

The CMP has expanded its work and focus on integrating beneficial use of dredged materials into its waterway access and habitat and shoreline restoration work since the last assessment. Since 2021, the CMP has beneficially used approximately 30,500 cubic yards of dredged material across 8 projects, supported by restoration and waterways funds. This work led to at least $375,000 in cost savings, although cost savings will fluctuate with the market. The program has worked with multiple local partners to explore beneficial use needs and connection points. During the next assessment period, the CMP anticipates completing work on a shallow draft channel dredge assessment and continuing to explore the success and use of thin layer placement.

**Outdoor Recreation**

The CMP supported work for the Maryland Outdoor Recreation Economy (MORE) Commission during the last assessment period, which provided an opportunity to uplift coastal recreation priorities. Eventually, Maryland established an Outdoor Recreation office in the MDNR as a result of these investments. In addition, the CMP, through a Project of Special Merit, worked with state parks in the coastal zone to support a pilot program for bilingual rangers that would help to address needs for interpreting coastal resource protection priorities and fish and wildlife regulations to a broader range of constituencies. As a result of this project the program was formally adopted and expanded through the Maryland Park Service, partners with the Chesapeake Conservancy and the Outdoor Recreation office.

3. Indicate if your state or territory has a comprehensive ocean or Great Lakes management plan.

| Comprehensive Ocean/Great Lakes Management Plan | State Plan | Regional Plan |
|---|---|---|
| Completed plan (Y/N) (If yes, specify year completed) | N | N |
| Under development (Y/N) | N | Y |
| Web address (if available) | http://dnr.maryland.gov/ccs | https://www.midatlanticocean.org / MARCO enables Maryland to advance key ocean priorities |
| Area covered by plan | n/a | Mid-Atlantic |

**Enhancement Area Prioritization**

1. What level of priority is the enhancement area for the coastal management program?

**High** __X___
**Medium** _____
**Low** _____

2. Briefly explain the reason for this level of priority. Include input from stakeholder engagement, including the types of stakeholders engaged.

The CMP continues to lead Maryland's work advancing Atlantic Ocean priorities, particularly around offshore energy and habitat, and is making investments in beneficial use to connect it more comprehensively to restoration initiatives and water access. Engaging resource users and coastal and ocean communities continues to be an ongoing need as dredge material placement and offshore energy are key topics that state and local partners are tracking. As a result of these needs, Maryland is rating this enhancement area a 'high' priority.

## Energy and Government Facility Siting

**Section 309 Enhancement Objective:** Adoption of procedures and enforceable policies to help facilitate the siting of energy facilities and Government facilities and energy-related activities and Government activities which may be of greater than local significance. §309(a)(8)[18]

**Phase 1 (High-level) Assessment:** *(Must be completed by all states and territories.)*
*Purpose: To quickly determine whether the enhancement area is a high-priority enhancement objective for the CMP that warrants a more in-depth assessment. The more in-depth assessments of Phase II will help the CMP understand key problems and opportunities that exist for program enhancement and determine the effectiveness of existing management efforts to address those problems.*

**Resource Characterization**

1. In the table below, characterize the status and trends of different types of energy facilities and activities in the state's or territory's coastal zone based on best-available data. If available, identify the approximate number of facilities by type. For ocean-facing states and territories (not Great Lakes states), Ocean Reports[19] includes existing data for many energy facilities and activities.

Maryland imports nearly 40% of its energy. Coal, natural gas, and petroleum are the fossil fuels utilized to produce electricity. Natural gas supplies about 42% of the state's electricity, while Maryland's coal-fired power plants have been reduced to producing only 5% of the state's annual electric generation. Power from the state's only nuclear plant – the Calvert Cliffs Nuclear Power Plant – typically supplies about 42% of annual generation. Petroleum and renewables supply much of the remaining generation. Maryland has four main types of renewable energy resources: wind, biomass, solar, and hydropower.

[18] CZMA § 309(a)(8) is derived from program approval requirements in CZMA § 306(d)(8), which states:

> "The management program provides for adequate consideration of the national interest involved in planning for, and managing the coastal zone, including the siting of facilities such as energy facilities which are of greater than local significance. In the case of energy facilities, the Secretary shall find that the State has given consideration to any applicable national or interstate energy plan or program."

NOAA regulations at 15 C.F.R. § 923.52 further describes what states need to do regarding national interest and consideration of interests that are greater than local interests.

[19] *coast.noaa.gov/digitalcoast/tools/ort.html.* Select the "view quick reports" button and enter the name of your state or territory in the search bar. Some larger states may have the "quick reports" for their state waters broken into several different reports. Click on the "state waters" reports to view. Note the Ocean Reports tool also generates "quick reports" for national estuarine research reserve boundaries in your state but this is just a subset of the "state waters" report(s) so you can ignore the reserve "quick reports." Click on the wind turbine icon on the left ("energy and minerals") for information on energy production. While outside your coastal zone, you may also want to consider facilities/activities in "federal waters" that may have effects on your coastal zone.

**Status and Trends in Energy Facilities and Activities in the Coastal Zone**

| Type of Energy Facility/Activity | Exists in Coastal Zone (# or Y/N) | Change in Existing Facilities/Activities Since Last Assessment (↑, ↓, -, unknown) | Proposed in Coastal Zone (# or Y/N) | Change in Proposed Facilities/Activities Since Last Assessment (↑, ↓, -, unknown) |
|---|---|---|---|---|
| Pipelines | Y - 13 | Increase | Y | Increase |
| Electrical grid (transmission cables) | Y - 156 | Increase | Y | Increase |
| Ports | Y | Unchanged | N | Unchanged |
| Liquid natural gas (LNG) | Y - 2 | Increase | Y | Increase |
| Electric Power Facilities (Oil) | Y - 15 | Unchanged | Y | Unchanged |
| Electric Power Facilities (Gas) | Y - 42 | Unchanged | Y | Unchanged |
| Electric Power Facilities (Coal) | Y -3, scheduled to close | Decrease | N | Unchanged |
| Electric Power Facilities (Nuclear) | Y - 1 | Unchanged | N | Unchanged |
| Electric Power Facilities (Wave) | N | Unchanged | N | Unchanged |
| Electric Power Facilities (Tidal) | N | Unchanged | N | Unchanged |
| Electric Power Facilities (Current. ocean, lake, river) | N | Unchanged | N | Unchanged |
| Electric Power Facilities (Hydropower) | Y - 3 | Unchanged | N | Unchanged |
| Electric Power Facilities (Ocean thermal energy conversion) | N | Unchanged | N | Unchanged |
| Electric Power Facilities (Solar) | Y - 98 | Increase | Y | Increase |
| Electric Power Facilities (Biomass) | Y - 2 | Decrease | Y | Decrease |
| Other (Electric Power Facilities (Wind)) | Y - 2 | Unchanged | Y | Increase |

2. If available, briefly list and summarize the results of any additional state- or territory-specific information, data, or reports on the status and trends for energy facilities and activities of greater than local significance in the coastal zone since the last assessment.

Maryland has seen an increase in small-scale solar projects, funded by USDA grants, for agricultural operations in the coastal zone. This has been observed through an increase in CZM federal consistency requests. Thirty projects have been submitted for CZM review in 2024, into 2025, ranging in size from 80 - 400 kW solar systems.

3. Briefly characterize the existing status and trends for federal government facilities and activities of greater than local significance[20] in the state's coastal zone since the last assessment.

A number of Department of Defense facilities that have significance beyond the state and at a regional scale are located in Maryland's coastal zone. Similarly, energy infrastructure and transmission, some of which has a greater than local significance, is growing in Maryland and the region. Over the next five years, the CMP expects the state, region, and other energy partners to continue and also increase conversations and planning for in-state energy generation, regional coordination needs, and transmission.

**Management Characterization**

1. Indicate if the approach is employed by the state or territory and if significant state- or territory-level changes (positive or negative) that could facilitate or impede energy and government facility siting and activities have occurred since the last assessment.

**Significant Changes in Energy and Government Facility Management**

| Management Category | Employed by State or Territory (Y or N) | CMP Provides Assistance to Locals that Employ (Y or N) | Significant Changes Since Last Assessment (Y or N) |
|---|---|---|---|
| Statutes, regulations, policies, or case law interpretations | Y | N | Y |
| State comprehensive siting plans or procedures | Y | N | Y |

2. For any management categories with significant changes, briefly provide the information below. If this information is provided under another enhancement area or section of the document, please provide a reference to the other section rather than duplicate the information:
    a. Describe the significance of the changes;
    b. Specify if they were 309 or other CZM-driven changes; and
    c. Characterize the outcomes or likely future outcomes of the changes.

Maryland set ambitious energy goals for the State in 2022, including reducing emissions by at least 60% by 2031 and obtaining net-zero by 2045. The state has moved towards decommissioning the majority of coal-burning electricity production, with the remaining 3 coal facilities to close by the end of 2025. Slight increases in natural gas and nuclear energy production indicate that Maryland will rely on a diversifying energy portfolio and increasing renewable energy to offset coal elimination.

Maryland's Critical Area includes all land within 1,000 feet of tidal waters and tidal wetlands and includes the waters of the Chesapeake Bay, the Atlantic Coastal Bays, their tidal tributaries, and the lands underneath these tidal areas. Regulations were published in the Maryland Register in 2020 regarding renewable energy in the Critical Area, guiding development of this energy facility type for this portion of the coastal zone.

[20] The CMP should make its own assessment of what government facilities may be considered "greater than local significance" in its coastal zone, but these facilities could include military installations or a significant federal government complex. An individual federal building may not rise to a level worthy of discussion here beyond a very cursory (if any at all) mention).

Additionally, the Maryland POWER Act (2023) set a goal of procuring 8.5 gigawatts of power from offshore wind by 2031. The POWER Act also directs state agencies to work with the Maryland regional electrical grid operator to build necessary transmission lines and for the operator to conduct an analysis of transmission system upgrades that may be needed to facilitate offshore wind power.

**Enhancement Area Prioritization**

1. What level of priority is the enhancement area for the coastal management program?

| | |
|---|---|
| **High** | _____ |
| **Medium** | __X__ |
| **Low** | _____ |

2. Briefly explain the reason for this level of priority. Include input from stakeholder engagement, including the types of stakeholders engaged.

While the CMP aids in multi-use and resource-management discussions regarding energy and transmission facilities siting, work supports lead partners on shore and is targeted to early planning and development activities. The CMP will address offshore energy coordination efforts, and the work will be folded into Oceans strategies. Regarding government facility siting, the CMP anticipates early coordination about facility use and will engage in broader community planning efforts involving these facilities through core program functions and project reviews.

## Aquaculture

**Section 309 Enhancement Objective:** Adoption of procedures and policies to evaluate and facilitate the siting of public and private aquaculture facilities in the coastal zone, which will enable states to formulate, administer, and implement strategic plans for marine aquaculture. §309(a)(9)

**Phase 1 (High-level) Assessment:** *(Must be completed by all states and territories.)*
*Purpose: To quickly determine whether the enhancement area is a high-priority enhancement objective for the CMP that warrants a more in-depth assessment. The more in-depth assessments of Phase II will help the CMP understand key problems and opportunities that exist for program enhancement and determine the effectiveness of existing management efforts to address those problems.*

**Resource Characterization**

1. In the table below, characterize the existing status and trends of aquaculture facilities in the state's coastal zone based on the best-available data. Your state Sea Grant Program may have information to help with this assessment.[21]

[21] While focused on statewide aquaculture data rather than just within the coastal zone, the *Census of Aquaculture* (*agcensus.usda.gov/Publications/Census_of_Aquaculture/)* may help in developing your aquaculture assessment. The census is conducted every 10 years and the last report was released in 2018. The report provides a variety of state-specific aquaculture data to understand current status and recent trends.

**Status and Trends of Aquaculture Facilities and Activities**

| Type of Facility/Activity | Number of Facilities[22] | Approximate Economic Value | Change Since Last Assessment (↑, ↓, -, unknown) |
|---|---|---|---|
| Commercial Shellfish Submerged Land Leases | 2019: 353<br>2025: 376 | The estimated dockside value of the oyster aquaculture industry in Maryland for 2023 was $7,381,482 | Increase |
| Commercial Shellfish Water Column Leases | 2019: 102<br>2025: 98 | See above | Decrease |
| Shellfish Nursery Permits | In 2023, the Department issued 10 new shellfish nursery permits. | | Increase |
| Non-Shellfish Aquaculture Permits | As of 2025, there are 22 non-shellfish aquaculture permits, species produced include various native fish, hybrid striped bass, channel catfish, tilapia, shrimp, turtles, koi, marine corals, ornamental fish and aquatic plants. | | Decrease |
| Aquaculture Enterprise Zones | No longer exist | | No change |

2. If available, briefly list and summarize the results of any additional state- or territory-specific data or reports on the status and trends or potential impacts from aquaculture activities in the coastal zone since the last assessment.

