



IN-LIEU FEE PROGRAM PROSPECTUS



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1. Introduction

This Prospectus provides a summary of the proposed Maryland Department of the Environment (MDE or Department) in-lieu fee (ILF) mitigation program (ILF Program). The ILF Program described in this Prospectus is intended to meet the requirements of the Mitigation Rule adopted by the U.S. Army Corps of Engineers (Corps) and the U.S. Environmental Protection Agency (EPA) (33 CFR Part 332 and 40 CFR Part 230), as well as the requirements of the State of Maryland. The Mitigation Rule defines an in-lieu fee program as “a program involving the restoration, establishment, enhancement, and/or preservation of aquatic resources through funds paid to a governmental or non-profit natural resources management entity to satisfy compensatory mitigation requirements for DA permits.” Under the ILF Program, MDE will allow applicants to meet the compensatory mitigation requirements through payment into the ILF Program and transfer the obligation to provide compensatory mitigation to MDE, the ILF Program sponsor.¹

The Department will work with federal, State, and local agency representatives comprising the Interagency Review Team (IRT) to develop and implement the ILF Program. Following issuance of a public notice and review of the Prospectus by the IRT, the Corps will provide the Department with an initial evaluation letter stating that the proposed ILF Program does or does not have the potential to provide appropriate compensatory mitigation for activities authorized by Department of the Army (DA) permits. Based on the directions given in this letter, MDE will address all comments received and either amend the Prospectus or develop and submit an ILF Draft Instrument, which will provide greater detail on the ILF Program’s operation, including the process by which mitigation projects will be identified, implemented, and managed. After the ILF Instrument is approved by the IRT, MDE will begin accepting payments for compensatory mitigation projects in accordance with the ILF Instrument and the Mitigation Rule requirements.

The Department has a proven track record of identifying, planning, and executing environmental protection and restoration projects to meet ecosystem conservation, water quality improvement, and other objectives. This record of performance and accomplishment must be a consideration when the IRT reviews the Prospectus and subsequent ILF Instrument and Mitigation Plans. The Department has been successfully managing an ILF wetland mitigation program, completing projects that have replaced lost wetland acreage, functions, and values, for more than 24 years. These projects have been funded through two independent special funds: (1) the Tidal Wetlands Compensation Fund (Tidal Fund), which has accepted mitigation payments since 1996; and (2) the Nontidal Wetlands Compensation Fund (Nontidal Fund), which has accepted mitigation payments since 1991. The Department is proposing to revise this existing ILF program to be consistent with the Mitigation Rule. In addition to wetland impacts requiring mitigation by the Corps, it is important to note that MDE’s efforts also include mitigation for nontidal wetlands

¹ As stated in the 2008 Federal Mitigation Rule, 33 CFR §332.8 “In-lieu fee programs operating under instruments approved prior to July 9, 2008 may continue to operate under those instruments for two years after the effective date of this rule, after which time they must meet the requirements of this part, unless the District Engineer determines that circumstances warrant an extension of up to three additional years. The District Engineer must consult with the IRT before approving such extensions. Any revisions made to the in-lieu fee program instrument on or after July 9, 2008 must be consistent with the terms of this part.”

that may not always require compensatory mitigation by the Corps (e.g., isolated wetlands, some wetland type conversion loss, and for projects where mitigation requirements were waived by the Corps). The strength of the State's program establishes MDE as an equal partner with the Corps in implementing a successful mitigation program in Maryland under the Mitigation Rule.

The Department's proposed ILF Program, including the use, operation, and maintenance of the Tidal Fund, Nontidal Fund, and proposed Waterway Fund will be aligned with the Mitigation Rule, while also ensuring the continued success and viability of the ILF Program in replacing the loss of aquatic resource acreage, functions, and values resulting from unavoidable, authorized impacts to wetlands and waters of the United States. The scope of this Prospectus includes the ILF Program and ILF projects only and will not cover compensatory mitigation for authorizations issued prior to the execution of the ILF Instrument or authorizations excluded from Mitigation Rule authority².

2. Regulatory Background

2.1. MDE's Regulatory Authority

To protect Maryland's valuable wetland and waterway resources, MDE regulates proposed activities in tidal wetlands, nontidal wetlands, including a 25-foot nontidal wetlands buffer, and waterways, including the 100-year nontidal floodplain. The Department's wetlands and waterways regulatory authority is based on three State statutes: the Tidal Wetlands Act, the Nontidal Wetlands Protection Act, and the Waterway Construction Act.

The Waterway Construction Act was enacted in 1933 to regulate construction activities within nontidal waterways and floodplains. Maryland statute and regulations³ govern the construction, reconstruction, repair, or alteration of a dam, reservoir, or waterway obstruction, or a change of the course, current, or cross section of a stream or water body within the State, including changes to the 100-year frequency floodplain.

In 1970, recognizing that many tidal wetlands had been lost or despoiled throughout the State by unregulated activities such as dredging, dumping and filling, the Maryland General Assembly enacted the Wetlands and Riparian Rights Act, also known as the Tidal Wetlands Act. The law set forth the State's policy to protect and preserve tidal wetlands, including all vegetated

² MDE has been operating the Programmatic Fund well before the effective date of the Mitigation Rule and has been accepting money from other entities and for other purposes, e.g., funds resulting from fines and court actions, payments from utility companies for crossing State wetlands, compensation payment for use of State property, and fees for mitigation of resources not regulated by the Corps. MDE has used the Programmatic Funds to successfully complete more wetland mitigation than compensatory mitigation required based on the money accepted into the Programmatic Fund. MDE will continue to utilize the Programmatic Funds to meet Maryland's goal of No-Net-Loss of wetland acreage and function by completing wetland mitigation for smaller impacts not requiring permittee mitigation. MDE will separate this Programmatic Fund from the ILF Program Fund. The ILF Program Fund will include money accepted for compensatory mitigation required by the Department of the Army permits after the approval of the ILF Instrument.

³ Title 5, Subtitle 5 Environment Article, Annotated Code of Maryland; Code of Maryland Regulations (COMAR) 26.17.04.

emergent wetlands and the submerged bottom of all tidally influenced waterways, and established a regulatory program to govern proposed dredge and fill activities affecting these sensitive resources. Two types of wetlands are regulated under the Tidal Wetlands Act: (1) State wetlands, which include all tidal wetlands channelward of the mean high water shoreline; and (2) private wetlands, which include all tidal wetlands landward of the mean high water shoreline. Proposed activities impacting State wetlands require a Tidal Wetlands License from the Maryland Board of Public Works (BPW), which issues its decision after considering a report and recommendation from MDE. Proposed activities impacting private wetlands require a Private Wetlands Permit from MDE. Based on the legislation's mandate to map Maryland's tidal wetland resources, the State's tidal wetlands regulatory program went into effect in 1972. Prior to the enactment of the Tidal Wetlands Act and subsequent promulgation of regulations,⁴ more than 1,000 acres of wetlands were being destroyed throughout tidewater Maryland every year. Today, impacts to tidal wetlands average less than one acre per year.

Finally, the State's regulation of nontidal wetlands came about following the 1987 Chesapeake Bay Agreement's inclusion of a commitment to increase the protection of nontidal wetlands. In response to this commitment, the State of Maryland formed a task force of business, government, and environmental stakeholders to develop a comprehensive policy for nontidal wetlands protection. Upon analyzing several options, the Task Force recommended that a new State law be enacted as the most effective means of increasing nontidal wetlands protection and streamlining the existing regulatory framework. As a result of this recommendation, the Maryland General Assembly enacted the Nontidal Wetlands Protection Act in 1989. This was one of the first state laws to declare a goal of "no net loss" of wetland acreage and functions and to strive for a net gain in wetlands over time. Through its nontidal wetlands regulatory program,⁵ which was established in 1991, the State continues to achieve its "no net loss" wetland objective and continuous efforts are undertaken to enhance the efficiency of the regulatory process.

From its inception, the nontidal wetlands program was designed to parallel aspects of Section 404 of the Clean Water Act (CWA). Additional activities exempt from the CWA are also regulated by MDE. Regulated activities include:

- Removal, excavation, or dredging of soil or material of any kind;
- Changing existing drainage or flood retention characteristics;
- Disturbance of the water level or water table by drainage, impoundment, or other means;
- Filling, dumping, discharging of material, driving piles, or placing obstructions;
- Grading or removal of material that would alter existing topography; and
- Destruction or removal of plant life.

It is important to note that under the State's wetlands and waterways laws, MDE has jurisdiction over the following areas which are not subject to regulation under Section 404 of the Clean Water Act: regulation of isolated wetlands; regulation of a 25-foot nontidal wetlands buffer or 100-foot expanded nontidal wetlands buffer; and regulation of the 100-year floodplain.

⁴ Title 16, Environment Article, Annotated Code of Maryland; COMAR 26.24 and COMAR 23.02.04.

⁵ Title 5, Subtitle 9. Environment Article, Annotated Code of Maryland; COMAR 26.23.

2.2 Maryland State Programmatic General Permit

The Corps issued the first Maryland State Programmatic General Permit (MDSPGP) in 1996. The goals of the MDSPGP-1 were to provide a comprehensive protection program for waters of the State, including wetlands; reduce administrative burden of the program for both the Corps and the State through interagency regulatory cooperation; improve the regulatory response time; and add predictability to the permit process. Applicants applied by completing a State/Federal Joint Permit Application, which was processed by the State. Based on the proposed impacts, some projects would be reviewed by the State only and some projects would be reviewed by both the State and the Corps. Subsequent MDSPGPs have been issued with similar goals. The most recent federal permit, the MDSPGP-4, was issued on October 1, 2011 and is currently in effect. A requirement of the MDSPGP-4 is that all compensatory mitigation required under the MDSPGP-4, including those that are reviewed only by MDE, must meet the requirements of the Mitigation Rule. For projects verified under Category B of the MDSPGP-4 by the Corps, but for which project-specific mitigation is not required by the Corps, the State will apply the mitigation requirements included in State statute and regulations.

2.3 Current Mitigation Requirements

The Waterway Construction Division of MDE's Wetlands and Waterways Program (WWP) regulates proposed activities in nontidal waterways and floodplains. The Division may require a permittee to mitigate for permanent impacts to intermittent or perennial waterways. Historically, the permittee would perform the mitigation or, in rare cases, purchase credit from a consolidated⁶ stream mitigation site. The consolidated stream mitigation sites are now closed. The Department does not currently have a Waterway Compensation Fund, but proposes to establish one as part of this revised ILF Program.

The Tidal Wetlands Division of the WWP and the BPW regulate proposed activities in tidal waters and wetlands. Mitigation may be required for any permanent impacts to tidal wetlands and tidal waters. The permittee may satisfy their mitigation requirement through one of three different methods: the permittee may (1) conduct the mitigation; (2) withdraw credit from a tidal wetland mitigation bank; or (3) pay into the Tidal Fund. Because there are no tidal wetland mitigation banks with available credit in Maryland, and because State regulations establish payment into the Tidal Fund as the least preferred option for mitigation, permittees perform the majority of tidal wetland mitigation projects, often on-site.

The Nontidal Wetlands Division of the WWP regulates proposed activities in nontidal wetlands and the 25-foot nontidal wetlands buffer or the expanded 100-foot buffer. The Division achieves "no net loss" in part through different types of mitigation efforts designed to replace lost wetland

⁶ Consolidated sites, which the Department promoted as an alternative to mitigation banking, include certain benefits of mitigation banking (e.g., projects constructed ahead of credit withdrawal and performed as one large project with greater oversight) while simultaneously addressing the perceived disadvantages of banking (e.g., slow review process). Using this approach, mitigation requirements for several different projects performed by different permittees may be located at a single site. Individual permittees, however, remain responsible for the success of the mitigation project. The Mitigation Rule requires that all consolidated sites go through the bank review process.

acreage and functions.⁷ The permittee is required to mitigate for all unavoidable permanent wetland impacts over 5,000 square feet, all nontidal wetland impacts to areas with significant plant or wildlife value,⁸ and areas within the Chesapeake and Atlantic Coastal Bays Critical Area.⁹ Historically, a permittee could satisfy the mitigation requirement through various options: the permittee could: (1) perform the mitigation; (2) purchase credit from a mitigation bank or a consolidated mitigation site; or (3) pay into the Nontidal Fund. Of the few nontidal wetland mitigation banks with available credit in the State, only one has been approved under the Mitigation Rule. The majority of the consolidated mitigation sites are now closed and use of any remaining credits does not meet Federal compensatory mitigation requirements. For projects authorizing wetland impacts to less than 5,000 square feet, the State mitigates for the wetland losses in place of the permittee. The State uses the Nontidal Fund to mitigate for these small losses as well as for permittees who have paid into the Nontidal Fund. As a result of this strategy, a net gain in nontidal wetland acreage has been achieved since the nontidal wetlands regulatory program took effect in 1991.

3. Revisions to State Regulations

MDE is preparing revisions to its State wetland and waterway regulations to achieve consistency with the requirements of the Mitigation Rule. These revisions will include new ILF rates for both nontidal and tidal wetlands. The new ILF rates will not only factor in the current cost of mitigation projects, but also reflect the higher costs associated with meeting all of the requirements of the Mitigation Rule. MDE will revisit these ILF rates periodically to ensure these rates remain sufficient to cover any increased costs associated with implementation of mitigation projects. The proposed regulations may include language to adjust the fee based on the Annual Consumer Price Index.

4. Proposed Maryland ILF Program

4.1. Objectives

⁷ COMAR 26.23.04.03A provides: “It is the goal of the Act to attain no net overall loss in nontidal wetland acreage and function, and to strive for a net resource gain in nontidal wetlands. However, it may not be possible for the goal of no net loss to be achieved in each permit action. Achievement of this goal will occur through the regulatory components of this subtitle and other Statewide initiatives which incorporate nontidal wetlands creation, restoration, and enhancement projects outside of the regulatory framework.”

⁸ “Significant plant or wildlife value” means a nontidal wetland (a) with water with unusual or unique community types; (b) with water discharge that maintains minimum stream base flow important for maintaining plant and wildlife species; (c) with threatened or endangered species, or species in need of conservation; (d) adjacent to Class III or Class IV waters; (e) of special State concern; (f) supporting vernal pools; or (g) that is regularly or periodically influenced by tidal waters. COMAR 26.23.01.02B(80).

⁹ “Critical Area” means all lands and waters defined under Natural Resources Article, § 8-1807, Annotated Code of Maryland, and includes (a) all waters and lands under the Chesapeake Bay and its tributaries to the head of tide as indicated on the State wetland maps, and all State and private tidal wetlands; (b) all land and water areas within 1,000 feet beyond the landward boundaries of State or private tidal wetlands and the head of tides; and (c) modifications to these areas through inclusions or exclusions proposed by local jurisdictions and approved by the Commission as specified in Natural Resources Article, § 8-1807, Annotated Code of Maryland. COMAR 27.01.01.01B(18).

The objectives of Maryland's ILF Program are to:

- Establish an effective compensatory mitigation program that may be used for unavoidable impacts to waters of the U.S. and State wetlands and waters that result from activities authorized under Section 404 and 401 of the Clean Water Act, Section 10 of the Rivers and Harbors Act, Maryland Nontidal Wetlands Protection Act, Maryland Tidal Wetlands Act, Maryland Waterway Construction Act and associated regulations;
- Replace the loss of wetland, stream or other aquatic resource acreage, functions, and values for authorized impacts undertaken within Maryland by completing projects that restore, create, enhance, or preserve nontidal wetlands, tidal wetlands, and waterways;
- Provide a pooled funding base for larger and more ecologically viable mitigation projects than those otherwise available for individual permittees¹⁰ on a permit-by-permit basis; and
- Facilitate economic and environmental objectives by streamlining the compensatory mitigation process, using a watershed approach, to more efficiently meet regulatory requirements.

The ILF program may be utilized to provide compensatory mitigation for impacts permitted by the Corps or MDE when:

- There are no approved mitigation banks having the appropriate number and resource type of credits available in the service area;¹¹
- There is no practicable permittee-responsible project¹² that will restore an outstanding resource; and
- The proposed loss is below a certain threshold.

4.2. Establishment and Operation of the ILF Program

Maryland statute and regulations include legal authorities and provisions allowing MDE to establish and operate an ILF program.¹³ MDE will be the project sponsor and administrator of

¹⁰ Unless specifically stated, "permittees" as used in this Prospectus encompasses all permittees and authorized persons authorized to conduct regulated activities under nontidal wetland and waterway permits and authorizations, as well as licensees and permittees authorized to conduct regulated activities under State and private wetland licenses and permits, and/or those persons or entities that are authorized under Department of the Army Permits.

¹¹ "Service area" is defined in the Mitigation Rule as "the geographic area within which impacts can be mitigated at a specific mitigation bank or an in-lieu fee program, as designated in its instrument."

¹² "Permittee-responsible mitigation" is defined in the Mitigation Rule as "aquatic resource restoration, establishment, enhancement, and/or preservation activity undertaken by the permittee (or an authorized agent or contractor) to provide compensatory mitigation for which the permittee retains full responsibility."

¹³ Md. Code Ann., Envir. § 5-909; COMAR 26.23.04.07 (Nontidal Wetlands); Md. Code Ann., § 16-205; COMAR 26.24.05.01 (Tidal Wetlands).

Maryland's revised ILF Program. The MDE ILF Program will be subdivided into three separate programs: Nontidal Wetlands Fund, Tidal Wetlands Fund, and Nontidal Waterways Fund. Fees will be accepted from permittees as compensatory mitigation for the loss of acreage, functions, and values of aquatic resources. These fees will be put into distinct financial accounts within a Federal Deposit Insurance Corporation institution, with all money being insured. The interest and other earnings accruing to these accounts will remain in the accounts to fund ILF projects. The money in these accounts will only be used to fund tasks that will replace the loss of aquatic resource acreage, functions, and values resulting from unavoidable, authorized impacts by restoring, enhancing, creating, and preserving aquatic resources. Tasks include support of site identification and evaluation, site acquisition, design, permitting, construction, planting, monitoring, remediation, and establishing long-term protection and maintenance.

Applicants requiring a State or federal authorization for unavoidable impacts to wetlands and waters of the United States may request to pay a compensation in-lieu fee or other form of compensatory mitigation as part of the permitting process. The Department has the right to decline an in-lieu fee payment as compensatory mitigation on a case-by-case basis. Similarly, when the Corps is reviewing the Joint Permit Application for proposed impacts, the Corps also has the right to decline an ILF payment as compensatory mitigation on a case-by-case basis.

While MDE's current proposal for the ILF Program includes both wetland and waterway mitigation, MDE will not accept money into the ILF Program for waterway¹⁴ mitigation until the Department and the IRT develop protocols to more consistently handle stream mitigation. The credit release schedule, monitoring protocol, and performance standards to be included as part of the Mitigation Plan provided for each proposed project will be developed and approved by MDE and the Corps, in concurrence with the IRT.

If MDE agrees to accept ILF payments for authorized impacts to wetlands or waterways, the payments will follow a schedule of costs and mitigation ratios established in State regulation, and in accordance with the credits available to the ILF Program.

4.2.1 Operations and Procedures

MDE will establish and maintain criteria for mitigation project proposals that provide for equal or greater replacement of acreage, functions and services by aquatic resource type, as well as appropriate upland buffer areas and long-term management strategies. Additionally, MDE will consider other watershed priorities identified in MDE technical documents, specifically *Prioritizing Sites for Wetland Restoration, Mitigation, and Preservation in Maryland* and *Priority Areas for Wetland Restoration, Preservation, and Mitigation in Maryland's Coastal Bays*, and/or the interagency-developed *Watershed Resources Registry*. In selecting ILF mitigation projects, MDE will give primary consideration to providing compensation commensurate with the type and extent of adverse aquatic resource impacts for which in-lieu

¹⁴ If MDE accepts money for waterway mitigation in the future, a separate waterway account will be established within the Nontidal Fund.

fees have been paid, considering watershed plan objectives as determined in the Compensation Planning Framework.