   Maryland's first aquaculture legislation passed in 1988. In 2010, the Maryland DNR overhauled its regulations for the management of the oyster resource in the Maryland portion of Chesapeake Bay with the intent of advancing oyster restoration. Since 2011, aquaculture has been permitted and managed by the Maryland DNR Fishing & Boating Service Aquaculture and Industry Enhancement Division, in close coordination with the Maryland Aquaculture Coordinating Council. Any person engaged in aquaculture or related activities must first obtain an aquaculture permit. Permits are free of charge and must be renewed every five years.

[22] Be as specific as possible. For example, if you have specific information of the number of each type of facility or activity, note that. If you only have approximate figures, note "more than" or "approximately" before the number. If information is unknown, note that and use the narrative section below to provide a brief qualitative description based on the best information available.

**Oyster Aquaculture**

According to a 2023 report from the University of Maryland Extension (most recent year available), the estimated dockside value of the oyster aquaculture industry in Maryland for 2023 was $7,381,482. Oyster aquaculture continues to be the most prevalent form of aquaculture in the state, with both submerged land and water column leases. There are currently 376 submerged land leases and 98 water-column leases, totaling over 7500 acres. From September 2010 through September 11, 2024, Maryland has received 638 shellfish lease applications, 567 of which have been received since August 1, 2011 when the Department began accepting applications for water column leases.

Since the last assessment, the dockside value of oysters has continued to rise. Also, the harvest of Bay scallop and hard clams has continued to increase. Grower financing programs continue to play a large role in supporting the growth of the shellfish aquaculture industry in Maryland. Since its inception in 2010, the Maryland Agricultural Resource-Based Industry Development Corporation (MARBIDCO) has approved loans totaling over $6 million through two funds. The estimated economic impact of Maryland's shellfish aquaculture is more than $13 million per year.

**Non-shellfish Aquaculture**

There are permitted facilities located throughout the State in Allegany, Anne Arundel, Baltimore, Caroline, Carroll, Cecil, Charles, Frederick, Harford, Kent, Montgomery, Prince George's, Talbot, Washington, Wicomico and Worcester Counties and Baltimore City. Additionally, there are currently efforts underway to build an Atlantic salmon recirculating aquaculture system in Cecil County. This facility would ultimately produce up to 20,000 metric tons of fish each year. Some have voiced concern about the potential for pollution such an operation would contribute to the Bay.

**Meetings and Conferences**

In February 2024, a symposium was held to examine alternative substrates used for oyster restoration or repletion in other regions, including the success of efforts to use alternative substrates. The meeting brought together experts from state and federal agencies, universities, non-profits, and private industry. Maryland Shellfish Growers Network also hosted a conference to share the latest information about the shellfish aquaculture industry. The Network exists to aid new and veteran shellfish growers in applying best practices, promoting Maryland's aquaculture industry, and sharing resources. A collaboration between the Chesapeake Bay Foundation and University of Maryland Extension, the Network is free to join.

**Management Characterization**

1. Indicate if the approach is employed by the state or territory and if there have been any state- or territory-level changes (positive or negative) that could facilitate or impede the siting of public or private aquaculture facilities in the coastal zone.

**Significant Changes in Aquaculture Management**

| Management Category | Employed by State or Territory (Y or N) | CMP Provides Assistance to Locals that Employ (Y or N) | Significant Changes Since Last Assessment (Y or N) |
|---|---|---|---|
| Aquaculture comprehensive siting plans or procedures | Y | N | N |
| Other aquaculture statutes, regulations, policies, or case law interpreting these | Y | N | Y |

2. For any management categories with significant changes, briefly provide the information below. If this information is provided under another enhancement area or section of the document, please provide a reference to the other section rather than duplicate the information:
    a. Describe the significance of the changes;
    b. Specify if they were 309 or other CZM-driven changes; and
    c. Characterize the outcomes or likely future outcomes of the changes.

Since the last assessment, several laws have expanded aquaculture in the state of Maryland. Below are the statutory changes that affect aquaculture leases that have occurred since 2020:

2021:

- HB 799 (Cross-filed as SB 442) - Aquaculture Leases and Shellfish Nursery Operations – Wetlands: The bill exempts aquaculture leases from having to get a Tidal Wetlands License or Permit.
- HB 800 - Aquaculture Leases - Marking and Recording Requirements - Mobile Application: This bill requires the department to create a new app, continually map changing coordinates, and provide those specified areas in real time to an end user.
- SB 350 - Natural Resources - Aquaculture – Leases: The bill allows private entities a limited-acre and short-term aquaculture lease to explore the commercial potential of culturing nontraditional aquatic grass species in Maryland.

2024:

- HB 857 Shellfish Aquaculture – Harvest Hours: The bill gives the department the ability to create regulations for shellfish harvest times on leases
- SB 303 Aquaculture – Definition of Shellfish – Alteration: In working with a leasee, the agency realized that the definition, which was written prior to the agency regulating bay scallops (a species that made a comeback along the coast about a decade ago), is no longer adequate to allow the agency to require fish health protocols related to shellfish not specifically defined in that definition. By broadening the definition, the agency would alleviate future issues if other species begin to spread in their natural ranges due to environmental changes or events.

Additionally, a proposed rule change was put forth in November 2024 that would establish harvest hours for shellfish aquaculture. During months when the *Vibrio parahaemolyticus* Control Plan (COMAR 10.15.07.06) is in effect, harvest hours for shellfish aquaculture harvesters are restricted to comply with

public health measures designed to keep harvested oysters protected from elevated air and water temperatures.

None of these changes were driven by Section 309, as aquaculture has not been a high priority for the CMP. The likely outcome of many of these statutory changes is increased participation in Maryland's aquaculture industry, and expansion from mainly oyster aquaculture to other species.

**Enhancement Area Prioritization**

1. What level of priority is the enhancement area for the coastal management program?

| | |
|---|---|
| **High** | _____ |
| **Medium** | _____ |
| **Low** | __X___ |

2. Briefly explain the reason for this level of priority. Include input from stakeholder engagement, including the types of stakeholders engaged.

As mentioned, the CMP does not directly manage or regulate Maryland's aquaculture industry. Staff have historically supported oyster aquaculture expansion by collecting coastal and marine use data (i.e. recreational use areas); evaluating the use of oyster aquaculture as a best management practice to help Maryland meet its water quality goals; and exploring watermen's issues through a State Working Waterfronts Initiative. Moving forward, the CMP will continue exploring opportunities to integrate aquaculture into CCS efforts, especially as aquaculture relates to use conflicts, water quality, and coastal hazard impacts. As the industry expands in Maryland, there may be a larger role for the CMP.

# Phase II Assessment

## Wetlands

**In-Depth Resource Characterization**

*Purpose: To determine key problems and opportunities to improve the CMP's ability to protect, restore, and enhance wetlands.*

1. What are the three most significant existing or emerging physical stressors or threats to wetlands within your coastal zone? Indicate the geographic scope of the stressor, i.e., is it prevalent throughout your coastal zone, or are there specific areas that are most threatened? Stressors can be development/fill; hydrological alteration/channelization; erosion; pollution; invasive species; freshwater input; sea level rise/Great Lakes level change; or other (please specify).

| | **Stressor/Threat** | **Geographic Scope** (throughout coastal zone or specific areas most threatened) |
|---|---|---|
| Stressor 1 | Sea Level Change | Coastal Zone |
| Stressor 2 | Saltwater Intrusion | Coastal Zone, Lower Eastern Shore |
| Stressor 3 | Development | Coastal Bays, Eastern Shore (Queen Anne's County) |

2. Briefly explain why these are currently the most significant stressors or threats to wetlands within your coastal zone. Cite stakeholder input and/or existing reports or studies to support this assessment.

   Sea level change, including both sea level rise and localized land subsidence, represents the greatest stressor to wetlands. The state's 2023 report projects that Maryland will experience sea-level rise during the first half of this century greater than that experienced during the whole of the last century. Such rapid changes are already impacting the distribution of coastal wetlands. And, as demonstrated in the latest run of SLAMM, Maryland can expect a decrease in the total area of wetlands by 2100, with a shift from mostly irregularly flooded marsh to mostly regularly flooded marsh by around 2050. Without an appropriate sediment supply, the ability to accrete vertically, or space to migrate landward, wetlands will become inundated and eventually convert to open water.

   Saltwater intrusion is another threat to wetlands in our state. Positioned along Maryland's shorelines and just landward of coastal salt marshes, coastal freshwater wetlands and coastal brackish wetlands are vulnerable to saltwater intrusion and salinization. According to Maryland's 2024 Plan to Adapt to Saltwater Intrusion and Salinization, saltwater stress brought on by storm surge, hurricanes and drought, as well as human actions, including dam construction, can cause wetland plants to die and areas to convert to open water or mudflat. Saltwater intrusion can also reduce the primary production of existing freshwater wetlands along the coast and can inhibit the accretion of wetland soils. More research is needed to understand the impacts of saltwater intrusion on methane and carbon dioxide emissions in wetlands.

   Lastly, development and human population growth represent stressors to Maryland's wetlands. According to the 2020 Census, Maryland's population is 6,177,224 and continues to grow by at least 7% each decade. Anything that interrupts the natural hydrology of wetlands, such as deposition of fill for development, increase in impervious surface cover, or construction of roads and levees can disrupt soils and vegetation composition.

3. Are there emerging issues of concern but which lack sufficient information to evaluate the level of the potential threat? If so, please list. Include additional lines if needed.

| Emerging Issue | Information Needed |
|---|---|
| Invasive Species | Extent of invasive marsh vegetation and better understanding of ecosystem services and trade-offs to inform land management. Decision-support tools for invasive species management and restoration of impacted areas based on site conditions and landscape perspectives. |
| Marsh Migration Barriers and Land Management | Understand the extent and unintended consequences of landowners implementing or pursuing marsh migration barriers (ex: retaining walls in the Critical Area, use of fill to elevate land, etc.). Information for how to best manage properties and state land to preserve migration areas alongside alternative uses. |
| Wetland Habitat Shifts | Comprehensive vegetation surveys or aerial imagery to allow for quantification of current wetland types. Increasing salinization/saltwater intrusion, as well as sea level change, will alter habitat types (i.e. more high salt marsh will convert to low marsh). Understand how ecosystem services will change with changes in habitat. |

**In-Depth Management Characterization**

*Purpose: To determine the effectiveness of management efforts to address identified problems related to the wetlands enhancement objective.*

1. For each additional wetland management category below that was not already discussed as part of the Phase I assessment, indicate if the approach is employed by the state or territory and if significant state- or territory-level changes (positive or negative) have occurred since the last assessment.

**Significant Changes in Wetland Management**

| Management Category | Employed By State or Territory (Y or N) | CMP Provides Assistance to Locals that Employ (Y or N) | Significant Changes Since Last Assessment (Y or N) |
|---|---|---|---|
| Wetland assessment methodologies | Y | N | N |
| Wetland mapping and GIS | Y | Y | Y |
| Watershed or special area management plans addressing wetlands | N | N | N |
| Wetland technical assistance, education, and outreach | Y | Y | N |
| Other (please specify) | | | |

2. For management categories with significant changes since the last assessment, briefly provide the information below. If this information is provided under another enhancement area or section of the document, please provide a reference to the other section rather than duplicate the information.
    a. Describe significant changes since the last assessment;
    b. Specify if they were 309 or other CZM-driven changes; and
    c. Characterize the outcomes or likely future outcomes of the changes.

Since the last assessment, the CMP has invested in better understanding and managing Maryland's wetlands. In the Phase 1 Assessment, projects and programs that focus on wetland management were discussed. The datasets described below are integrated into the projects described in Phase 1 and provide ways for the state and our partners to understand vulnerable wetlands and better manage restoration, protection, monitoring or other actions related to wetland health.

**Sea Level Effecting Marshes Model (SLAMM)**
The coastal management program at Maryland Department of Natural Resources worked with researchers at George Mason University, the Nature Conservancy, and Warren Pinnacle Consulting Inc. to update Maryland's Sea Level Affecting Marshes Model (SLAMM). The Sea Level Affecting Marshes Model was re-run with 2018 Sea Level Rise projections to predict coastal habitat transitions and tradeoffs within an altered coastline. Coupled local-regional hydrodynamic modeling was conducted with three representative storms (Hurricane Isabel, Hurricane Irene, and a December 2020 Winter Blizzard) to predict changes in coastal protection benefits due to sea level rise. The resulting data informed updates to Maryland's future wetland area data and Marsh Protection Index to assist with prioritizing management actions, including coastal easements, conservation, and restoration work to preserve tidal wetlands and their migration corridors.