The Department will use acreage or another mutually agreed upon method for accounting credits on all tidal and nontidal wetland projects that create or restore aquatic resources.¹⁵ For the waterway projects, the credit system will be based on currently accepted practices in the Baltimore District, including assessing functional uplift. For projects that enhance aquatic resources or provide out-of-kind mitigation, credits will be defined in the site-specific Mitigation Plan. On an annual basis, MDE will provide the Corps with a ledger showing credit production, credit transactions, and financial transactions tracked by service area and separately for each individual ILF project. The Department will also provide an annual report showing activities for any financial assurance accounts and long-term management accounts. The Department will strive to replace all aquatic losses within the service area for which fees have been accepted into the ILF Program. A limited number of advance credits¹⁶ may be made available to permittees when the MDE ILF instrument is approved and will be specified for each service area in the instrument.

Mitigation will be performed within the same service area in which the impact occurs unless the Corps, in consultation with the IRT, has agreed to an alternative approach. MDE understands the importance of providing mitigation that is temporally proximate to the corresponding impacts. As such, MDE will complete land acquisition and initial physical and biological improvements by the third full growing season after MDE receives an ILF payment in that service area. The Department may also choose to purchase credits from an approved mitigation bank. The Corps, at its discretion, may allow extensions of the three-year time limit. Within any service area, if there is not an appropriate ILF project in place within the three-year time period, the Corps may make a determination that more time is needed to plan and implement an ILF project or, direct MDE to disperse funds from the ILF program account to provide alternative compensatory mitigation to fulfill the obligations created through the sale or transfer of advance credits. If the cumulative ILF mitigation requirement within any year that has not been satisfied through an ILF project is less than 5,000 linear feet of stream, five acres of nontidal wetlands, or one acre of tidal wetlands, the Corps may allow MDE to satisfy the mitigation requirement by using credits within an adjacent river basin, use of preservation, or out-of-kind mitigation options.

¹⁵ Some terms defined in COMAR 26.23.01.01 differ from those defined in the Mitigation Rule. “Creation” in COMAR corresponds with “establishment” in the Mitigation Rule, where the manipulation of an upland site results in a gain of aquatic resource area and functions. “Restoration” in COMAR corresponds with “re-establishment” in the Mitigation Rule, where the former aquatic resource is rebuilt, resulting in a gain of aquatic resource area and function. “Enhancement” in COMAR corresponds with “enhancement” or “rehabilitation” in the Mitigation Rule, depending on the circumstances. Neither result in a gain of aquatic resource area. According to the Mitigation Rule definitions, “enhancement” is when the project will heighten, intensify, or improve upon a specific aquatic resource function(s), but may lead to the decline in other aquatic function(s) while “rehabilitation” is when the project repairs natural/historic functions to a degraded aquatic resource.

¹⁶ “Advance credits” is defined in the Mitigation Rule as “any credits of an approved in-lieu fee program that are available for sale prior to being fulfilled in accordance with an approved mitigation project plan.”

The IRT will have an opportunity to review each proposed ILF wetland and stream mitigation project. For all proposed ILF projects, MDE will prepare and submit to the Corps a site-specific Mitigation Plan, which will include the twelve elements¹⁷ defined in 33 CFR §332.4(c)(2) through (c)(14). The Mitigation Plan will also include how the site: is consistent with the Compensation Planning Framework, meets the mitigation site evaluation criteria, and a credit release schedule tied to achievement of specific performance standards. To facilitate the approval process, if a Corps' authorization is required to conduct regulated activities at a site, MDE will also work with the Corps to obtain this permit concurrent with the IRT review. All projects will be subject to public notice and comply with established criteria as described in the ILF Instrument. Addition and approval of ILF project sites will include details of monitoring methods, performance standards, methodology for determining credits, and credit release schedules.

The Department or its designee shall provide monitoring and maintenance for ILF projects based on the monitoring and long-term management plan included in the site-specific Mitigation Plan, unless determined otherwise by the Corps in consultation with the IRT. The Department will also provide long-term protection for these projects, as described below under *Ownership Arrangements and Long-Term Management*. The Department will establish an ILF Program Account, which will also include two additional funds, a Monitoring and Remediation Fund and a Long-Term Management Fund, as discussed in the Program Account Section.

The Department is committed to implementing the requirements of this revised ILF Program and has a strong interest in maintaining a successful mitigation program in Maryland. For this reason, MDE will provide a letter of commitment from the Secretary to satisfy the Mitigation Rule requirement for financial assurances. The letter of commitment will state that MDE will satisfy the mitigation requirements for fees that have been accepted into the ILF Program. The letter will also include a provision stating that MDE or its designee will complete the required mitigation or will purchase mitigation credit from an approved mitigation bank. The specific terms of the letter of commitment will be negotiated with the Corps.

4.2.2. Transfer of Permit Liability

MDE will assume all legal responsibility for satisfying the compensatory mitigation requirements of the Corps/State permits for which in-lieu fees have been accepted (i.e., the implementation, performance, and long-term management of the compensatory mitigation projects approved under the approved ILF Instrument and subsequent Mitigation Plans). The transfer of liability is established by: 1) the approval of the ILF Instrument; 2) receipt by the Corps project manager of a credit sale certification letter signed by MDE that includes the permit number, date of transaction, and amount and type of credits sold; and 3) the transfer of fees from the permittee to MDE.

4.3. Proposed Service Areas

¹⁷ The required elements of a mitigation plan, as discussed in the Mitigation Rule 33 CFR §332.4(c)(2) through (c)(14) include objectives, site selection, site protection instrument, baseline information, determination of credits, mitigation work plan, maintenance plan, performance standards, monitoring requirements, long-term management plan, adaptive management plan, financial assurances, and other information as required by the district engineer.

The geographic service areas for the MDE ILF Program will be based on a watershed approach, specifically HUCs and river basins. The service areas will be the 6-digit HUC for the Potomac River, and the 8-digit HUCs for the Coastal Bays and the Youghiogheny¹⁸ watersheds. The Chesapeake Bay drainage area will be divided into two service areas. The service areas include:

- Youghiogheny River (HUC 05020006);
- Potomac River (HUC 020700);
- Western Chesapeake Bay (HUCs 02050306; 02060003; 02060004; 02060006);
- Eastern Chesapeake Bay (HUCs 02040205; 02060001; 02060002; 02060005; 020801);
and
- Coastal Bays (HUC 02040303).

For the Tidal Wetland Fund, the Western Shore Chesapeake Bay and the Eastern Shore Chesapeake Bay service areas initially will be combined. Because annual Tidal Fund revenue is low, MDE must consolidate funds for these two service areas to implement a successful project within a three-year timeframe. Over time, these service areas will be distinct, and tidal projects will be completed on both the Western Shore Chesapeake Bay and the Eastern Shore Chesapeake Bay. Consequently, fund activities, including impacts, credits and projects, will be tracked and reported by both service areas.

The basis for establishing these service areas is described in Element 1 of the Compensation Planning Framework. These service areas are appropriate to compensate for adverse environmental impacts across the entire service area, as discussed more in the Compensation Planning Framework. If MDE or the IRT determines that the ILF Program does not provide adequate compensation for impacts to a particular resource, MDE will reject any request to use the ILF Program as compensation for impacts to those resources. Since this ILF Program is designed to provide compensatory mitigation for small impacts, having a relatively large service area will allow MDE to consolidate small impacts to build a larger project that provides more ecological benefits. It is anticipated that over time MDE will build multiple projects within the same service area, as was done in the past using the Programmatic Funds. For the Nontidal Wetlands Fund and the Waterways Fund, after the Department completes a mitigation project in each of the five selected service areas, MDE will subdivide the service areas based on available funding, location of impacts, and physiographic regions. Future ILF Program operations, including credit and financial accounting procedures, will incorporate these smaller service areas.

MDE will provide compensatory mitigation within the same service area in which the impacts occurred, unless an exception is approved by the Corps, in consultation with the IRT. The proximity of proposed projects to impacts will be considered during project site selection. ILF sites will be located to effectively replace lost aquatic resource functions and services and address key watershed needs within their service areas. MDE will use a landscape approach to

¹⁸ The Youghiogheny River watershed has no tidal wetlands, so will not be a service area for the Tidal Wetlands Fund.

locate individual sites within a service area, as discussed in the Compensation Planning Framework. Compensatory mitigation will be in-kind, unless an exception is approved by the Corps, in consultation with the IRT. For example, MDE will provide compensatory mitigation for nontidal wetland impacts by completing projects that restore, create, enhance, or preserve nontidal wetland projects.

4.3.1 Advance Credits

In order to make the ILF Program feasible and be able to complete a mitigation project within each service area, given the low amount of impacts and therefore low amount of collected money in the ILF Program, MDE is requesting advance credits. The advance credits will be based on: 1) the predicted future amount of required mitigation during a three-year period; 2) the ability of MDE to construct the project within a three-year period; 3) the amount of money required to complete a feasible project; and 4) service areas. This request for advanced credits is supported by the Compensation Planning Framework.

As discussed in more detail in Section 4.4, the assumption is that future development will likely follow current development trends. In addition, the estimates of future required compensatory mitigation are based on historical impacts and associated required mitigation (Table 1 and Table 2). The amount of compensatory mitigation paying into the ILF Program will likely increase in the future due to stricter requirements of permittee-required mitigation and current lack of mitigation banks for the majority of Maryland. Therefore, MDE will not use the amount of compensatory mitigation paying into the Compensation Funds in the past as the estimate of future amounts, but will instead consider the total required mitigation within a three year period (Table 3).

MDE is capable of constructing a large mitigation project within the three-year time period. For all service areas, except the Youghiogheny River, there are many opportunities for constructing large wetland and stream mitigation projects, as discussed in the General Needs and Technical Feasibility Section. MDE has developed a partnership with Chesapeake Bay Trust (CBT), whereby CBT uses a Request for Proposal to solicit projects that meet certain requirements. MDE has also developed a partnership with U.S. Fish and Wildlife Service (USFWS) for assistance with site monitoring.

An adequate number of advanced credits will allow for the collection of funds to support larger projects. The only feasible approach for completing a project that meets all of the requirements of the Mitigation Rule is to build a larger site. This conclusion is based on 1) the large amount of MDE staff time now required for each project; 2) the extensive amount of monitoring that will be required; and 3) the long-term management (e.g., finding an easement-holder and maintaining the site in perpetuity). For this reason, MDE will generally construct nontidal projects that are at least 20 acres, tidal projects that are at least 0.4 acres, and stream projects that are at least 5,000 linear feet. In the Youghiogheny River service area, since wetland impacts are low and it is difficult to find large sites for wetland mitigation, wetland advance credits are fewer. Advance credits will be based on Service Areas (Table 3).

As required by the Mitigation Rule, MDE will complete land acquisition and initial physical and biological improvements by the third full growing season after the first advance credit is sold, unless the Corps, in consultation with the IRT, allows a time extension.

Table 1. *Permanent Nontidal Wetland Impacts, Required Mitigation, and Nontidal Fund Activities by Proposed Service Area from January 1, 1991 through December 31, 2012.*

Proposed Service Area	Permanent nontidal wetland impacts (acres)	Total required nontidal wetland mitigation (acres)	Nontidal wetland mitigation requirements (Permittee-responsible mitigation and mitigation banks*) (acres)	Nontidal Wetland Compensation Fund		
				Nontidal wetland impacts paying into Nontidal Fund (acres)	Nontidal wetland mitigation requirements paying into Nontidal Fund (acres)	Wetland restoration/creation completed using Nontidal Fund (acres)
Coastal Bays	108	94	80	8	14	28
Eastern Shore Chesapeake Bay	216	233	178	36	55	305
Western Shore Chesapeake Bay	355	538	476	38	62	64
Potomac River	216	290	268	14	22	84
Youghiogheny River	4	5	2	2	3	1
<u>Total</u>	<u>900</u>	<u>1161</u>	<u>1005</u>	<u>97</u>	<u>156</u>	<u>483</u>

* Excluding mitigation satisfied through payment into Nontidal Fund

Table 2. *Permanent Vegetated Tidal Wetland Impacts and Estimated Mitigation Requirements by Proposed Service Area from January 1, 1994 through December 31, 2012.*

Proposed Service Area	Permanent vegetated tidal wetland impacts* (acres)	Estimated vegetated tidal wetland mitigation requirement* (acres)
Coastal Bays	0.33	0.66
Eastern Shore Chesapeake Bay	7.25	14.50
Western Shore Chesapeake Bay	2.26	4.52
Potomac River	0.15	0.30
Youghiogheny River	N/A	N/A
<u>Total</u>	<u>9.99</u>	<u>19.98</u>

*Note: Since MDE does not track mitigation required for impacts to tidal vegetated wetlands, the mitigation requirement for tidal vegetated wetlands is based on the assumption that mitigation may be required for all tidal vegetated wetland impacts at a 2:1 ratio or higher. This table does not include regulated impacts or mitigation for tidal open water or SAV.

Table 3. *Wetlands and Waterways Advanced Acreage Credit Available by Proposed Service Area.*

Proposed Service Area	Nontidal wetland mitigation required during a 3-year period (acre)	Nontidal wetland advance credits (acre)	Estimated vegetated tidal wetland mitigation during a 3-year period* (acre) 2010-2012	Tidal wetland advance credits (acre)	Stream mitigation required during a 3-year period (linear feet)	Stream advance credits (linear feet)
Coastal Bays	13	20	0.0014	0.4	1,000	5,000
Eastern Shore Chesapeake Bay	32	20	1.57	1.0	2,000	5,000
Western Shore Chesapeake Bay	73	20	.63	1.0	44,000	10,000
Potomac River	40	20	0.011	0.4	23,000	10,000
Youghiogheny River	1	1	NA	NA	1,000	5,000
<u>Total</u>	<u>159</u>	<u>81</u>	<u>2.2</u>	<u>2.8</u>	<u>71,000</u>	<u>35,000</u>

*Note: The estimated tidal vegetated mitigation required does not include mitigation required for projects with impacts to open water, which may also propose to use the Tidal Fund to satisfy mitigation requirements. If projects requiring mitigation for loss of tidal open water are included, the estimated amount of mitigation per year would increase.

4.4 General Need and Technical Feasibility

It has been estimated that Maryland has lost 45-65 percent of its original wetlands. Some of the lost wetland functions include water quality, wildlife habitat, floodwater storage, groundwater recharge/discharge, and recreation. Despite this high historic wetland loss, there are many aquatic restoration opportunities located within Maryland. When selecting ILF program projects, the Department will evaluate the technical feasibility and potential success of the project, as discussed in Element 6 of the Compensation Planning Framework. There are extensive areas with hydric soils that have historically been ditched or otherwise drained, resulting in excellent opportunities for the re-establishment of wetlands. There are also areas, often within a previously mowed or farmed stream corridor, where nontidal wetlands can be created through minor grading to improve water quality, and provide habitat and floodwater storage. In addition, there are numerous opportunities to restore degraded waterways and reconnect them to the floodplain, resulting in improved water quality and habitat. However, in some watersheds where it is harder to restore aquatic resources due to existing development or lower technical feasibility, out-of-kind mitigation may be required to satisfy compensatory mitigation.

The Department has used the Nontidal Fund to successfully construct numerous projects using these types of restoration methods, as described on the MDE website.¹⁹ Similarly, the Tidal Fund has been used to successfully construct many projects. For example, funds have been used for projects combining bulkhead removal with marsh restoration and for projects providing marsh rehabilitation through mosquito ditch plugging and *Phragmites* control. The Department has been successful in completing restoration, creation, enhancement, and preservation projects to satisfy mitigation requirements for payments received into the Compensation Funds. With a fee structure increase based on projected costs associated with meeting the Mitigation Rule requirements, the Department will continue to have adequate funding to implement successful mitigation projects in the future. The Department has a separate Mitigation Section that will be overseeing the consistency of ILF Program operations with the Mitigation Rule. The Department, in partnership with CBT, has developed a Request for Proposal to expedite the identification and initial evaluation of potential mitigation sites.

According to Maryland Department of Planning (MDP)²⁰, during the period 1973 through 2002 (29 years), over 650,000 acres of agricultural and forested land were lost to development. MDP predicted that between 2002 and 2030 (28 years), based on current trends, development will result in a loss of an additional 650,000 acres of agricultural and forested land. The location of this development will also continue to reflect recent trends. Based on this data, MDE is predicting a similar wetland loss to that of historic permitted wetland loss.

¹⁹ The MDE WWP website contains information on the mitigation sites constructed using money from the Nontidal Fund: http://www.mde.state.md.us/programs/Water/WetlandsandWaterways/AboutWetlands/Pages/Programs/WaterPrograms/Wetlands_Waterways/about_wetlands/pwm_by_watershed.aspx

²⁰ Task Force on the Future of Growth and Development in Maryland. 2008. *Where Do We Grow From Here?*

From January 1, 1991 through December 31, 2012, the Department required compensatory nontidal wetland mitigation for 1,640 authorizations, correlating with 1,161 acres required wetland mitigation. Of these, 48% of the authorizations or 13% of the acreage, was mitigated through payments into the Nontidal Fund while 50%²¹ of the authorizations or 87% of the acreage was mitigated through permittee-responsible mitigation, consolidated mitigation sites, or mitigation banks.

From the period 1994 through 2012, there was roughly 14.6 acres permanent vegetated tidal wetland loss (1.6 acres annually). During the period January 1, 1991 through December 31, 2012, there were approximately 900 acres of permanent nontidal wetland impacts (40.9 acres annually). Permittees were required to mitigate for 1,005 acres nontidal wetlands. Projects completed using the Nontidal Fund accounted for 483 acres of wetland restoration/creation. Other authorized nontidal wetland gains²² resulted in 144 acres wetland restoration/creation. The resulting aquatic resource gain is 732 acres of nontidal wetland. Additionally, there was a large amount of voluntary²³ tidal and nontidal wetland restoration, creation, and enhancement completed throughout Maryland that was reported to the Department. During the years 1998 through 2012, this included 10,816 acres of nontidal wetland restoration/creation, 6,898 acres nontidal wetland enhancement, 463 acres of tidal wetland restoration/creation, and 160,081 acres tidal wetland enhancement. Wetland enhancement completed through the Nontidal Fund and other authorized gains, has resulted in several thousand additional acres of wetland enhancement during this time period.

Individually and cumulatively, the majority of authorized wetland and waterway impacts within Maryland are small in size. From January 1, 2008 through December 31, 2012, ninety-five percent of MDE's authorizations were for less than 5,000 square feet of permanent nontidal wetland impact and ninety-nine percent of authorizations were for less than one acre of permanent nontidal wetland impact. The success of Maryland's regulatory program to avoid and minimize wetland and waterway impacts, however, has adversely affected the development of a mitigation banking industry in the State because it is difficult to achieve the economy of scale necessary to operate a successful mitigation bank. More importantly, the absence of a viable mitigation banking industry amplifies the need for the Maryland's ILF Program. There are only two wetland mitigation banks and no stream mitigation banks with remaining available credit in Maryland. Of these banks, one is a single-user bank: Calvert County government's wetland mitigation bank (Cage Farm). The remaining bank, Maple Dam Road, is a multi-user bank but only has nontidal wetland mitigation credits and the service area is currently limited to

²¹ During this time, 2% of the total authorizations were mitigated through a combination of permittee-responsible mitigation and payment into the Nontidal Fund.

²² This includes nontidal wetland gains where an authorization was issued, but the gains were not to satisfy compensatory mitigation requirement.

²³ These gains may include wetland restoration, creation, and enhancement/rehabilitation completed through NRCS programs (e.g., Wetland Reserve Program), Maryland DNR programs, county programs, etc. These projects were not completed to satisfy a wetland mitigation requirement.

Dorchester County²⁴. Only one mitigation bank, Cage Farm, has been approved in Maryland since the establishment of the Mitigation Rule. For this reason, the Department is expecting wetland and waterway mitigation banks to satisfy only a small percentage of future compensatory mitigation needs in Maryland. Permittee-responsible mitigation that meets the Mitigation Rule is also very difficult and potentially expensive. With the limited number of banks and stricter requirements for permittee-responsible mitigation, applicants are more likely to request payment into the ILF Program to satisfy compensatory mitigation.