**US Geological Survey Marsh Health**
In recent years, our partners at the United States Geological Survey (USGS) developed several useful data sets to aid with coastal management and conservation prioritization. These data sets include the Un-Vegetated to Vegetated Ratio (UVVR), the updated Marsh Lifespan Model, the Coastal Change Likelihood Fabric data (CCL Fabric), and the Conceptual Marsh Units (CMU) data. The CMP is working to integrate these cutting-edge products into our management toolbox and mapping products, including the Marsh Protection Index (MPI). The CCL fabric data in particular has usefulness in providing suggestions for making decisions about what wetlands to protect, restore, monitor, and leave alone.

These datasets are all tools that we regularly use to assess our state's wetlands and assist in decision making throughout Maryland.

**Chesapeake Bay High-Resolution Land Cover Project (Chesapeake Conservancy)**
The Chesapeake Conservancy (CC) has collaborated with federal, state and local partners to produce 1-meter horizontal resolution land cover and land use/land cover (LULC) datasets for the Chesapeake Bay watershed regional area, including Maryland's Coastal Bays. These high-resolution data sets allow coastal managers to look at change throughout the product years (2013/14 - 2017/18) and better understand land use throughout Maryland's coastal zone. This data has been used within products like our Restoration Mapper and Coastal Atlas, as it provides a finer lens (compared to the 30m resolution of most national products) through which to view change throughout the region.

**Critical Area Wetlands Maps**
The Maryland Critical Area Commission has been legislatively tasked (House Bill 1258) with updating our critical area tidal wetland maps and has progressed the updates over the last ~5 years. The Critical Area maps show wetlands that fall within the critical area buffer, which demarcates areas within 1,000 ft of the Maryland's tidal waters and tidal wetlands. The new maps are updated for the new edge of shoreline and to reflect improved wetland mapping available. All counties but Dorchester and Worcester have completed and approved new Critical Area maps and Dorchester and Worcester counties both have draft maps published. The new maps show managers where the landward edge has changed since the previous update, and note areas designated as Intensely Developed Areas (IDAs), Limited Development Areas (LDAs), and Resource Conservation Areas (RCAs).

**Coast Smart Ready Action Boundary (CRAB)**
The Coast Smart Ready Action Boundary (CRAB) is a tool designed to support the implementation of Maryland's Coast Smart law. Application of this tool to projects that must be considered under Coast Smart was required in 2020. This map layer takes the FEMA 100-year flood map and adds 3 feet vertically to account for future sea level rise, subsidence, and other future impacts. The Newly Inundated area shows how 3 additional feet of water moves across new areas of the landscape based on the land elevation profile or Digital Elevation Model (DEM). Thus, the CRAB map is a valuable tool to help communities identify future potential risk more conservatively than FEMA's flood map.

**Future Wetland Areas Index**
The Sea Level Affecting Marshes Model (SLAMM) was re-run with 2018 Sea Level Rise projections to predict coastal habitat transitions and update the Future Wetland Areas. The new model run produced projections at 10-year timesteps, and new data layers were uploaded to Maryland iMap and Coastal Atlas. Statewide, regularly flooded marsh increases throughout the time series, eventually converting to open water on the lower Eastern Shore. The model predicts total marsh acreage to peak around 2050 or 2060. Eleven new data layers (including areas projected to convert to wetlands, wetlands projected to persist, habitat available online will be used in project review and to target coastal easements. CMP staff held several trainings in 2024 on application of the new data, including for Critical Area Commission, an Eastern Shore Partnership, and the Land Acquisition and Planning unit (LAP).

**Marsh Protection Index (MPI)**
The Department developed a Marsh Protection Index that combines multiple data sets to estimate the protective ability of marsh units throughout the Chesapeake and Coastal Bays regions. This Index will help us to understand what current marshes are most valuable when it comes to protecting people and

can help to prioritize restoration goals throughout Maryland's wetlands. This tool is expected to roll out in 2025-2026.

**Restoration Mapper**

To enhance the state's ability to prepare for and respond to coastal hazards, Maryland Department of Natural Resources, in partnership with the Chesapeake Conservancy Conservation Innovation Center and funded by the National Oceanic and Atmospheric Administration (NOAA) developed the Maryland Restoration Map. The purpose of this map is to support restoration and hazard mitigation activities in Maryland. The web map contains a collection of environmental, hydrological, and social datasets to support landscape and parcel assessment activities. The Maryland Restoration Map provides planners, practitioners, and citizens with the ability to 1) identify areas in the state that are vulnerable to coastal hazards, 2) identify potential restoration opportunities in those areas, and 3) understand how restoration practices can provide many other ecosystem service benefits like improving our water quality, air quality, and providing wildlife habitat. A key feature of the Maryland Restoration Map is the "Find Opportunities" tool. This tool is intended to support restoration and hazard mitigation activities in Maryland by allowing users to identify parcels in a specified geographic area of interest (county, watershed, etc.), based on user defined restoration opportunity type, co-benefit type, and associated criteria.

**EPA Pollution Reduction Grant**
As part of a multi-state coalition, Maryland received funding from the Environmental Protection Agency to advance blue carbon, tree planting and forest health initiatives on the lower Eastern Shore. This grant includes goals to restore 200 acres of marsh, restore 400 acres of living shorelines that protect marshes, plant 500 acres of forest, provide sustainable forest management on 1,000 acres, and leverage Coastal Easements to identify private landowners willing to either plan to transition their land to wetlands or actively restore wetlands on their property. Such easements will be accompanied by management plans that detail actions to avoid carbon emissions resulting from land conversion, projected sea level rise, and soil emissions from unhealthy habitats. A strong community engagement component including employing community liaisons will strengthen participation and implementation.

3. Identify and describe the conclusions of any studies that have been done that illustrate the effectiveness of the state's or territory's management efforts in protecting, restoring, and enhancing coastal wetlands since the last assessment. If none, is there any information that you are lacking to assess the effectiveness of the state's or territory's management efforts?

**Statewide Restoration Targeting:**
Statewide restoration targeting has been prioritized through a variety of landscape scale efforts. Progress towards protecting, restoring, and enhancing wetlands is outlined in The Chesapeake Bay Program's Charting a Course to 2025. Challenges identified for wetlands include 1) funding agreements that are not long enough to consider restoration projects that take multiple years, and 2) insufficient outreach and engagement with landowners. The Marshes for Tomorrow initiative identified marsh condition throughout several focal areas in the state, homing in on areas of high quality that need protection and marsh units that could use restoration. The Marsh Condition Index consists of the unvegetated to vegetated ratio (UVVR) and SLAMM cover category for a given marsh unit. High quality marshes were identified around the Fishing Bay shoreline and extending into the marsh platform interior on the west and northeast sides of Fishing Bay, and along the Transquaking River corridor. In the Deal Island focus area, the best condition marshes are located north of Deal Island Road and in the

southeastern quarter of Deal Island Wildlife Management Area (WMA). Most of the marshes across the Pocomoke Sound area are in good condition, with some regions of interior erosion at Pocomoke Sound WMA, Langford Marsh, and Richardson Marsh. Further, the Atlantic Coast Joint Venture (ACJV) has published restoration priorities for each state along the East Coast; Maryland's was last updated in early 2024. The document focuses on saltmarsh sparrow and identifies several key areas of habitat, their existing conditions, and recommendations for management. The priority marshes highlighted are Blackwater/Fishing Bay, Grey's Creek Park, St. Martin's Neck, Assateague Island, Fairmount, Newport Bay, Deal Island, Pocomoke, and the western shore of Chincoteague Bay. A comprehensive vegetation survey would complement these ongoing initiatives and aid in assessing the effectiveness of Maryland's management strategies for wetlands. Elevation data would also be useful to determine if thin layer placement projects throughout the state have had the desired effect.

**Planning for Future Wetland Areas**

Maryland's Critical Area Commission (CAC) considers impacts to future wetland areas when evaluating state agency projects. Using data from the new model run of SLAMM, planners can visually assess if future wetland areas will be affected by a given project. If so, CAC considers if the impacts are unavoidable or if protection and/or enhancement surrounding the future wetland areas are possible.

**State Lands Planning**

The CMP incorporates wetland data into hazard mitigation planning on state lands, including forests, parks, and wildlife management areas. Planning for sea level rise and habitat transitions will increase the ability of ecosystems to thrive and allow for continuity of operations. Additionally, the recently updated future wetland area data are being utilized to target conservation in the coastal zone. By focusing easements and acquisition on areas that are projected to be wetlands with future sea level rise, Maryland aims to protect migration corridors.

**Identification of Priorities**

1. Considering changes in wetlands and wetland management since the last assessment and stakeholder input, identify and briefly describe the top one to three management priorities where there is the greatest opportunity for the CMP to improve its ability to more effectively respond to significant wetlands stressors. *(Approximately 1-3 sentences per management priority.)*

   *Management Priority 1: Increase functionality and persistence of tidal wetlands through restoration and management*

   *Description: Wetlands provide coastal protection benefits and other ecosystem services to communities, but these habitats are threatened by rising sea levels. Restoration and management are vital management options for ensuring the persistence of tidal wetlands, but limited financial and technical capacity will affect the scope of these activities. Numerous targeting tools are available to support decision-making about where to focus restoration efforts to preserve ecosystem services. Guidance and a focus on partner collaboration are needed to apply these tools, prioritize management actions, and select appropriate wetland restoration actions. The CMP's Restoration Initiative can support progress towards wetland restoration and enhancement with a focus on beneficial use of dredged materials (i.e. thin layer sediment placement).*

   *Management Priority 2: Increase the ability of local and state conserved lands to address coastal hazards through marsh migration and buffer management that balances natural and working landscapes*

*Description: Inter- and intra-agency collaboration is crucial to enhance the ability of Maryland's natural and working lands to prepare for, respond to and recover from coastal hazards, especially as these hazards affect the quality, quantity, and geographic distribution of coastal wetlands. Working on both public lands and conservation easements on private lands, the CMP will examine coastal hazard mitigation related actions to benefit marsh migration. Proactive land management will allow for resource protection and the continued provision of ecosystem services while balancing public access, recreational opportunities, and working lands.*

*Management Priority 3: Regional coordination, tracking and evaluation of project success*

*Description: Coordinate with local and regional practitioners around project performance and workforce development. Consider site location in performance evaluation and how long-term coordination and management can help further the impact of wetland restoration and conservation. Use networks to help transfer information to local managers and practitioners and perform outreach across the wetland and conservation restoration landscape. Track and help disseminate opportunities for workforce development to local managers and practitioners (e.g. training programs and certification).*

2. Identify and briefly explain priority needs and information gaps the CMP has to help it address the management priorities identified above. The needs and gaps identified here do not need to be limited to those items that will be addressed through a Section 309 strategy but should include any items that will be part of a strategy.

| **Priority Needs** | **Need?** (Y or N) | **Brief Explanation of Need/Gap** |
|---|---|---|
| Research | Y | Comprehensive vegetation survey to assess effectiveness of wetland management strategies. Research/data to understand thin layer placement project impact on elevation. Research to further understand salinity impacts on methane release in tidal wetlands. Impacts of development and siting of solar farms and data centers on the water table and wetland migration corridors. |
| Mapping/GIS | Y | Mapping of changes to habitat types and restoration areas (ex: ash restoration tool, Salt Patch Mapper). If determined to impact wetlands, mapping of proposed solar farm siting areas. |
| Data and information management | Y | Catalogue or inventory of existing resources to increase understanding of available tools, support state/local lands management, and empower local land managers. |
| Training/capacity building | Y | Understanding and piloting of shoreline easements. Increase ability to coordinate wetland funding efforts in local and unincorporated areas. Increase workforce development opportunities for practitioners to develop and implement management plans. |
| Decision-support tools | Y | Existing tools should be better integrated and explained to provide managers with more informed strategies for wetland management. |

| Priority Needs | Need? (Y or N) | Brief Explanation of Need/Gap |
|---|---|---|
| Communication and outreach | Y | Outreach materials for coastal easements, hazard mitigation options, and easement management plans. Develop case studies for small- and large-scale wetland restoration projects. |
| Other (specify) | | |

**Enhancement Area Strategy Development**

1. Will the CMP develop one or more strategies for this enhancement area?

   **Yes** ___X___
   **No** _____

2. Briefly explain why a strategy will or will not be developed for this enhancement area.

A strategy will be developed for this enhancement area with the broad goal of mitigating wetland loss in Maryland. A myriad of projects and tools have been developed since the last 309 assessment to inform wetland conservation, demonstrating the importance of wetlands and urgency for addressing threats. With an expected sea level rise of approximately 1-2 feet by 2050 (above Year 2000 levels) and 4 feet or more feet by 2100, this critical habitat will be further threatened. Wetlands provide a host of ecosystem services, including water quality improvement, carbon sequestration, flood protection, and habitat for countless wildlife species. Targeting areas of healthy wetlands to conserve, as well as stressed wetlands that need management intervention, will aid Maryland in protecting coastal communities and livelihoods. This enhancement area has close ties to the coastal hazards enhancement area, with overlapping initiatives and goals.