The regulated community benefits by an expedited application process for applicants proposing small permanent impacts (e.g., less than 5,000 square feet of nontidal wetlands) who would otherwise be forced to locate, construct, and maintain their own mitigation sites. The regulatory agencies simultaneously benefit by the elimination of small mitigation projects that are generally less successful and scattered throughout the State, requiring significant staff time to evaluate and inspect. The Nontidal Fund has been effective in reducing the number of these small mitigation projects. From January 1, 1991 to December 31, 2012, there were approximately 852 projects mitigated through the Nontidal Fund with an average impact of 0.11 acres and an average mitigation requirement of 0.18 acres per project. From January 1, 2008 through December 31, 2012, the Tidal Fund accepted \$465,839 for compensatory mitigation of 40 authorizations, while the Nontidal Fund accepted \$1,041,312 for compensatory mitigation of 157 authorizations.

4.5 Ownership/Long-term Management

The Department or its designee shall provide long-term maintenance and protection for ILF projects based on the long-term maintenance plan included in the site-specific Mitigation Plan, unless otherwise determined by the Corps in consultation with the IRT. The site will be protected in perpetuity through an IRT-approved protection mechanism, including a Conservation Easement or Declaration of Restrictive Covenants. The site-specific Mitigation Plan will specify the amount of funds required for long-term management. These funds will be transferred into the separate Long-Term Management Fund²⁵ upon project completion. If the responsibility for the long-term management is transferred to another entity, MDE will also transfer all long-term management money to that entity.

4.6 Sponsor Qualifications

When initially established in 1972, the Tidal Fund included payments from utility companies for crossing State wetlands and compensation payments for the use of State property. In 1996, MDE began accepting in-lieu fee payments into the Tidal Fund for mitigation. The Department has been successfully operating the Tidal Fund since its inception. Fees from the Tidal Fund have been used to successfully complete mitigation projects throughout the State, including shoreline stabilization using marsh establishment (e.g., replacing bulkheads with marsh), establishing fish

²⁴ The Maple Dam Bank is currently being revised to meet the Mitigation Rule requirements. Proposed revisions include a larger Service Area.

²⁵ The ILF Program account will be divided into several separate funds. There will be three main ILF Program accounts: Nontidal Wetlands, Tidal Wetlands, and Nontidal Waterways. Each of these accounts will also have a Monitoring and Remediation Fund and a Long-Term Management Fund.

passage, enhancing wetlands through mosquito ditch plugging, and eradicating *Phragmites* through a cost-share program with the Maryland Department of Natural Resources (DNR). In recent years, MDE has been working with the Chesapeake Bay Trust to build tidal wetland projects. Through this partnership, 40 tidal wetland restoration projects (75,003 square feet) will have been completed through Fiscal Year 2015. Using measures of success based on percentage native tidal wetland vegetation and best professional judgment, CBT determined that all but one of the completed projects were successful. The one project that was not deemed to be a success, due to high levels of *Phragmites*, is currently being managed for invasive species. While the Tidal and Nontidal Fund expenditures focused on creation, restoration, and enhancement projects, MDE also contributed to the advancement of the science by funding important research that will improve project success (e.g., Virginia Institute of Marine Sciences research).

MDE has been accepting payments into the Nontidal Fund since 1991. Fees from the Nontidal Fund have been used to complete more than 65 projects, with at least one project in 17 of the 21 Federal Hydrologic Unit Code (HUC) watersheds (Figure 1). During the period January 1, 1991 through December 31, 2012, the Department accepted payment for 97 acres of nontidal wetland impact, resulting in 156 acres of required compensatory mitigation. Using these funds, MDE constructed 483 acres of nontidal wetland restoration/creation and performed wetland enhancement activities on several thousand additional acres of nontidal wetlands, far exceeding the acreage of compensatory mitigation required based on funds received. As discussed in Section 4.4, when considering all types of mitigation and voluntary wetland restoration, creation, and enhancement, Maryland has a net gain of wetland acreage.

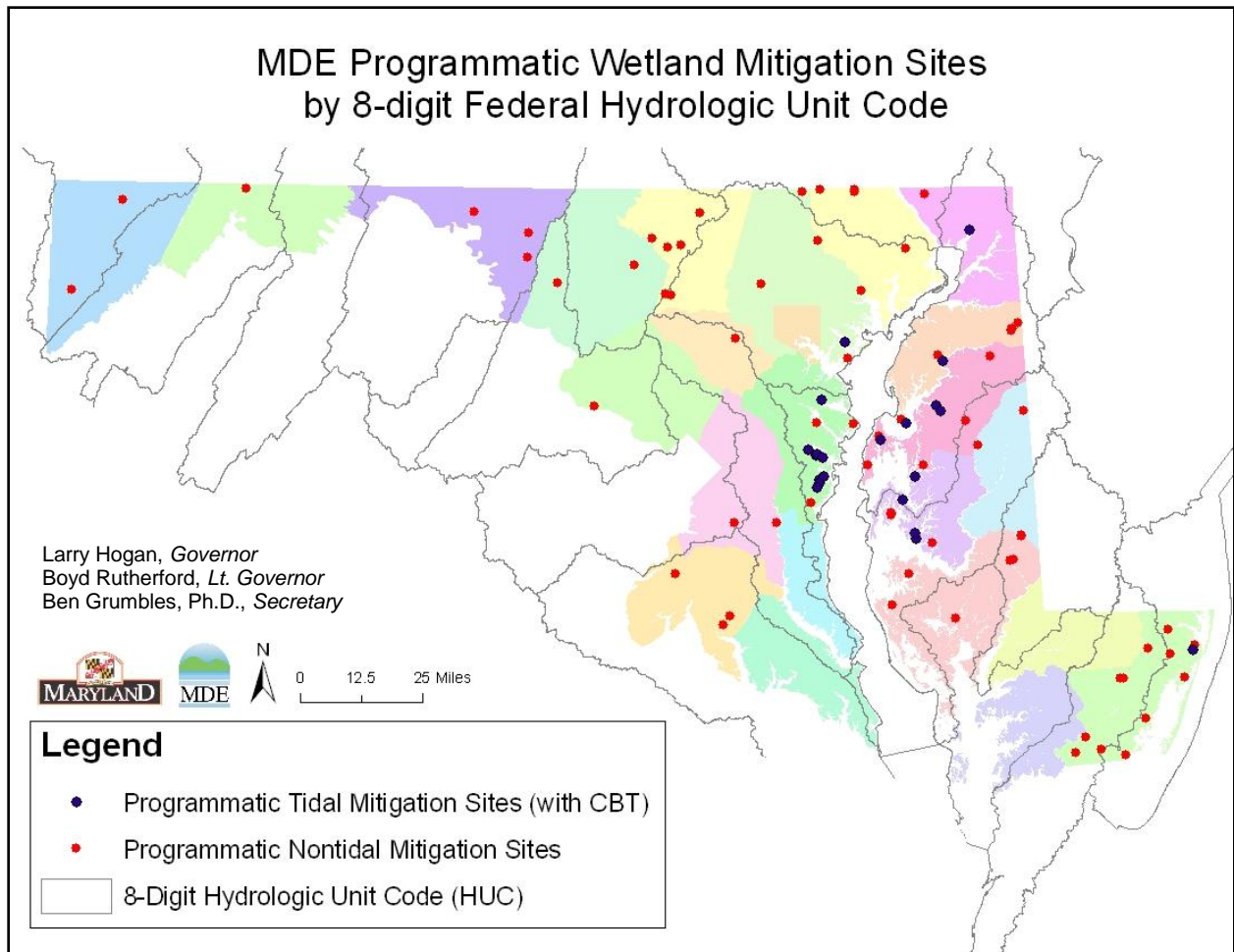


Figure 1. *Mitigation Sites Completed Through 2012 Using the MDE Nontidal and Tidal Wetland Compensation Funds.*

In 2007, using an EPA State Wetland Program Development Grant, MDE completed a report²⁶ to determine the overall effectiveness of MDE's nontidal wetland mitigation program by critically analyzing all of the aspects and components involved with mitigation projects, and providing recommendations on how to correct any deficiencies found during the analysis. Based on the recommendations from this document, the State has improved several elements of the mitigation program. Additionally, MDE developed a formal scoring system²⁷ as an element of this grant to

²⁶ The MDE WWP website contains information on the effectiveness of the Maryland Compensatory Mitigation Program: http://www.mde.state.md.us/programs/Water/WetlandsandWaterways/AboutWetlands/Pages/Programs/WaterPrograms/Wetlands_Waterways/about_wetlands/mitigation_report.aspx

²⁷ The MDE WWP website contains information on the Rapid Mitigation Site Scoring Method: http://www.mde.state.md.us/programs/Water/WetlandsandWaterways/AboutWetlands/Pages/Programs/WaterPrograms/Wetlands_Waterways/about_wetlands/mitigation_scoring.aspx. Scores were on a scale from 0-100, with additional points being possible for rare species.

rapidly evaluate nontidal wetland mitigation sites and reduce the scoring bias. This scoring methodology, which was created using several existing methods and success criteria, is based on a scale of 100, with extra points being given for presence of RTE species. It quickly identifies where a site is deficient, e.g., vegetation, soils, hydrology, or functions. Using this methodology, MDE can evaluate a high number of sites and produce an overall assessment of the success of each mitigation project, which can easily be compared to other sites. The objective of this effort was to evaluate the effectiveness of the overall nontidal wetlands compensatory mitigation program. Between May 1, 2007 and July 1, 2012, MDE scored a total of 1,182 acres wetland mitigation. MDE scored 293 acres of programmatic mitigation, with scores ranging from 51-108, a mean score of 84, and a weighted mean score of 91. MDE scored 889 acres of permittee-responsible mitigation, mitigation banks, and consolidated sites, with a mean score of 74. Based on this scoring system, Maryland's ILF mitigation scored higher than other wetland mitigation. More information on the MDE mitigation program²⁸, the Rapid Mitigation Site Scoring Method, Effectiveness of Maryland's Compensatory Mitigation Program, as well as specific programmatic mitigation sites, can be found on MDE's WWP website.

Overall, 64 of the 65 nontidal programmatic mitigation sites were successful based on the scoring system and aerial photography. There were 44 programmatic sites scored, out of which 43 sites were determined to be successful based on a passing score. The Department was unable to score a number of programmatic sites due to issues with site access. Many of these sites were built on privately-owned agricultural fields. Since MDE was operating under different mitigation requirements, there was no agreement for long-term access after the initial monitoring period ended. However, the Department determined that these sites were successful during the monitoring period and comparisons with recent aerial photography reveal no significant changes in these sites. While the majority of sites received passing scores, some sites did have problems. In a few projects, there were portions of the site that did not get the anticipated hydrology. In the past, if sites were not deemed to be successful and there was no cost-effective potential for remediation, the Department would remove the credits from its accounting, similar to the requirements of the Mitigation Rule. The 483 acres of wetland restoration/creation reflects this adjusted number. As the Department did not historically maintain sites after the initial monitoring period, *Phragmites* has appeared in some sites. The Department is now putting more effort into monitoring the site prior to construction and will invest more in remediation and long-term management.

Considering that MDE has been successful in using the Tidal and Nontidal Funds to provide compensatory mitigation in the past, MDE is capable of operating an ILF Program that meets the Mitigation Rule requirements.

4.7 Compensation Planning Framework

²⁸ The MDE WWP website contains more information on the MDE Mitigation Program: http://www.mde.state.md.us/programs/Water/WetlandsandWaterways/AboutWetlands/Pages/Programs/WaterPrograms/Wetlands_Waterways/about_wetlands/restoration_index.aspx

The Mitigation Rule requires the sponsor of an ILF program to utilize a Compensation Planning Framework to “select, secure, and implement aquatic resource restoration, establishment, enhancement, and/or preservation activities.” While an extensive number of documents and models focus on Maryland’s aquatic resources, MDE will rely on three specific efforts to prioritize and direct its mitigation: 1) *Prioritizing Sites for Wetland Restoration, Mitigation, and Preservation in Maryland*; 2) *Priority Areas for Wetland Restoration, Preservation, and Mitigation in Maryland’s Coastal Bays* (together, “prioritization documents”); and 3) the Watershed Resources Registry (WRR).

As part of two EPA State Wetland Program Development grants, MDE completed projects to prioritize areas for wetland restoration, preservation, and mitigation in Maryland’s Coastal Bays in 2004 and throughout Maryland in 2006²⁹. The resulting documents, sorted by county and watershed, characterize the aquatic resources in each watershed and identify the highest priority areas for protection and restoration. These documents also identify and summarize pertinent existing documents and resources, including, for example, local watershed plans, Watershed Restoration Action Strategies, Maryland Biological Stream Surveys (MBSS), Stream Corridor Assessments, State plans, local water quality monitoring reports, 303(d) lists, 305(b) reports, and Total Maximum Daily Load calculations. Based on this information, Geographic Information System (GIS) and desktop data were used to identify desirable and undesirable locations for wetland restoration, preservation, and mitigation.

In addition to the Department’s prioritization documents, MDE will use the WRR for compensation planning. The WRR is a GIS-based watershed planning tool developed through several years of extensive coordination between the Technical Advisory Committee (TAC) that included numerous federal, state, local, and nongovernmental organizations, such as MDE, Corps, USFWS, EPA, DNR, Maryland Environmental Services and Maryland State Highway Administration.³⁰ This GIS-based tool, which replaces the GIS maps from the MDE prioritization documents, provides a watershed-based planning framework for aquatic resources throughout Maryland. The WRR includes the most pertinent conservation models available in the State, which will be maintained and revised periodically, as new and updated data is acquired. These GIS layers were carefully selected by the TAC to represent the most important resources to protect and restore throughout the State. See Appendix A for more details on the WRR.

Relying on the Compensation Planning Framework for compensatory mitigation site selection supports a watershed approach that focuses on the needs of the watersheds. Sites will be located based on how they fit in the landscape and how they contribute to the watershed goals and objectives. The potential for developing a successful self-sustaining site will also be higher. This Compensation Planning Framework addresses the ten elements required by the Mitigation Rule.

²⁹ The MDE WWP website contains the MDE mitigation prioritization documents: http://www.mde.state.md.us/programs/Water/WetlandsandWaterways/AboutWetlands/Pages/Programs/WaterPrograms/Wetlands_Waterways/about_wetlands/prioritizingareas.aspx

³⁰ The web-interface for the Watershed Resources Registry is located at: <http://www.watershedresourcesregistry.com/>

Background

The following background is an excerpt from the 2003 *Maryland State Watershed Conservation Plan*, as summarized from *An Overview of Maryland's Wetlands and Water Resources*.³¹

In total surface area, Maryland is the eighth smallest state in the nation. The State comprises 23 counties, the two largest being Frederick and Garrett Counties and the two smallest being Calvert and Howard Counties. Baltimore is an independent city occupying 80 square miles (Tiner and Burke, 1995). Maryland contains portions of two major U.S. ecoregions; the eastern portion of the state, roughly from Baltimore and Montgomery Counties east, falls within the Southeastern Mixed Forest, while the western section of the state is in the Appalachian Oak Forest (Bailey, 1978). Maryland also includes the majority of the Chesapeake Bay, which has a dominant influence on the region's climate, biological resources, and economy (Tiner and Burke, 1995).

Maryland's 9,837 square miles of land area lie in five distinct physiographic provinces, making it one of the most geologically and hydrologically diverse states in the northeastern United States. The five physiographic provinces, from east to west, include: the Coastal Plain, the Piedmont, the Blue Ridge, the Valley and Ridge and the Appalachian Plateau.

The topography of Maryland is highly variable; the land surface elevation increases gradually from the Atlantic Ocean across the Coastal Plain, and then increases rapidly over the Piedmont Province and the ridges of the Appalachian Plateau, culminating in the highlands of the Allegheny Plateau in Garret County. The boundary between the Piedmont and Coastal Plain Provinces is commonly known as the 'Fall Line', because of the dense concentration of falls throughout the area, and is characterized by rapid changes in geologic, topographic and hydrologic features.

Development is concentrated in central Maryland, around Washington, D.C. and Baltimore (Figure 2). There is a high concentration of agriculture in north central Maryland and on the eastern shore. Western Maryland, southern Maryland, and southern Eastern Shore still have a high amount of forested land. Land use plays a large role in the condition of the aquatic resources, with areas of high development and agriculture generally having degraded aquatic resources.

³¹ The summary of "An Overview of Maryland's Wetlands and Water Resources" (Clearwater et. al. 2000) is from Maryland State Wetland Conservation Plan. Maryland Department of the Environment and Wetland Conservation Plan Work Group. 2003. Funded by U.S. Environmental Protection Agency State Wetland Program Development Grant CD 993568-01-6

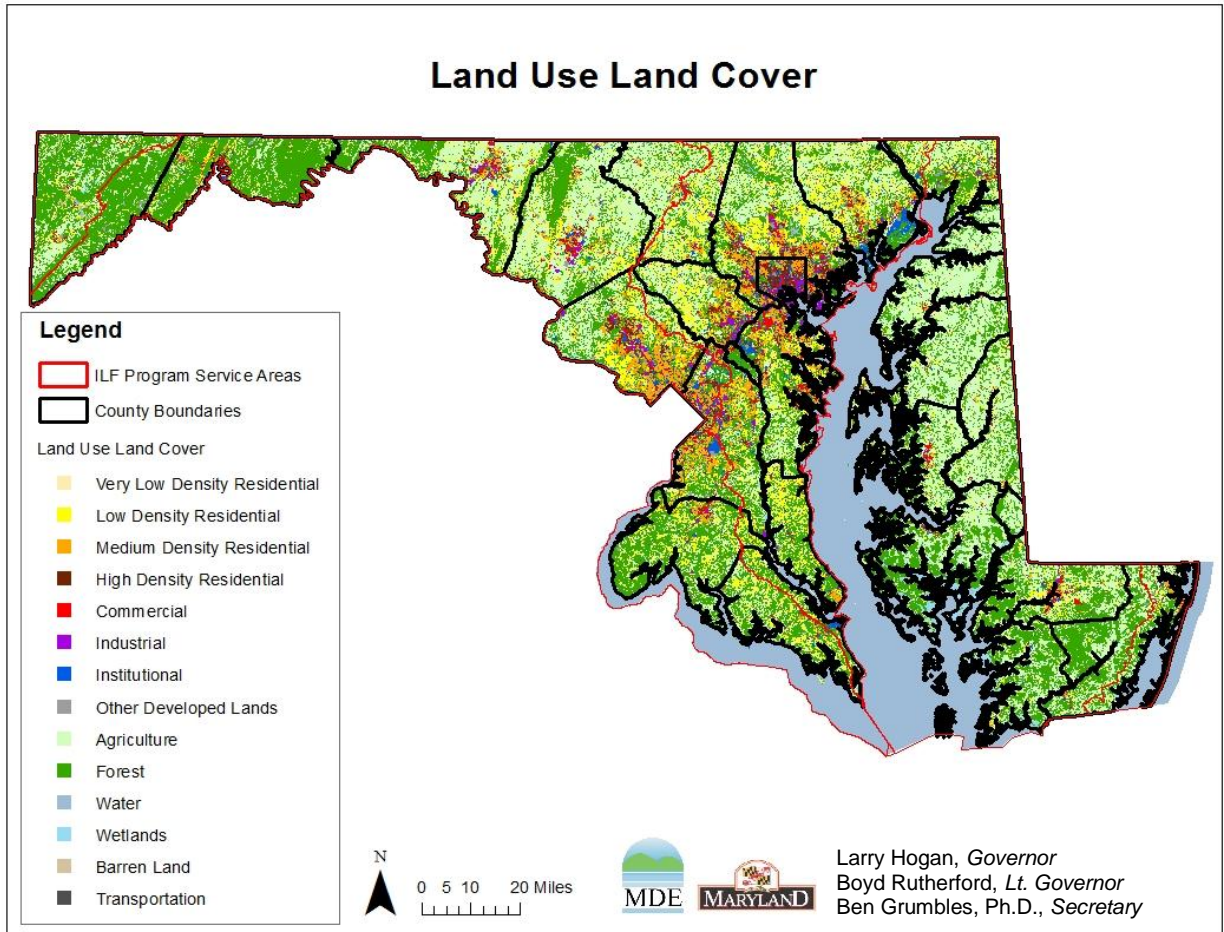


Figure 2. *Land Use Land Cover. 2010 Data from MD iMap, Maryland Department of Planning.*