## Coastal Hazards

**In-Depth Resource Characterization**

*Purpose: To determine key problems and opportunities to improve the CMP's ability to prevent or significantly reduce coastal hazard risks by eliminating development and redevelopment in high-hazard areas and managing the effects of potential sea level rise and Great Lakes level change.*

1. Based on the characterization of coastal hazard risk, what are the three most significant coastal hazards[23] within your coastal zone? Also indicate the geographic scope of the hazard, i.e., is it prevalent throughout the coastal zone, or are there specific areas most at risk?

| | **Type of Hazard** | **Geographic Scope** (throughout coastal zone or specific areas most threatened) |
|---|---|---|
| Hazard 1 | Flooding (high tide, riverine, stormwater) | Coastal Zone |
| Hazard 2 | Coastal Storms | Coastal Zone |
| Hazard 3 | Sea Level Rise | Coastal counties and municipalities, including the lower eastern shore and southern Maryland. |

2. Briefly explain why these are currently the most significant coastal hazards within the coastal zone. Cite stakeholder input and/or existing reports or studies to support this assessment.

   This information is consistent with the Maryland State Hazard Mitigation Plan (2021). Flooding (high tide, riverine and stormwater) and Coastal Storms (tropical storms, hurricanes, and Nor'easters) consistently impact the State according to Presidential Disaster Declarations. These impacts are also demonstrated through MyCoast Maryland reports (High Tide Flooding, Storm Reporter, and Coastal Storm Damage), spatial datasets (Ecological Effects of Sea Level Rise & Future Wetland Area Mapping, Sea Level Rise Visualizations, Coast Smart Ready Action Boundary) and reports (Maryland's Plan to Adapt to Saltwater Intrusion and Salinization, 2023 Sea level Rise projections for Maryland). Sea level rise is a long-term hazard that exacerbates flooding, coastal storms, shoreline erosion, saltwater intrusion, and coastal storms. Updated sea level rise projections were released in 2023, estimating that relative mean sea level is likely to rise between 1 and 1.6 feet by 2050. Based on an intermediate sea level rise scenario, minor flooding events that are currently predicted at 2-5 events per year are estimated to increase to 50 events per year in 2050. Beyond 2050, relative mean sea level rise will depend largely on global emissions pathways and is more uncertain. In response to these hazards, the state established the Maryland Department of Emergency Management Office and updated the Critical Area Chesapeake and Atlantic Coastal Bays Critical Area Protection Program.

3. Are there emerging issues of concern, but which lack sufficient information to evaluate the level of the potential threat? If so, please list. Include additional lines if needed.

[23] See list of coastal hazards on pg. 27 of this assessment template.

| Emerging Issue | Information Needed |
|---|---|
| Social impacts of saltwater intrusion | Saltwater intrusion modeling and projections. Impacts to surficial aquifers that affect vulnerable communities. Identification of infrastructure (i.e. foundations, underground utility lines, sewer pipes, septic systems, etc.) that are vulnerable to impacts. |
| Land-based impacts (drought, heat islands, wildfire, heat-related and insect-caused illness, etc.) | Spatial data scaled appropriately for comparisons across Maryland communities and conserved lands. Better understanding of local community impacts, dynamics and ability to respond to impacts (i.e. capacity). |
| Precipitation-based flooding | Application of data and science in coastal hazard mitigation planning and implementation to inform hazard mitigation solutions. Better understanding of compound flooding. |

**In-Depth Management Characterization**

*Purpose: To determine the effectiveness of management efforts to address identified problems related to the coastal hazards enhancement objective.*

1. For each coastal hazard management category below, indicate if the approach is employed by the state or territory and if there has been a significant change since the last assessment.

**Significant Changes in Coastal Hazards Statutes, Regulations, and Policies**

| Management Category | Employed by State/Territory (Y or N) | CMP Provides Assistance to Locals that Employ (Y or N) | Significant Change Since the Last Assessment (Y or N) |
|---|---|---|---|
| Shorefront setbacks/no build areas | Y | Y | Y |
| Rolling easements | N | N | N |
| Repair/rebuilding restrictions | Y | Y | Y |
| Hard shoreline protection structure restrictions | Y | Y | N |
| Promotion of alternative shoreline stabilization methodologies (i.e., living shorelines/green infrastructure) | Y | Y | Y |
| Repair/replacement of shore protection structure restrictions | Y | Y | N |
| Inlet management | Y | Y | Y |
| Protection of important natural resources for hazard mitigation benefits (e.g., dunes, wetlands, barrier islands, coral reefs) (other than setbacks/no build areas) | Y | Y | N |
| Repetitive flood loss policies (e.g., relocation, buyouts) | N | N | N |
| Freeboard requirements | Y | Y | N |

| Management Category | Employed by State/Territory (Y or N) | CMP Provides Assistance to Locals that Employ (Y or N) | Significant Change Since the Last Assessment (Y or N) |
|---|---|---|---|
| Real estate sales disclosure requirements | N | N | N |
| Restrictions on publicly funded infrastructure | Y | Y | Y |
| Infrastructure protection (e.g., considering hazards in siting and design) | Y | Y | Y |
| Other (please specify) | | | |

**Significant Changes to Coastal Hazard Management Planning Programs or Initiatives**

| Management Category | Employed by State/Territory (Y or N) | CMP Provides Assistance to Locals that Employ (Y or N) | Significant Change Since the Last Assessment (Y or N) |
|---|---|---|---|
| Hazard mitigation plans | Y | Y | Y |
| Sea level rise/Great Lake level change or adaptation plans | Y | Y | Y |
| Statewide requirement for local post-disaster recovery planning | N | N | N |
| Sediment management plans | Y | Y | Y |
| Beach nourishment plans | Y | Y | N |
| Special Area Management Plans (that address hazards issues) | N | N | N |
| Managed retreat plans | N | N | N |
| Other (nuisance flood plans and state coordination office) | Y | Y | Y |

**Significant Changes to Coastal Hazard Research, Mapping, and Education Programs or Initiatives**

| Management Category | Employed by State/Territory (Y or N) | CMP Provides Assistance to Locals that Employ (Y or N) | Significant Change Since the Last Assessment (Y or N) |
|---|---|---|---|
| General hazards mapping or modeling | Y | Y | Y |
| Sea level rise mapping or modeling | Y | Y | Y |
| Hazards monitoring (e.g., erosion rate, shoreline change, high-water marks) | Y | Y | Y |
| Hazards education and outreach | Y | Y | Y |
| Other (social vulnerability mapping and integration into programs) | Y | Y | Y |

2. Identify and describe the conclusions of any studies that have been done that illustrate the effectiveness of the state's management efforts in addressing coastal hazards since the last assessment. If none, is there any information that you are lacking to assess the effectiveness of the state's management efforts?

   The CMP supports local communities to address coastal hazard mitigation in three phases: Understand, Plan, and Implement. The effectiveness of the state's management efforts in addressing coastal hazards is best demonstrated through the following initiatives that support planning to implementation:

   **Community Flood Grants**
   Community Flood Grants assist local communities with understanding their flood risk and planning to address that risk. Between 2021 and 2025 an annual solicitation (Grants Gateway Outcome 2) led to 25 projects that helped address flooding across Maryland's coastal communities. These projects addressed topics such as nuisance flood planning, stormwater and drainage assessments, comprehensive plans, watershed master plans, and sea level rise. Stepwise approaches were embraced to help transition communities from planning to implementation phases.

   **Restoration Initiative**
   The CMP's Restoration Initiative supports implementation of restoration projects to help protect communities from erosion, flooding, and other coastal hazard impacts. Between 2021 and 2025 an annual solicitation (Grants Gateway Outcome 3) led to 18 nature-based designs and construction of 13 nature-based solutions addressing coastal flooding, erosion, sea level rise and precipitation-induced flooding across Maryland's coastal communities. Construction is underway for an additional 4 projects while 3 projects are under evaluation for adaptive management.

   **Community-Based Organization Capacity Building Initiative**
   The Community Based Organization - Capacity Building Initiative (CBO-CBI) was created to bridge the resource gap between mainstream, established organizations and partners and build the capacity of community-based organizations (CBO). Throughout its duration, the program has effectively collaborated with 50 community-based organizations and assisted CBOs in successfully submitting 24 grant applications. As of December 2024, eight of these projects have received funding, resulting in initial funding exceeding $350,000.

**State Working Group and Next Generation Planning**

A Framework and Next Generation Plan were developed by a state working group to inform strategic planning to address coastal hazards and their impacts. This work includes a comprehensive list of strategies and activities that cover multiple different sectors and interests statewide. The Next Generation Plan is a prioritized subset of those actions with implementable milestones to help achieve these goals over time. Both of these efforts involved the coordination of multiple groups of partners from state agencies, local governments, universities, nonprofit organizations, and others.

**Identification of Priorities**

1. Considering changes in coastal hazard risk and coastal hazard management since the last assessment and stakeholder input, identify and briefly describe the top one to three management priorities where there is the greatest opportunity for the CMP to improve its ability to more effectively address the most significant hazard risks. *(Approximately 1-3 sentences per management priority.)*

   *Management Priority 1: Increase the ability of local partners to prepare for, respond to and mitigate coastal hazards*

   *Description: Build and strengthen partnerships with local governments and technical assistance providers to inform short and long-term hazard mitigation planning. Stepwise collaborative approaches to local assessment and design can lead to more robust, holistic, and strategic solutions that work together to address coastal hazards at parcel, community and landscape scales. The CMP will build off of existing capacity building initiatives and networks to foster this work.*

   *Management Priority 2: Increase the ability of natural and working lands to prepare for, respond to and mitigate coastal hazards*

   *Description: Inter- and intra-agency collaboration is crucial to enhance the ability of Maryland's natural and working lands to thrive as coastal hazards and environmental change affects the quality and quantity of coastal wetlands, forests and diverse natural resources. Proactive hazard mitigation and land management planning can lead to the implementation of hazard mitigation actions, such as coastal easements, that protect these resources and the ecosystem services that they provide.*

   *Management Priority 3: Enhance the ability of ecosystems to withstand coastal hazards through restoration*

   *Description: Restoration provides coastal protection benefits to communities and ecosystems through wave attenuation, flood reduction, and shoreline stabilization. While the design and installation of restoration projects is the foundation of nature-based hazard mitigation, additional capacity is needed to support the implementation and maintenance of scientifically sound projects that can adjust to changing environmental conditions. Continuity of CMP's Restoration Initiative provides an opportunity to enhance the ability of ecosystems to withstand coastal hazards and environmental change while demonstrating restoration strategies and training a growing workforce.*

2. Identify and briefly explain priority needs and information gaps the CMP has for addressing the management priorities identified above. The needs and gaps identified here should not be limited to

those items that will be addressed through a Section 309 strategy but should include any items that will be part of a strategy.

| Priority Needs | Need? (Y or N) | Brief Explanation of Need/Gap |
|---|---|---|
| Research | Y | Monitoring of restoration projects provides the data needed to inform management activities and develop guidance for nature-based solutions.<br><br>Understanding and identification of thresholds or tipping points is needed to inform community planning, site management, and strategic hazard mitigation actions. Research can support decision support tools, community outreach, and land management. |
| Mapping/GIS/modeling | Y | Updated sea level rise and shoreline erosion rate data are needed to apply the best available science in coastal hazards planning. Combined floodwater modeling is needed to better understand impacts of compound flooding.<br><br>Updated tools and data are needed to foster beneficial use of dredged materials in restoration projects. |
| Data and information management | Y | Local and state partners need coastal hazard data, tools and information to be packaged in a usable and accessible format. These resources can lead to prepared communities and ecosystems, but only if they are applied to local and state coastal management. |
| Training/Capacity building | | Local government partners are required to apply the CoastSmart siting and design criteria to projects that meet certain criteria. Trainings are needed to ensure CoastSmart is understood and applied correctly at the local scale.<br><br>Workforce development opportunities are needed to increase the availability of local qualified practitioners to support the design, implementation, and management of restoration projects.<br><br>Local capacity building is imperative to the expansion of hazard mitigation work at the local scale. The CMP and its partners have limited capacity to assist partners, and thus must work strategically across geographic focus areas to leverage existing resources and build capacity. |
| Decision-support tools | Y | Updated sea level rise guidance is needed to assist local governments and other partners with applying the best available science in hazard mitigation planning.<br><br>Decision-support tools like the Maryland Coastal Atlas provide access to spatial data that is vital for coastal planning. New and updated coastal datasets and associated mapper tools should be integrated into the Maryland Coastal Atlas and other existing platforms. |
| Communication and outreach | Y | Guidance on state recommended hazard mitigation strategies is needed to guide implementation of green, gray and hybrid mitigation actions. Communication and outreach are needed to increase transparency of nature-based solutions. |

| Priority Needs | Need? (Y or N) | Brief Explanation of Need/Gap |
|---|---|---|
| Other (specify) | | |

**Enhancement Area Strategy Development**

1. Will the CMP develop one or more strategies for this enhancement area?

   **Yes** ___X___
   **No** _____

2. Briefly explain why a strategy will or will not be developed for this enhancement area.

A strategy will be developed for the coastal hazards enhancement area with the overarching goal of increasing hazard mitigation at local, state, parcel and landscape scales. Both human communities and ecosystems are threatened by the impacts of coastal hazards and these impacts are not confined to property or jurisdictional boundaries. A comprehensive strategy is needed to address coastal hazards while managing and preserving coastal resources for the benefit of coastal communities and ecosystems now and into the future. Strategy development provides an opportunity to 1) grow partnerships and capacity at the local scale to support strategic assessment, design and pursuit of hazard mitigation actions; 2) collaborate across state agencies and sectors to support strategic management of state and natural working lands that are threatened by coastal hazards ; and 3) promote restoration and management practices through workforce development and financial and technical assistance to foster hazard mitigation for communities and ecosystems.