4.7.1. Geographic Service Areas (Element 1)

The Mitigation Rule states that the Compensation Planning Framework should include the geographic service area, including a watershed based rationale for the delineation of each service area. While Maryland is a small State, it is divided into a relatively high number of watersheds, i.e., twenty-one 8-digit HUCs (Figure 3). Historically, authorized permanent impacts to vegetated nontidal wetlands have averaged about 40 acres per year (Table 1) and authorized impacts to vegetated tidal wetlands have averaged less than one acre per year (Table 2). Consequently, impacts for each HUC have been relatively small (Table 4). The majority of these impacts were mitigated through permittee-responsible mitigation projects. In fact, from January 1, 1991 to December 31, 2010, only 91 acres of impacts were mitigated through the Nontidal Fund. When considering appropriate mitigation replacement ratios, the State accepted payments into the Nontidal Fund during this 20-year period for a total of 138 acres of required nontidal wetland mitigation (Table 4). The distribution of the 138 acre mitigation requirement ranged from 0 to 26 acres per HUC, with more than half of the HUCs requiring less than 5 acres of

mitigation. When considering permanent impacts to vegetated tidal wetlands during the period from 1994 through 2012, impacts by HUC have also been very low (Table 5). Considering that statewide impacts are so low – the average annual mitigation requirement for the majority of the HUCs is less than one acre – realistic service areas must be established in order to maintain a viable ILF Program. If service areas are too small, sufficient revenue will not be collected within the three-year timeframe to create a worthwhile mitigation project.

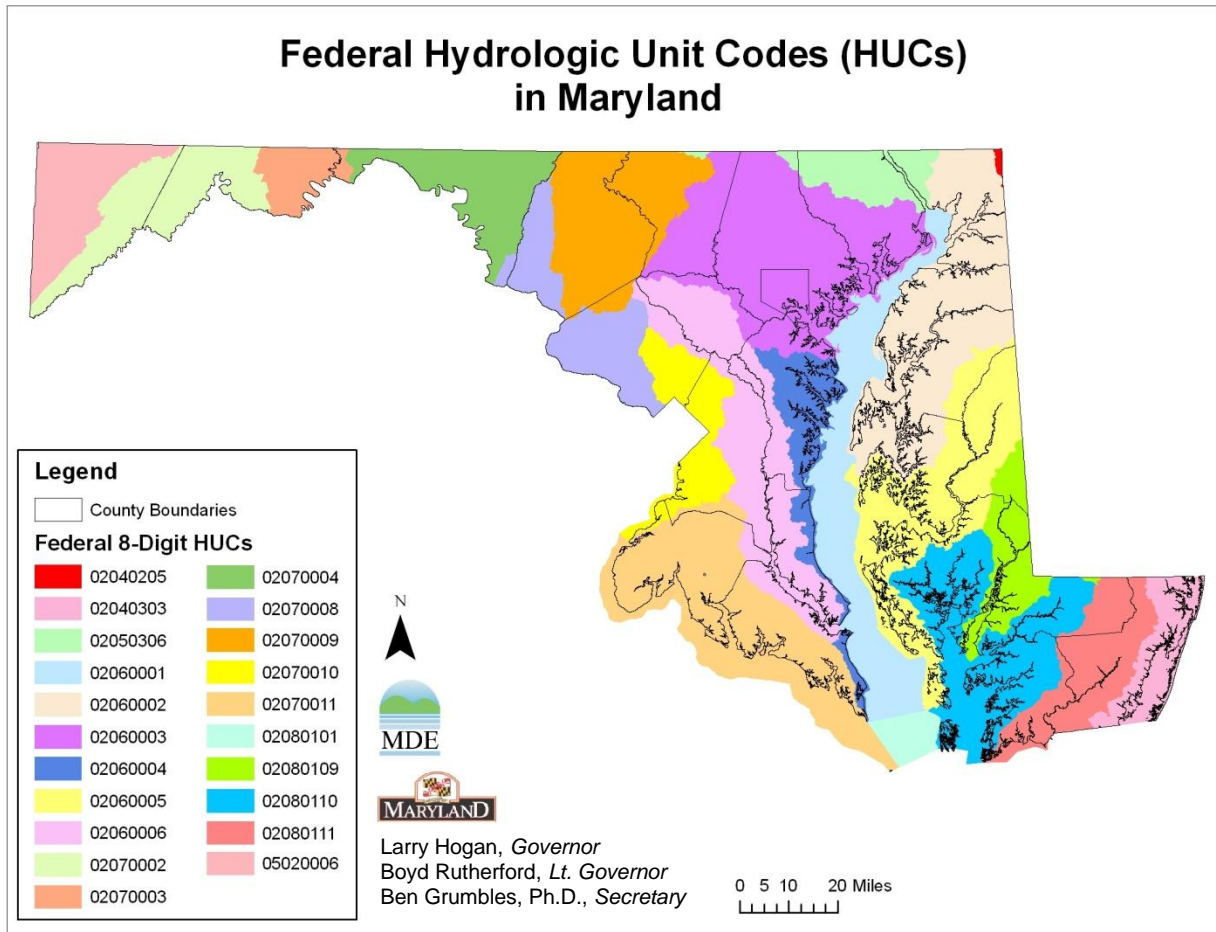


Figure 3. *Federal 8-Digit Hydrologic Unit Codes in Maryland.*

Table 4. *Permanent Nontidal Wetland Impacts and Projects Paying into the Nontidal Fund by Hydrologic Unit Code from January 1, 1991 through December 31, 2010.*

Watershed Name	8-Digit HUC	Total Permanent Nontidal Wetland Impact (ac)	Average Annual Permanent Nontidal Wetland Impact (ac)	Nontidal Fund Payments		
				Total Impacts Paying Into Nontidal Fund (ac)	Total Mitigation Paying Into Nontidal Fund (ac)	Average Annual Mitigation Paying Into Nontidal Fund (ac)
Brandywine–Christina	02040205	1.22	0.06	0.06	0.11	0.01
Chincoteague	02040303	95.03	4.75	6.81	12.16	0.61
Lower Susquehanna	02050306	4.40	0.22	1.31	2.46	0.12
Upper Chesapeake Bay	02060001	0.00	0.00	0.00	0.00	0.00
Chester–Sassafras	02060002	55.42	2.77	13.23	22.60	1.13
Gunpowder–Patapsco	02060003	197.20	9.86	18.05	26.05	1.30
Severn	02060004	28.72	1.44	5.80	9.92	0.50
Choptank	02060005	66.97	3.35	16.00	17.91	0.90
Patuxent	02060006	100.82	5.04	9.15	16.67	0.83
North Branch Potomac	02070002	9.62	0.48	0.70	0.94	0.05
Cacapon–Town	02070003	0.27	0.01	0.00	0.00	0.00
Conococheague–Opequon	02070004	3.11	0.16	0.27	0.30	0.02
Middle Potomac Catoctin	02070008	17.02	0.85	2.90	3.43	0.17
Monocacy	02070009	12.20	0.61	3.21	3.17	0.16
Middle Potomac–Anacostia–Occoquan	02070010	61.63	3.08	5.67	8.30	0.42
Lower Potomac	02070011	62.59	3.13	0.96	2.02	0.10
Lower Chesapeake Bay	02080101	0.00	0.00	0.00	0.00	0.00

Watershed Name	8-Digit HUC	Total Permanent Nontidal Wetland Impact (ac)	Average Annual Permanent Nontidal Wetland Impact (ac)	Nontidal Fund Payments		
				Total Impacts Paying Into Nontidal Fund (ac)	Total Mitigation Paying Into Nontidal Fund (ac)	Average Annual Mitigation Paying Into Nontidal Fund (ac)
Nanticoke	02080109	6.51	0.33	0.00	0.00	0.00
Tangier	02080110	58.54	2.93	2.15	3.64	0.18
Pokomoke– Western Lower Delmarva	02080111	23.46	1.17	3.02	5.86	0.29
Youghiogheny	05020006	4.47	0.22	1.56	2.41	0.12
	<u>Total</u>	<u>809.20</u>	<u>40.46</u>	<u>90.84</u>	<u>137.94</u>	<u>6.90</u>

Table 5. *Permanent Vegetated Tidal Wetland Impacts from January 1, 1994 through December 31, 2012.*

Watershed Name	8-Digit HUC	Number of projects	Total Permanent Tidal Wetland Impact (acres)
Chincoteague	02040303	10	0.43
Lower Susquehanna	02050306	0	0
Upper Chesapeake Bay	02060001	2	0.09
Chester-Sassafras	02060002	101	3.64
Gunpowder/Patapsco	02060003	12	0.15
Severn	02060004	39	2.47
Choptank	02060005	106	4.74
Patuxent	02060006	15	1.94
Middle Potomac-Anacostia-Occuquan	02070010	0	0
Lower Potomac	02070011	15	0.49
Nanticoke	02080109	3	0.37
Tangier	02080110	2	0.09
Pokomoke-Lower Western Delmarva	02080111	4	0.15
	Total	309	14.56

The geographic service areas for the MDE ILF Program will be based on a watershed approach. The service areas will be the 6-digit HUC for the Potomac River, and the 8-digit HUCs for the Coastal Bays and the Youghiogheny watersheds (Figure 4). The Chesapeake Bay drainage area will be divided into two service areas. The service areas include:

- Youghiogheny River (HUC 05020006)
- Potomac River (HUC 020700)
- Western Chesapeake Bay (HUC 02050306; 02060003; 02060004; 02060006)

- Eastern Chesapeake Bay (HUC 02040205; 02060001; 02060002; 02060005; 020801)
- Coastal Bays (HUC 02040303)