## Ocean and Great Lakes Resources

### In-Depth Resource Characterization

*Purpose: To determine key problems and opportunities to enhance the ability of state CMP to better address ocean and Great Lakes resources.*

1. What are the three most significant existing or emerging stressors or threats to ocean and Great Lakes resources within your coastal zone? Indicate the geographic scope of the stressor, i.e., is it prevalent throughout the coastal zone, or are specific areas most threatened? Stressors can be land-based development; offshore development (including pipelines, cables); offshore energy production; polluted runoff; invasive species; fishing (commercial and/or recreational); aquaculture; recreation; marine transportation; dredging; sand or mineral extraction; ocean acidification; or other (please specify).

| | **Stressor/Threat** | **Geographic Scope** (throughout coastal zone or specific areas most threatened) |
|---|---|---|
| Stressor 1 | Energy development | Ocean: benthic habitats offshore<br>Nearshore: MD EEZ (cable transmission routes), waterfront infrastructure/uses |
| Stressor 2 | Channel navigation | Throughout the coastal zone |
| Stressor 3 | Rising temperatures, sea level change, and ocean acidification are prevalent throughout the coastal zone and affect multiple ocean and Bay resources. | Throughout the coastal zone |

2. Briefly explain why these are currently the most significant stressors or threats to ocean and Great Lakes resources within the coastal zone. Cite stakeholder input and/or existing reports or studies to support this assessment.

   **Energy development** in the mid-Atlantic Ocean would be novel, regardless of the source of energy (e.g., oil and gas, wind, etc.). Considerable uncertainty exists regarding potential impacts to critical benthic habitats and ocean-dependent economies, particularly commercial fishing grounds. Coastal stakeholders and commercial ocean fishing communities have consistently and vehemently voiced their concerns regarding this uncertainty and how it may help or harm their industries.

   **Channel navigation** impacts ocean and aquatic resources and ecosystems throughout the coastal zone. Regular dredging, sediment displacement, and vessel traffic disrupt benthic habitats, alter natural sediment transport, and degrade water quality. These activities, combined with increasing sedimentation from intensified storms and coastal hazards, exacerbate erosion and habitat loss in adjacent areas. The cumulative effects of maintaining navigable waterways will continue to pose challenges to ecosystems and communities reliant on healthy coastal and marine environments.

   **Coastal hazard impacts and stressors** are impacting all ocean and aquatic resources and ecosystems. Well-documented threats such as ocean acidification and increased temperatures are and will continue to affect resources that depend on the lands and waters across the coastal zone.

3. Are there emerging issues of concern, but which lack sufficient information to evaluate the level of the potential threat? If so, please list. Include additional lines if needed.

| Emerging Issue | Information Needed |
|---|---|
| Ocean acidification and marine carbon dioxide removal (mCDR) | Empirical data, spatio-temporal trend analyses, and hotspot mapping are needed to understand, prepare for and address ocean acidification.<br>The status of emerging mCDR technologies, costs, and federal initiatives are needed to guide mCDR in Maryland's coastal zone. |
| Sediment management | Regional Sediment Management (RSM) is needed to inform strategic sediment management on a regional scale. Better understanding of emerging sediment management techniques (ex. thin layer sediment placement, Confined Aquatic Disposal, etc.) is needed to inform restoration projects. Better understanding of dredging needs, particularly in shallow-draft channels, and identification of beneficial use opportunities are needed to inform prioritization of projects. |

**In-Depth Management Characterization**

*Purpose: To determine the effectiveness of management efforts to address identified problems related to the ocean and Great Lakes resources enhancement objective.*

1. For each of the additional ocean and Great Lakes resources management categories below that were not already discussed as part of the Phase I assessment, indicate if the approach is employed by the state or territory and if significant state- or territory-level changes (positive or negative) have occurred since the last assessment.

**Significant Changes in Management of Ocean and Great Lakes Resources**

| Management Category | Employed by State or Territory (Y or N) | CMP Provides Assistance to Locals that Employ (Y or N) | Significant Changes Since Last Assessment (Y or N) |
|---|---|---|---|
| Ocean and Great Lakes research, assessment, monitoring | Y | Y | Y |
| Ocean and Great Lakes GIS mapping/database | Y | Y | Y |
| Ocean and Great Lakes technical assistance, education, and outreach | Y | Y | Y |
| Other (please specify) | | | |

2. For management categories with significant changes since the last assessment, briefly provide the information below. If this information is provided under another enhancement area or section of

the document, please provide a reference to the other section rather than duplicate the information.

a. Describe significant changes since the last assessment;
b. Specify if they were 309 or other CZM-driven changes; and
c. Characterize the outcomes or likely future outcomes of the changes.

Related to research, assessment, and monitoring, the CMP has developed and advanced work to monitor select restoration projects across coastal communities to understand their performance over time to changing coastal conditions. This work was led by CZM-driven efforts and is anticipated to inform adaptive management and data integration efforts over the course of the next strategy period.

Related to GIS mapping and databases, the Mid-Atlantic Regional Partnership on the Ocean (MARCO) recently launched app versions of its regional mapping portal and has continued to expand the range of fisheries data available. In the coming years, the mapping portal team anticipates building out the availability of benthic habitat data. The CMP has also continued to improve its Coastal Atlas mapping data and tool offerings, including for beneficial use and coastal conservation. All of these changes were CMP-driven or -informed, including some investments through 309. Over the next five years, the Program anticipates further improvements to these resources to ensure that data and mapping tools are available to communities across the coastal zone to aid in decision making. In addition, the program has also supported community-specific mapping efforts (e.g. ditch mapping) to help address a variety of coastal resource management challenges.

3. Identify and describe the conclusions of any studies that have been done that illustrate the effectiveness of the state's or territory's management efforts in planning for the use of ocean and Great Lakes resources since the last assessment. If none, is there any information that you are lacking to assess the effectiveness of the state's or territory's management efforts?

In 2022, The Mid Atlantic Regional Council on the Ocean (MARCO) published a "blue economy" report titled, "New Perspectives on the Ocean Economy of the Mid-Atlantic States". The report integrated federal, state, and industry data (including Economics National Ocean Watch data) regionally as well as for the Mid-Atlantic states individually. The economic contributions of Maryland's coastal resources and ocean-dependent industries has grown significantly over the past decade. The most notable contribution increases to the GDP are in the living resources, marine transportation, and tourism/recreation sectors.

Since the last assessment, two regional efforts have engaged partners to develop integrated plans for ocean science - the Regional Wildlife Science Collaborative (RWSC) and the Responsible Offshore Science Alliance (ROSA). The RWSC collaboratively developed a Science Plan to inform future data collection and research, and ROSA developed a project monitoring framework and guidelines. Both of these efforts enable states and CMPs to better direct and plan for ocean resource management and sustainable uses of our ocean.

**Identification of Priorities**

1. Considering changes in threats to ocean and Great Lakes resources and management since the last assessment and stakeholder input, identify and briefly describe the top one to three management priorities where there is the greatest opportunity for the CMP to improve its ability to effectively plan for the use of ocean and Great Lakes resources. *(Approximately 1-3 sentences per management priority.)*

   *Management Priority 1: Data and Research Application*

   *Description: By advancing work across restoration science, coastal and ocean decision making, and resource assessment, Maryland's CMP needs to address how new or updated data and research are integrated into applied outcomes in communities across the coastal zone. By working to compile, develop and interpret a wide variety of data (e.g. benthic, economic significance of coastal and ocean resources) and subsequently train partners on the utilization of these data and mapping resources, the CMP can make an impact on the effective utilization of these new, updated, and emerging resources and tools in a range of ocean and Chesapeake/Coastal Bays management efforts.*

   *Management Priority 2: Advancing Beneficial Use and Sediment Management*

   *Description: Maryland continues to integrate dredging with restoration goals through tools like the BUILD GIS tool. The Shallow-Draft Channel Dredging and Restoration Assessment will identify barriers and opportunities, informing updates to DNR's Beneficial Use Policy, which will streamline sediment reuse strategies. Expanding partnerships and enhancing coordination will support habitat, hazard mitigation, and waterway access statewide. Additional discussion with a variety of local and start partners related to upland placement sites and capacity solutions will help to advance CMP work on not only sediment management, but regional sediment plans, and restoration goals.*

2. Identify and briefly explain priority needs and information gaps the CMP has to help it address the management priorities identified above. The needs and gaps identified here do not need to be limited to those items that will be addressed through a Section 309 strategy but should include any items that will be part of a strategy.

| Priority Needs | Need? (Y or N) | Brief Explanation of Need/Gap |
|---|---|---|
| Research | Y | CMP-led work within the CMP's agency and with Maryland Commission groups will help to advance discussion around future marine carbon dioxide removal (mCDR) goals.<br><br>Empirical data of ocean acidification spatio-temporal trends will be important for the CMP to anticipate and adapt to coastal hazard impacts the state is experiencing. Additionally, research is needed to better understand the economic impacts and opportunities those changes may provide.<br><br>Having conducted and completed a significant amount of monitoring work at numerous restoration project sites, the CMP will seek to analyze the data and research and integrate it into adaptive management solutions at restoration sites.<br><br>Additional research is required to understand Maryland's dredging needs, the full scope of beneficial use (BU) opportunities, and the barriers preventing BU. The Shallow-Draft Channel Dredging and Restoration Assessment (SDCDRA) plays a critical role in gathering field-based data to inform these needs. |
| Mapping/GIS | Y | The BUILD GIS tool is instrumental in matching dredging projects with beneficial use (BU) opportunities. However, there is a pressing need to migrate the tool to a more updated ArcGIS platform, as well as expand its capabilities to integrate other organizations' restoration and dredging projects.<br><br>Seafloor habitat mapping is needed so that the CMP can plan for and adapt to multi-disciplinary uses of ocean resources in the years ahead (energy development, protection of economically important fishing grounds, sediment management, etc.). |

| | | |
|---|---|---|
| Data and information management | Y | The BUILD GIS tool must be expanded to include projects from other organizations, requiring integration of external data sources. Additionally, the platform needs to be migrated to the updated ArcGIS framework to ensure its functionality and compatibility with emerging technologies.<br><br>Comprehensive data on dredging needs, BU opportunities, and project performance metrics is crucial for informed decision-making. The Shallow-Draft Channel Dredging and Restoration Assessment (SDCDRA) helps address this by assessing and compiling data on shallow-draft channels and their restoration potential.<br><br>In addition to benthic habitat, ocean acidification and marine carbon dioxide removal (mCDR) data needs, the management of such information on an easy-to-use, pre-existing data portal is critical. Data management of ocean resources is critical to planning efforts of the CMP. |
| Training/Capacity building | Y | Training and capacity building are essential for state and local entities to effectively use tools like BUILD and interpret findings from the Shallow-Draft Channel Dredging and Restoration Assessment (SDCDRA), ensuring alignment with beneficial use (BU) goals.<br><br>As the CMP makes continued investments in restoration and seeks to build a community of practitioners to design and implement successful nature-based projects, there is a continued need to focus on training and workforce development efforts and ensure continued capacity building support. |
| Decision-support tools | Y | Related to comprehensive flood risk and adaptation mapping and GIS, there is a need to compile recently completed data and tool development products, determine how users are integrating them in decision making, and recommend and develop consistent approaches for data application.<br><br>While BUILD serves as a valuable tool, enhancements are necessary to make it more versatile and accessible for broader use. These updates should incorporate findings from the Shallow-Draft Channel Dredging and Restoration Assessment (SDCDRA) to improve decision-making for beneficial use (BU) projects. |

| | | |
|---|---|---|
| Communication and outreach | Y | Targeted outreach is needed to build awareness and collaboration around dredging needs, beneficial use (BU) opportunities, and the outcomes of tools like BUILD and dredging assessments. Additionally, promoting DNR funding opportunities for restoration, hazard mitigation, and waterway access projects can help engage and support stakeholders in advancing BU efforts.<br><br>Consistent public outreach with coastal communities is needed so that 1) their perspectives and needs are thoroughly embedded in decision-making processes, and 2) opportunities for natural resource protection and economic benefits are made fully aware to communities. |
| Other (specify) | | |

**Enhancement Area Strategy Development**

1. Will the CMP develop one or more strategies for this enhancement area?

   **Yes** ___X___
   **No** _____

2. Briefly explain why a strategy will or will not be developed for this enhancement area.

A strategy focused on ocean/coastal resources will be developed to help address key priorities over the next five years. The CMP will focus on two areas - sediment management and coastal and ocean mapping. In sediment management there are opportunities to more effectively align dredging and restoration efforts and work to support national priorities to beneficially use 70% of dredge material by 2030. Related to coastal and ocean mapping, Maryland and the CMP continue to utilize GIS and data tool development and mapping as a crucial component of updated decision making and resource management initiatives and there are key needs that have been identified through this assessment that can be advanced in the next five years.

# Strategy: Hazards & Wetlands

***I.*** **Issue Area(s)**

**A.** The proposed strategy or implementation activities will *primarily* support the following high-priority enhancement area(s) *(check no more than two):*

☐ Aquaculture
☐ Energy and Government Facility Siting
**X** Coastal Hazards
☐ Ocean/Great Lakes Resources
☐ Special Area Management Planning
☐ Cumulative and Secondary Impacts
**X** Wetlands
☐ Marine Debris
☐ Public Access

**B.** The proposed strategy or implementation activities will also support the following enhancement areas *(check all that apply)*:

☐ Aquaculture
☐ Energy and Government Facility Siting
☐ Coastal Hazards
☐ Ocean/Great Lakes Resources
☐ Special Area Management Planning
**X** Cumulative and Secondary Impacts
☐ Wetlands
☐ Marine Debris
**X** Public Access

**II. Strategy Description**

**A.** The proposed strategy will lead to, or implement, the following types of program changes *(check all that apply):*

☐ A change to coastal zone boundaries;

☐ New or revised authorities, including statutes, regulations, enforceable policies, administrative decisions, executive orders, and memoranda of agreement/understanding;

**X** New or revised local coastal programs and implementing ordinances;

**X** New or revised coastal land acquisition, management, and restoration programs;

☐ New or revised special area management plans (SAMP) or plans for areas of particular concern (APC) including enforceable policies and other necessary implementation mechanisms or criteria and procedures for designating and managing APCs; and,

**X** New or revised guidelines, procedures, and policy documents which are formally adopted by a state or territory and provide specific interpretations of enforceable CZM program policies to applicants, local government, and other agencies that will result in meaningful improvements in coastal resource management.

**B.** ***Strategy Goal: Enhance landscape and community scale coastal hazard and wetland planning to support resilient communities and the strategic implementation of nature-based solutions. Build capacity at regional, state and local scales through partnership building and application of the best available science.***.

Maryland will simultaneously address coastal hazard impacts and threats to wetlands in a way that leverages scientific and local understanding of hazards and their interactions with coastal wetlands. This goal will support accelerated and interconnected decision-making around resource conservation, restoration, policy, development and public access in the coastal zone. This will be achieved through enhancing regional-scale planning and implementation; supporting

local communities to build capacity and protect investments; and translating hazards, engineering, and ecological science for use by local, state and regional partners.

### C. Description

The Maryland Coastal Management Program (CMP) will address coastal hazards and mitigate wetland loss through 1) new or revised coastal programming that offers enhanced trainings and programs for local communities; 2) streamlined guidance for application of tools and data in restoration, conservation and local coastal programs; and 3) pursuit of strategic policy updates.

This strategy will explore designing a cohesive approach across the coastal zone to address community-specific challenges, including capacity building initiatives and guidance on integrating data into planning efforts. Additionally, this strategy will further the State's goal to strategize the implementation of limited resources by focusing efforts on a regional scale. Further, making GIS, mapping, and decision-support tools more accessible will ensure the best available science can be utilized at all levels in an integrated and consistent way. A legal and policy review will build off of lessons learned from Critical Area regulations, floodplain management, the Coast Smart Construction Program, and other efforts to inform updates to regulations and/or new programs to support vulnerable communities. Additionally, the CMP is interested in updating building guidance regarding CoastSmart and improving coordination across state agencies to facilitate the implementation of new policies and regulations.

## III. Needs and Gaps Addressed

The CMP's Coastal Hazards and Wetlands Phase I and II Assessments demonstrated that addressing anticipated challenges related to coastal hazards and threats to wetlands is a priority over the next five years. Acknowledging that unique and community-specific approaches are needed to meet existing challenges, the CMP will develop an equitable and nimble strategy for addressing these threats across communities. There is also an increasing demand for training, geographic information systems (GIS) and mapping, and decision support tools to support community goals. Limited capacity for addressing the anticipated challenges remains a major roadblock to local progress.

Empowering communities with the ability to make their own decisions is a more equitable strategy to address anticipated challenges relating to coastal hazards and threats to wetlands. Revised guidelines (including permitting and regulation guidance) and staff assistance in the interpretation of data to support community goals will further the accessibility of decision support tools to communities. More streamlined and purpose-driven communication products and training opportunities can improve the rollout of new tools and products such as new flood vulnerability or wetland prioritization data. Supporting community-based organizations, local governments, and small businesses through efforts to enhance capacity including community liaisons, regional watershed specialists, and workforce development initiatives, will create informed decision makers at all levels.

## IV. Benefits to Coastal Management

The benefits of the efforts detailed in this strategy include an overall increase in community-centered wetland restoration and coastal hazard mitigation strategies. By focusing on coastal hazards and wetlands together, this strategy protects and improves the longevity of community investments while increasing public access opportunities. Improving resource delivery will empower community involvement in scientifically informed decision-making to protect wetlands and reduce the risk of coastal hazards by providing natural buffers. This strategy will enhance community decision-making by advancing workforce development, developing additional datasets, tools and guidance documents, and improving the delivery and availability of these resources through coordinated strategic implementation. By providing skill-development opportunities through training and outreach, communities will be better equipped to identify and implement projects that maximize community resources, reduce the risks associated with coastal hazards, and support the better management of wetlands. This strategy will also improve coordination between state governmental agencies to support larger-scale regional planning efforts and improve service delivery from the CMP to local communities and governments. Emphasizing regional coordination, planning, and policy will result in an increased channeling of resources, funding, and technical assistance and expertise to communities.

## I. Likelihood of Success

The likelihood of success for the strategic goals and program changes outlined above is high. The CMP's technical tools and data layer-related support for wetland conservation, restoration, and protection, as well as coastal hazard mitigation, have drastically increased through the implementation of the 2021-2025 strategy. Improvements to the data layers displayed in tools such as our Coastal Atlas, specifically the Future Wetland Areas layers, and the development of a Maryland Flood Visualization Explorer illustrate the areas where the CMP has enhanced technical resources to support decision-making in Maryland communities. The successful utilization of these tools is made more likely by providing training and online resources. Partnership with Maryland's Coastal Training Program during the 2021-2025 strategy has led to an expansion in training opportunities that integrate CMP developed data, tools and resources.

The program changes outlined above aim to build on those improvements through strong connections and partnerships with local and regional groups, such as Local Authorities and county and municipal governments. This type of framework has previously led to successful collaborations. For example, the CMP has concentrated resources on new landscape scale restoration initiatives such as the Whole Watershed and the Targeted Area programs, which resulted in expanded project implementation to achieve a broader regional impact in both the coastal zone as well as inland. CZM staff have remained embedded as leaders, facilitators and active members of statewide work groups that are poised to continue to affect change over time. Over the past five years, the CMP has fulfilled connector and translator roles by convening listening sessions with local government staff, developing Nuisance Flood Plan (NFP) guidance for localities, and creating guidance documents for coastal hazards that outline project planning strategies. This underscores the CMP's capability to continue this role over the next five years by offering guidance, training and facilitation related to wetlands and coastal hazards. Additionally, we have collaborated closely with our Department's education staff to translate scientific insights and enhance community resources to reduce risks. We intend to persist in this educator-translator approach while implementing the strategy outlined in this document. The CMP will continue to explore collaborations and enhance decision-making to support locally driven initiatives for Maryland's frontline communities.

## V. Strategy Work Plan

**Strategy Goal 1: Using a landscape/regional scale approach, provide financial and technical support to targeted local communities around coastal hazards, wetlands, and nature-based solutions.**

**Targeted Program Change:** This goal represents a program change by modifying the way our CMP distributes funds and technical resources. Historically, the CMP has made opportunistic progress through annual solicitations, with well-resourced communities routinely applying for and receiving 309 funding based on their documented needs. This goal allows us to accelerate progress through a more strategic approach to financial and technical assistance while facilitating the exchange of ideas, information, and experiences among groups that may lack resources or capacity to respond to solicitations.

**Total Years: 1-5**
**Total Budget: $1,308,000**

**Year(s): 1-5**
**Description of activities:** The Maryland Coastal Program will scale up coastal hazard and wetland projects and support communities and populations with the greatest needs, particularly those that have historically lacked access to technical and financial resources. This work will be achieved through the centralization of technical and financial assistance while leveraging resources such as network partners to identify target areas. These changes will address local capacity challenges and improve the quality of deliverables within the understand-plan-implement model for service delivery. Additionally, the CMP will facilitate delivery of technical and financial services, foster collaboration, and enhance knowledge exchange among re-engaged network partners at the regional scale. Knowledge exchanges will encourage local ownership, accelerate strategy progress, and provide opportunities for lessons learned to inform updates to the service delivery process.

**Major Milestone(s):**

1. Develop and evaluate maps that identify communities that have either applied unsuccessfully or never applied for coastal hazard and nature-based solutions funding through DNR's Grants Gateway.
2. Identify targeted regions for funding initiatives based on community resource gaps. Examples may include Southern Maryland, the Lower Eastern Shore, the Upper Western Shore, the Choptank River watershed, the Greater Baltimore Wilderness region, or municipal-focused Targeted Resiliency Areas.
3. Revise the CMP's understand-plan-implement model for service delivery to enhance delivery of understand/plan services. This milestone includes updating the Grants Gateway Outcome 2 scope and description to reflect the new service delivery instrument; establishing a funding mechanism that decreases the burden on low-capacity recipients; and initiating pilot projects in newly identified target regions.
4. Host workshop events for the network and non-state partners, resulting in a revitalized capacity network that addresses local needs.
5. Facilitate knowledge exchange among the grant recipient cohort, within and between regions.
6. Solicit feedback from grant recipients and service delivery networks to inform review and revision of the service delivery instrument and deliverables. Improve delivery of resources

to increase community capacity to address coastal hazards and advance nature-based solutions.

**Budget**: $933,000

**Year(s): 1-5**
**Description of activities:** The Coastal Management Program will increase local capacity and knowledge for improved planning around coastal hazards and implementation of nature-based solutions, shoreline easements, and wetland conservation and restoration. This work will include targeted outreach and support to community-based organizations, improvement of landowner awareness of wetland conservation and management strategies, and promotion of workforce development for coastal restoration practitioners.

**Major Milestone(s):**

1. Increase workforce development opportunities for coastal restoration practitioners to implement nature-based solutions. This work will build off of previously developed living shoreline trainings, coastal easement management plans, and workforce development initiatives for natural resource-based industries.
2. Work with land trust partners to increase usage and understanding of coastal and shoreline easements to support wetland conservation and increase public access along shorelines.
3. Work with land trust and acquisition partners to increase landowner awareness of coastal easement opportunities and accelerate implementation of easements with management plans.
4. Foster growth of community-based organizations, building off of existing networks such as the Community Based Organization Capacity Building Initiative (CBO-CBI) and working with network partners.

**Budget**: $375,000

**Strategy Goal 2: Utilize Data to Inform Decision-making.**

**Targeted Program Change:** This goal represents a program change by integrating the best available science and data into new and revised coastal land acquisition, management, and restoration programs at local and state scales. Coastal tools and data will be better communicated to partners and integrated into the application of state and department site plans, guidelines, procedures and policies. Coordination across Maryland state agencies will inform existing and/or new programs and policies that will improve coastal zone management and increase transparency about decision-making.

**Total Years: 1-5**
**Total Budget: $481,000**

**Year: 1-5**
**Description of activities:** The Coastal Management Program will utilize Resiliency through Restoration monitoring data to develop an Adaptive Management Framework for each phase of the adaptive management process. The Adaptive Management Framework will be available on a webpage that includes a clickable decision tree to walk users through each step of the adaptive management cycle. This webpage will also include a decision support guide and recommended resources and tools, such as monitoring guidance and an R package for data analysis. The CMP will compile adaptive management data to identify lessons learned and apply this information to existing restoration programs, future

funding, and grant decision-making. Additional data and tools that support hazard mitigation and wetland enhancement will be compiled to support development of future guidance on data application. Examples include the Maryland Flood Explorer, Future Wetland Areas, and Marsh Protection Index. Additionally, the Coastal Management Program will create, publish, and maintain an up-to-date list or website of state-recommended tools and data related to hazard mitigation and wetland protection/restoration. This work will focus on actionable tool usage to aid in planning concerning hazards and wetlands at different scales and for different audiences. This resource will specify how to request state assistance for tools and training on their technical use and purpose. This work will also help guide prioritization of training efforts.

**Major Milestone(s)**:

1. Develop a comprehensive Adaptive Management decision support tools and guide for use in outreach, communications, and training curriculum implementation.
2. Research and document local, state and regional tools, data and resources for use in hazard mitigation and wetland protection/restoration planning at parcel, landscape, and regional scales.
3. Develop an online resource that recommends data/tools based on project goals, scale, and audience. Coordinate with the department's coastal hazards and state lands planning websites to prevent duplication of information and ensure alignment with state messaging.
4. Develop training plans and agendas to roll out new resource guides.

**Budget**: $100,000

**Year(s): 1-3**

**Description of activities:** The Coastal Management Program will conduct a legal review to inform recommendations for regulations and/or new programs to support vulnerable communities. Areas of focus may include Critical Area regulations, floodplain management, the Coast Smart Construction Program or wetland restoration, among others. The CMP will coordinate with state agencies to inform the implementation of new department and/or state policies or regulations. The implementation of policies will be monitored to track success and determine adaptive management needs.

**Major Milestone(s):**

1. Scope and conduct a legal review of current state and department regulations, policies and standards that provide opportunities for continued risk without changes to business-as-usual.
2. Based on the completed legal review, the CMP will recommend regulation, policy and standard updates for implementation. This work will include coordination across state agencies. Recommendations could relate to CoastSmart Council, Critical Area Commission, or cross-agency initiatives.

**Budget:** $50,000

**Year(s): 1-5**
**Description of activities:** The Coastal Management Program will deliver training and technical assistance to state, local, and community partners to better support the implementation of hazard mitigation, wetland restoration/protection, and adaptive management planning and practices. Place-based plans will showcase innovative examples of planning for conservation and public access. Partner feedback will inform training and resource adjustments and lead to identification of additional training and resource needs, as well as tool updates that reflect community needs and gaps. This work will build off of a Guidebook (under development) as the framework for future site-specific guides.

**Major Milestone(s):**

1. Develop place-based plans that support and improve resilient recreational and public boating spaces, balance public use and resource conservation, and facilitate implementation of practices to address hazards.
2. Annually engage and train state, local and community partners on implementation of nature-based solutions and effective data and tool usage for hazard mitigation and wetland protection/restoration planning, with a focus on local program changes. Integrate place-based plan examples into applicable trainings.
3. Provide training on the Maryland Flood Explorer for community planners, practitioners and local planners, with a focus on data application for various parcel/landscape/regional scales and end users. If needed, make big and small updates to wetland, coastal hazard, and ocean related state managed tools where needed.
4. Collect and compile feedback on tools/resources/training offered or managed by the CMP to inform training adjustments and/or future tool development to develop a comprehensive document to detail resources, training and information.

**Budget:** $331,000

## VI. Fiscal and Technical Needs

### A. Fiscal Needs:

The majority of the work identified in this strategy will be carried out with current in-house resources. Project of special merit opportunities are outlined below to create guidance for consultants, contractors, and other professionals in the siting and installation of living shoreline strategies, as well as to expand public access implementation.

The funding for items such as the Guidebook and Community-Based Organization Capacity-Building Initiative will continue to leverage other funding sources such as the Inflation Reduction Act, Infrastructure Investment and Jobs Act, and the Environmental Protection Agency.

### B. Technical Needs:

Current CZM staff have the technical knowledge to carry out the identified objectives. These strategies will rely on partnerships with other state agencies, non-profit groups, and university partners for the following:

**Outreach and Training development** -

The CMP plans to leverage partnerships with The Nature Conservancy, Chesapeake Conservation Landscaping Council, Chesapeake Bay Trust, Chesapeake Bay National Estuarine Research Reserve (CBNERR), and the University of Maryland Sea Grant and Sea Grant Extension to conduct outreach and develop training materials.

**Data and Tool Development** -
The CMP plans to leverage partnerships with Maryland Department of Information Technology (DoIT), Maryland Department of Emergency Management (MDEM), University of Maryland Center for Environmental Science (UMCES), University of Maryland College Park (UMCP), Chesapeake Bay National Estuarine Research Reserve (CBNERR), and Maryland Department of Planning (MDP) to achieve the data to decision making goal.

## VII. Projects of Special Merit (Optional)

**Maryland Guide to Designing Living Shorelines for Environmental Change** - Living shorelines are the default shoreline protection practice in Maryland. Development of a Living Shoreline Design Guide would build off of Maryland's updated Erosion Control Guidelines to help Maryland practitioners design living shorelines that account for changing environmental conditions. Development of this resource supports the data-to decision making strategy and is a logical extension of the Living Shoreline Certification that was developed under the previous CZM Strategy. This project would support strategy themes of workforce development, adaptive management and nature-based solutions, while leveraging existing partnerships with regulatory agencies and CZM network partners. (See Strategy Goal 1)

**Public Access Guidebook** - Public access to the water requires a combination of soft and hard infrastructure at the land-water interface. This infrastructure will look different depending on the type of public access (i.e. motorized boating, non-motorized boating, passive). At the same time, the land-water interface is continually affected by high tide flooding and storm impacts. Various practices may be pursued to address these hazards for water-dependent infrastructure, but practices may also inadvertently impede accessibility for the public, especially for users with disabilities. The Coastal Management Program (CMP) plans to use lessons learned from the development of the previously mentioned Guidebook to develop a Public Access Guidebook. This project may take the form of a new guidebook or addition to the existing guidebook. The goal of this project is to centralize case studies and best practices for planning and design of public access projects that are vulnerable to impacts from coastal hazards. The CMP will coordinate with the Department's Office of Outdoor Recreation, Center for Waterway Improvement and Infrastructure, and Engineering and Construction to inform content and ensure ADA accessibility is integrated. This work will inform financial and technical assistance for waterways, living shoreline and dune crossover projects, leading to projects that address hazards while promoting equitable access. This project also has applications to implementation of Land Preservation Parks & Recreation Plans and place-based plans (See Strategy Goal 2).

# Strategy: Oceans & Coastal Uses & Resources

**I. Issue Area(s)**

**A.** The proposed strategy or implementation activities will *primarily* support the following high-priority enhancement area(s) *(check no more than two):*

- ☐ Aquaculture
- ☐ Energy and Government Facility Siting
- ☐ Coastal Hazards
- ☑ Ocean/Great Lakes Resources
- ☐ Special Area Management Planning
- ☐ Cumulative and Secondary Impacts
- ☐ Wetlands
- ☐ Marine Debris
- ☐ Public Access

**B.** The proposed strategy or implementation activities will also support the following enhancement areas *(check all that apply)*:

- ☐ Aquaculture
- ☑ Energy and Government Facility Siting
- ☐ Coastal Hazards
- ☐ Ocean/Great Lakes Resources
- ☐ Special Area Management Planning
- ☑ Cumulative and Secondary Impacts
- ☐ Wetlands
- ☐ Marine Debris
- ☐ Public Access

**II. Strategy Description**

**A.** The proposed strategy will lead to, or implement, the following types of program changes *(check all that apply):*

☐ A change to coastal zone boundaries;

☑ New or revised authorities, including statutes, regulations, enforceable policies, administrative decisions, executive orders, and memoranda of agreement/understanding;

☑ New or revised local coastal programs and implementing ordinances;

☐ New or revised coastal land acquisition, management, and restoration programs;

☐ New or revised special area management plans (SAMP) or plans for areas of particular concern (APC) including enforceable policies and other necessary implementation mechanisms or criteria and procedures for designating and managing APCs; and,

☑ New or revised guidelines, procedures, and policy documents which are formally adopted by a state or territory and provide specific interpretations of enforceable CZM program policies to applicants, local government, and other agencies that will result in meaningful improvements in coastal resource management.

**B.** ***Strategy Goal: Strengthen coordination among partners and constituents to maximize efficiency while addressing shared resource management challenges related to sediment and ocean management.***

The goal of this strategy is to strengthen coordination among partners and constituents to maximize efficiency while addressing shared resource management challenges. Sediment management and ocean resource management are key priorities within this goal. Specifically, sediment management efforts will focus on: 1) assessing current shallow-draft channel dredging needs, 2) stream-lining collaboration with the US Army Corps of Engineers and local partners for regional use of dredged material, and 3) expanding on-line mapping tools for the beneficial use

of dredged sediments. Ocean management priorities will focus on fisheries protection and sustainability, data needs for long-term planning (e.g., seafloor-mapping, assessments of potential energy siting, marine mammal protection), and leveraging the capacity and cost-effectiveness of regional ocean partnerships to help achieve these priorities. Additionally, the approval and implementation of a Geographic Location Descriptor will be important to achieve this goal.

**C. Description**

This strategy will primarily focus on activities in support of responsible sediment and ocean management.

*Sediment Management:*

Effective sediment management is critical for maintaining navigational access, preparing for changing conditions, and restoring habitats. Maryland's CMP will refine and expand regional and place-based sediment management strategies to address growing dredging needs and limited placement options. Building on previous efforts, the program will focus on assessing shallow-draft dredging requirements, identifying new beneficial use opportunities and partnerships, and collaborating with the U.S. Army Corps of Engineers (USACE) and local jurisdictions on local and regional sediment management needs. Additionally, the CMP will advance innovative sediment management techniques, such as Thin Layer Placement (TLP), to improve ecosystem benefits and maximize material efficiency. By leveraging partnerships with USACE, Maryland Port Administration (MPA), and other federal, state and local organizations, this strategy will strengthen coordination between agencies, optimize dredging operations, and ensure that sediment is managed as a valuable resource rather than a disposal challenge.

By migrating and updating the Maryland Coastal Atlas BUILD (Beneficial Use: Identifying Locations for Dredge) data layers to newer systems, this will enhance geospatial tools available to facilitate alignment between dredging and restoration by proactively identifying beneficial use opportunities across the state. Through partnerships with local jurisdictions and state and federal agencies, the CMP will develop place-based and regional sediment management plans that help to accelerate progress on effective use of dredged material management.

*Ocean Resources & Data*

Regional partnerships (e.g., Mid-Atlantic Regional Council on the Ocean [MARCO], Regional Wildlife Science Collaborative [RWSC], Responsible Offshore Science Alliance [ROSA]) provide capacity and resources to the CMP, which allows Maryland to set higher-impact goals for itself and to do so in the most cost-effective manner. These partnerships and their data portals and science plans strengthen the state's ability to plan for and respond to ocean resource management needs. Over the next five years, the CMP will evaluate ocean planning and policy needs, develop and finalize an ocean prospectus, and carry out work to implement key actions. This will equip the CMP and state with actionable steps to assess emerging ocean uses and implement steps that balance and build coastal economies and strengthen protections for ocean resources.

**III. Needs and Gaps Addressed**

As noted in the Oceans & Great Lakes Resources Phase I and II Assessments, the CMP has identified priority needs and gaps for sediment management and ocean resources and data.

*Sediment Management:* Strategic sediment management at a regional or sub-regional scale is essential to address increasing dredging needs in shallow-draft channels and where limited placement options exist while maximizing beneficial use opportunities. Additionally, advancing innovative sediment management techniques — such as Thin Layer Placement (TLP) — will enhance habitats for future conditions and improve long-term material reuse. Comprehensive assessment of shallow-draft dredging needs is necessary to identify high-priority navigation channels and align beneficial use (BU) opportunities with restoration goals.

*Ocean Resources & Data:* State ocean initiatives and regional partnerships are becoming increasingly important to the CMP for ocean data management and planning for nearly every ocean resource issue. Through its participation in these partnerships, the CMP has participated in efforts to identify data, information, and project and policy coordination needs that would improve decision making and engage the ocean community. have been identified and characterized by these partners and this strategy will help to address state-specific ocean management needs. This strategy will enhance the CMP's ability to address needs identified in the Phase II assessment by scoping a range of potential future ocean uses at both the state and regional scales and evaluate how current and emerging uses may change over time and developing approaches and steps to support that work.

## IV. Benefits to Coastal Management

The Maryland Coastal Management Program (CMP) plays a vital role in balancing economic, environmental, and community needs in ocean and sediment management. By enhancing regional coordination, expanding data accessibility, and developing and improving sediment management strategies, this strategy will strengthen responses to changing conditions, support fisheries sustainability, and ensure effective ocean resource planning. Maryland's CMP is uniquely positioned to advance regional collaboration, data-driven decision-making, and science-based policy development to address these challenges. By addressing sediment management and ocean resource management, the CMP can leverage technical expertise and regional collaboration to ensure sustainable resource management while increasing efficiency, reducing conflicts, and protecting Maryland's coastal and ocean resources.

*Specific to Sediment Management:* Improving regional dredging coordination for shallow-draft channels, fostering beneficial use opportunities, and providing increased data accessibility and application through the Coastal Atlas and BUILD tools will allow for cost-effective and environmentally beneficial sediment placement strategies. Additionally, expanding Regional Partnerships through continued engagement with MARCO, RWSC, ROSA, USACE, and MPA will improve coordination on dredging, fisheries, habitat conservation, and offshore resource planning.

*Specific to Ocean Resources & Data:* Advancing seafloor habitat mapping and characterizing and compiling data and information that can be applied to ocean resource decisions will improve the state's ability to respond to changing ocean uses and assess impacts and management options that balance economic growth with ecosystem protection.

## V. Likelihood of Success

The CMP has a strong track record of implementing regional ocean and sediment management strategies and direct partnerships with local jurisdictions. This strategy builds upon existing partnerships, data tools, and policy frameworks to achieve measurable success. The MD CMP had successful engagement with 10 federal agencies while updating the list of Federal Activities subject to CZM review and routinely engages with local governments addressing dredging and restoration projects. Agencies provide meaningful, positive responses and identify collaborative solutions. The contacts made during these processes, along with the positive feedback and collaboration opportunities, indicate a willingness for future collaboration for program updates.

CMP already works closely with USACE, MPA, MARCO, RWSC, and ROSA, ensuring that cross-agency collaboration is well-established and continues to evolve. Coastal Atlas and BUILD enhancements will improve access to sediment management and habitat data, leading to better-informed planning and project alignment. Seafloor mapping efforts, sediment placement techniques (TLP), and expanded partnerships will prepare the CMP for changing conditions and improve long-term resource management. With growing state, regional, and federal support, this strategy has a high likelihood of success in achieving efficiency and sustainability in Maryland's ocean and sediment management efforts.

## VI. Strategy Work Plan

**Strategy Goal 1:** Expand Regional Sediment Management
**Total Years:** 5
**Total Budget: $370,000**

**Year(s):** 1-5
**Description of activities:** The CMP will enhance regional sediment management coordination by expanding interagency and regional partnerships, improving sediment data accessibility and integration, and streamlining dredging and beneficial use (BU) efforts in shallow-draft channels. Key activities include:

- Strengthening collaboration with USACE, MPA, MARCO, U.S. Fish and Wildlife Service (USFWS), Maryland Department of the Environment (MDE) and local governments and stakeholders to align dredging needs with beneficial use opportunities.
- Enhancing Coastal Atlas and the BUILD tool by migrating to ESRI Experience Builder, updating datasets, improving data-sharing, sediment tracking, regulatory coordination, and project alignment.
- Advancing innovative sediment management techniques, such as Thin Layer Placement (TLP), to support habitat restoration and prepare for changing conditions.
- Identification and prioritization of shallow-draft navigation channels to identify dredging sites and strategic BU locations that support landscape and community scale planning, including direct partnerships with local governments through a new beneficial use solicitation process.
- Reinstituting and expanding the DNR Beneficial Use Committee to function as a DNR interagency BU/dredging coordination group, which will support annual evaluations of sediment management priorities, inform policy updates, and provide shared recommendations on BU implementation and regulatory integration.

- Exploring the integration of BUILD and sediment site data into the regulatory and permit review process, working closely with MDE to identify pathways to support early coordination and efficient project review.

**Major Milestone(s):**

1) **2026-2030** - Establishing Partnerships:
    a) **Regional Sediment Coordination (Years 1-5):** Strengthen collaboration with USACE, MARCO, RWSC, and other partners to advance shared ocean sand and sediment priorities.
    b) **State Interagency Coordination (Years 1–5)**: Re-establish and expand the DNR BU Committee to include relevant agencies and partners. Conduct annual evaluations of sediment priorities and provide formal recommendations to guide implementation.
    **c) Local Partnerships (Years 1-5)**: Establish 2-5 partnerships with local government and community partners to scope dredging and beneficial use needs, developing comprehensive approaches that sequence dredging, project development, and implementation to best leverage available planning, permitting, and implementation resources.
2) **2027-2030** - Dredging Coordination & Beneficial Use Opportunities:
    a) **Shallow-Draft Dredging Assessment (Years 2-4)**: Identify priority dredging sites and beneficial use opportunities to guide regional sediment management.
    b) **Thin Layer Placement (TLP) Guidance (Years 2-5)**: Develop best practices for implementing TLP as a beneficial use strategy for habitat restoration using nature-based projects.
    c) **Beneficial Use Policy & Project Guidance (Years 2-5)**: Update shallow-draft channel Departmental guidance on sediment reuse for nature-based restoration projects, aligning with statewide restoration and community flood reduction goals.
3) **2026-2030** - Data Accessibility:
    a) **BUILD Tool Updates & Migration (Years 1-5):** Transition BUILD and Coastal Atlas to ESRI Experience Builder and update available datasets to ensure continued functionality and improve data accessibility.
    b) **Assess Feasibility of and Advance Regulatory Tool Integration (Years 2–5):** Assess integration of BUILD into MDE's permit screening and review processes to support early project coordination and site selection.

**Budget:** $370,000

**Strategy Goal 2:** Oceans Prospectus
**Total Years:** 5
**Total Budget: $131,000**

**Year(s):** 1-2
**Description of activities:** The CMP will complete assessments of current and emerging ocean uses and research and science needs. This work will be conducted in partnership with regional organizations and partnerships (e.g. MARCO, RWSC, ROSA) as well as in-state partners (e.g. Maryland Geological Survey, Maryland Energy Administration) that address specific resource-management goals. Using these assessments, the CMP will develop and

identify key resource management and ocean use goals as well as policy and implementation activities to advance them. The result of this work will be a "Maryland ocean prospectus."

**Year(s):** 3-5
**Description of activities:** Based on the most high-priority needs and opportunities for collaboration, the CMP will select several ocean resources and data management priorities to further develop with a three-pronged focus: the implementation of policy tools and priority actions (e.g. Geographic Location Descriptor), enhancing and leveraging regional partnerships, establishing benthic habitat mapping and ocean use initiatives.

- The CMP will leverage steering committee positions on MARCO and RWSC, as well as collaborating with ROSA, to expand the CMP's capacity in specialized technical, empirical data collection and guidance on best data management approaches. The CMP will integrate data and information into its work from partners about key fishing grounds and stakeholder engagement, regional resource planning, and knowledge of marine benthic habitats.
- The CMP will explore a program update about ocean policies and the utility of additional Geographic Location Descriptors (GLD) through work with subject matter expertise in GLDs. This will build off of regular coordination with NOAA staff during the last Assessment period. The CMP will determine best approaches and advance implementation of GLDs based on an assessment of changes in offshore uses and resources throughout the 2026-2030 Enhancement Plan period.

**Major Milestone(s):**
1) Ocean Partnerships and Ocean Uses:
    a) **2026-2028 -Ocean Coordination (Years 1-5):** The CMP will develop an ocean prospectus that scopes ocean economy, environmental, policy, and research topics. The CMP will leverage its leadership roles on the MARCO Management Board, the RWSC State Caucus and relevant subcommittees (e.g., Habitat & Ecosystem, Marine Mammal), state-specific coordination groups, and collaborate with ROSA in order to identify emerging issues and enhance the CMP's ability to balance ocean uses and protect important natural resources.
2) Mapping & Data Management:
    a) **Benthic Habitat Mapping (Years 1-5):** A seafloor mapping subcommittee has recently formed in MARCO, which will utilize NOAA's Spatial Priorities Studies approach to identify priority mapping needs (critical habitat areas, marine hazards, mineral/sediment sources, navigation safety, etc.). The MD CMP will be an active member of this subcommittee, in which major milestones include the identification of priorities and mapping criteria, geospatial mapping tools, and guidance for data management. These deliverables will be directly applied to MD decision-making by aiding permitting reviews, informing strategic planning, and identifying emergent resource priorities.
3) **2026 & 2028-2030 -** Geographic Location Description and Policy and Program Updates:
    a) **GLD Approval and Implementation (Years 1):** Develop and implement a 2025 GLD and in Strategy Year 1, identify other policy approaches for changing and emerging ocean uses offshore of Maryland.

b) **Offshore use assessment (Years 2-5):** Assess changes in offshore uses and resources, and identify GLD updates. Expand GLD or add authorities as needed. Evaluate substantive policy updates needed to explore language updates for enhanced fisheries protections and other state interests. Continual screening of legislative updates will direct future policy updates during the 2026-2030 timeframe.

**Budget:** $131,000

## VII. Fiscal and Technical Needs

### A. Fiscal Needs:

The CMP anticipates sufficient fiscal resources for a majority of the proposed strategy, with plans for pursuing a Project of Special Merit to support the sediment management strategy goal. The ocean management goal will rely on regional partnerships and coordination with NOAA. Policy and GLD work will require a legal screening for a program change anticipated in 2028, which may be supported through 309 funds.

### B. Technical Needs:

The technical needs necessary for strategy implementation can be satisfied by in-house expertise; utilizing key partnerships with local, state, and federal agencies as well as regional organizations and the Research Reserve; and contracting with subject matter experts.

## VIII. Projects of Special Merit (Optional)

***Beneficial Use: Identifying Locations for Dredge (BUILD) Migration & Enhancement***

The Beneficial Use: Identifying Locations for Dredge (BUILD) tool is a critical resource for aligning dredging projects with beneficial use opportunities, supporting navigation, public access, and coastal restoration across Maryland. However, the current ESRI platform supporting BUILD and the Maryland Coastal Atlas is being phased out, requiring migration to ESRI Experience Builder. A Project of Special Merit could support this transition by ensuring that BUILD remains a functional, user-friendly tool that enhances data accessibility, decision-making, and interagency coordination for beneficial use projects. This effort would include modernizing the interface, writing code for custom tools, integrating new sediment and navigation data layers, and improving user experience. These enhancements will help optimize dredging operations, reduce costs, and maximize the economic and environmental benefits of sediment as a resource.

Additionally, this potential PSM project may explore the feasibility of integrating BUILD into Maryland's dredging and beneficial use permit review processes in coordination with the Maryland Department of the Environment (MDE). This analysis would identify opportunities to streamline project review, improve early coordination, and support more consistent identification of viable BU sites. These enhancements will help optimize dredging operations, reduce costs, and maximize the economic and environmental benefits of sediment as a resource.

**Shallow Draft Channel Dredging and Restoration Assessment (SDCDRA)**

A second PSM may be proposed to conduct portions of a 'Shallow Draft Channel Dredging and Restoration Assessment' (SDCDRA) to evaluate Maryland's capacity to align small-scale dredging needs with beneficial use (BU) opportunities that support habitat restoration and community hazard mitigation. The project will identify shallow draft navigation channels in need of maintenance, nearby restoration sites that could receive sediment, and existing policy, permitting, and funding barriers. SDCDRA will result in a statewide geospatial assessment and a set of actionable recommendations to improve coordination among DNR, MDE, USACE, and local governments. This effort will support future planning and investment in waterway access and restoration and directly inform updates to Maryland's BUILD tool and BU policy. Additional state and federal planning funds may be leveraged to support data collection, agency coordination, and implementation planning aligned with this assessment.

## 5-Year Budget Summary by Strategy

| Strategy Title | Anticipated Funding Source (309 or Other) | Year 1 Funding | Year 2 Funding | Year 3 Funding | Year 4 Funding | Year 5 Funding | Total Funding |
|---|---|---|---|---|---|---|---|
| **Hazards & Wetlands** | 309 | $393K | $362K | $358K | $358K | $318K | $1.789M |
| **Ocean & Coastal Uses & Resources** | 309 | $65K | $96K | $100K | $100K | $140K | $501K |
| **Total Funding** | | $458K | $458K | $458K | $458K | $458K | $2.29M |

## Summary of Stakeholder and Public Comment

As part of the development of this document, the CMP has worked with a variety of partners and stakeholders to discuss enhancement areas, needs and gaps in coastal management and how the Program could help fill some of these needs in a way that is complementary to other work underway. Partners included:

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Feedback was collected through a variety of work groups and standing committees, as well as through a survey to CMP stakeholders. Feedback from these discussions was considered and is reflected in the document.

**Public Comment**
The CMP is coordinating public review and comment in July and August of 2025 through the Department's website.