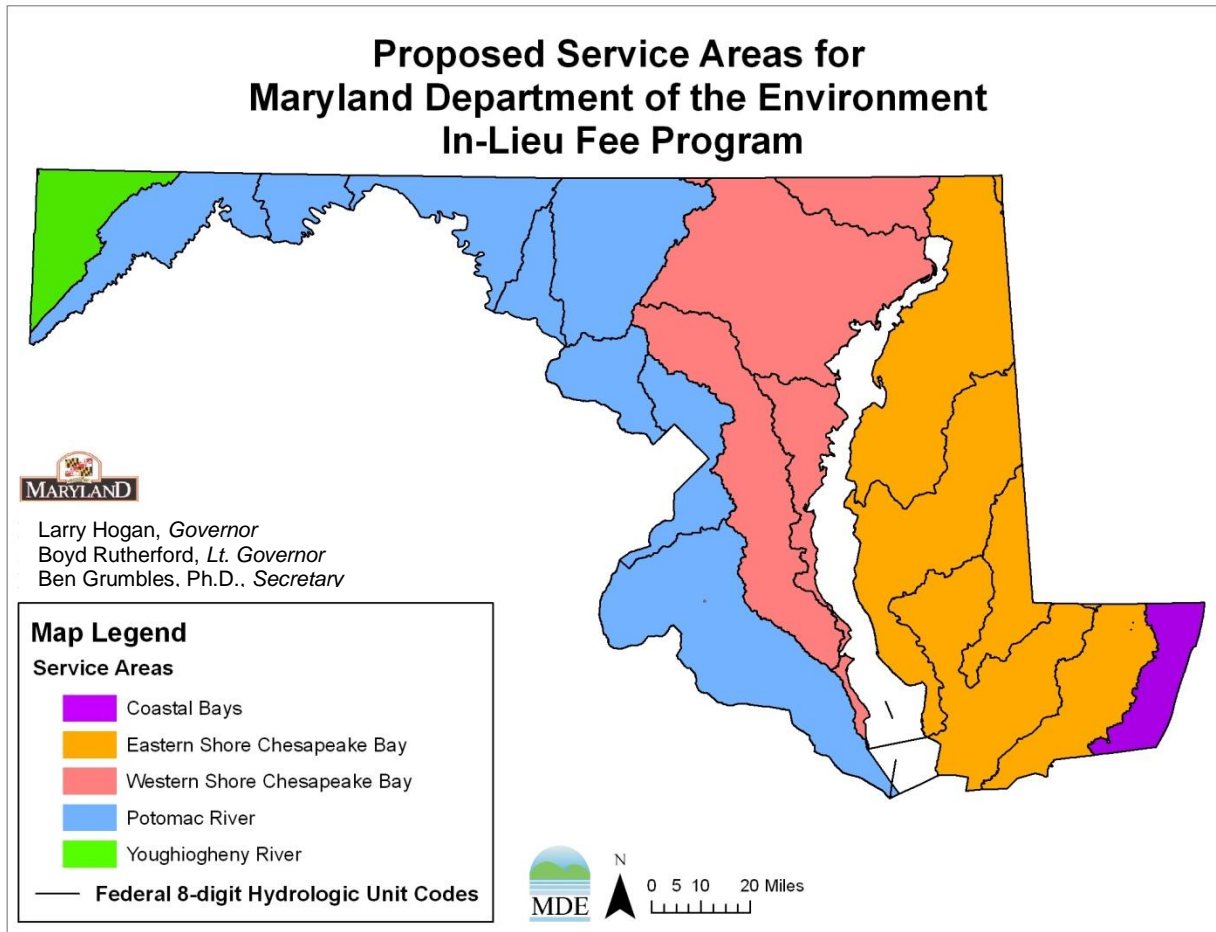


Figure 4. *Proposed Service Areas for the MDE ILF Program.*

These service areas follow watershed boundaries, an approach consistent with the majority of State natural resources conservation strategies and the Mitigation Rule. These service areas were also chosen based on historic wetland impacts by watershed. Some of the HUCs (e.g., 02060001, 02080101) have had no regulated permanent nontidal wetland impact in the last 22 years.

While both the Eastern Shore and Western Shore service areas drain into the Chesapeake Bay, the inland portions of each is distinct. Both are at least partially within the Coastal Plain, but the Eastern Shore is within the Lower Coastal Plain while the Western Shore is within the Upper

Coastal Plain³². The Eastern Shore can be characterized as a flat, low plain with elevations ranging from sea level to 100 feet. Streams on the Eastern Shore are not deeply incised, but are often artificially ditched. The Western Shore has gently rolling topography and higher ranges in elevations, more closely resembling that of the Piedmont rather than the Eastern Shore³³. Streams on the Western Shore are generally not artificially ditched, but are often incised. The Eastern Shore is dominated by agriculture, while the Western Shore contains more urban and suburban land use (Figure 3). There are also differences in topography and land characteristics between much of the Western Shore and Eastern Shore, with the Eastern Shore tending to have more broad flat areas than the Western Shore. The two areas are also classified as distinct regions by EPA and Maryland's Tributary Strategy. For tidal wetland projects, the Western Shore Chesapeake Bay and the Eastern Shore Chesapeake Bay service areas initially will be combined. As a result of low annual Tidal Fund revenue, MDE must consolidate funds for these two service areas to implement a successful project within a three-year timeframe. Over time, these service areas will be distinct, and tidal projects will be completed on both the Western Shore Chesapeake Bay and the Eastern Shore Chesapeake Bay. Consequently, fund activities, including impacts, credits and projects, will be tracked and reported by both service areas.

During the development of the proposed service areas, MDE considered an approach based on watersheds and an approach based on physiographic regions. While MDE acknowledges that there are differences between the Coastal Plain and Piedmont physiographic regions, wetlands within these regions of Maryland provide many of the same functions. Additionally, moving to a physiographic region approach would result in at least seven service areas, which was contrary to MDE's fiscal analysis demonstrating that the initial service areas must be large in order to operate a financially viable ILF Program that meets the mandates of the Mitigation Rule. More importantly, MDE determined that a watershed approach was consistent with a myriad of State-based programs. For example, Maryland's water quality improvement goals (e.g., Total Maximum Daily Loads) and reporting requirements, including 303(d) list of impaired waters and Tributary Strategies, are based on watersheds. Maryland's conservation efforts are based on watersheds (e.g., Stronghold watersheds, Tier II watersheds, etc.). Several of these watersheds contain both Coastal Plain and Piedmont physiographic regions, but no separate goals or restrictions between the physiographic regions have been applied. Using the watershed approach is also consistent with past State wetland and waterway mitigation policy.

The service area size is appropriate to compensate for adverse environmental impacts across the entire service area, since aquatic resources within the service area are similar (Section 4.7.4) and they all drain to the same larger system. For example, an impact may occur in the upper Potomac River watershed while the mitigation project may occur in the lower Potomac River watershed. Both areas are draining to the Potomac, and ultimately the Chesapeake Bay, so a project in the lower Potomac River will benefit the same system as impacted by the authorization. Since this ILF Program is designed to provide compensatory mitigation for small

³² Tiner, R. W. and D.G. Burke. 1995. Wetlands of Maryland. U.S. Fish and Wildlife Service, Ecological Services, Region 5, Hadley, MA and Maryland Department of Natural Resources, Annapolis, MD.

³³ Maryland Department of Natural Resources, 1987. The Quantity and Natural Quality of Ground Water in Maryland, Water Supply Division.

impacts, having a relatively large service area will allow MDE to consolidate small impacts to build a larger project that provides more ecological benefits. It is anticipated that over time MDE will build multiple projects within the same service area. After the Department completes a mitigation project in each of the five selected service areas, MDE will subdivide the service areas based on available funding, location of impacts, and physiographic regions.

The early success of Maryland's ILF Program under the Mitigation Rule will be directly related to the size of the service areas. Due to the financial uncertainties associated with the development of each ILF mitigation site – acquisition costs, extensive plan development and review, financial assurances, monitoring costs, and long-term management – the Department must initially focus its financial resources in a limited number of service areas in order to be financially viable.

MDE will provide compensatory mitigation within the same service area in which the impacts occurred, unless an exception is approved by the Corps, in consultation with the IRT. While the service areas will be based on watersheds, the ILF Program will work to find mitigation sites as close to the impacts as possible, considering physiographic regions and the needs of the watershed. The proximity of proposed projects to impacts will be considered during project site selection. ILF sites will be located to effectively replace lost aquatic resource functions and services and address key watershed needs within their service areas. MDE will use a landscape approach to locate individual sites within a service area, as discussed in Element 6 and further detailed in the Watershed Resources Registry and the MDE prioritization documents. Compensatory mitigation will be in-kind, unless an exception is approved by the Corps, in consultation with the IRT. For example, MDE will provide compensatory mitigation for nontidal wetland impacts by completing projects that restore, create, enhance, or preserve nontidal wetland projects.

4.7.2. Threats to Aquatic Resources (Element 2)

The Mitigation Rule states that the Compensation Planning Framework should include a description of the threats to aquatic resources in the service area(s), including how the in-lieu fee program will help offset impacts resulting from those threats. The Department has utilized several sources, including the prioritization documents and the WRR, to evaluate the threats to aquatic resources. Incorporated data includes: State and local comprehensive planning documents; local and regional water quality data; biological and physical stream survey data; watershed plans; ecological condition assessments; floodplain data; and data relating to species at-risk. The Department will also utilize additional data as it becomes available. Through the ILF Program, MDE will attempt to complete projects that target threats to the aquatic resources. While more details on threats to aquatic resources are described within the prioritization documents and the WRR, current threats include:

- Filling wetlands for development and coastal shoreline armoring.
- Conversion of wetlands to open water due to creation of farm ponds, sea level rise and associated loss of tidal wetlands, shoreline erosion, high nutria populations converting vegetated wetlands to open water, and dredging for navigation channels and marinas.

- Direct and indirect impacts to wetland and waterway hydrology from artificially draining wetlands for agriculture, forestry, or mosquito control, maintaining channelized and ditched waterways, development and associated stormwater management changing characteristics of hydrology and groundwater recharge, reduction or loss of floodplain connectivity, existing development with inadequate stormwater management, and future development leading to higher amounts of impervious surface.
- Degradation or conversion of plant communities due to invasive species (e.g., Common Reed, Japanese Stiltgrass), high white-tailed deer populations reducing plant diversity and forest regeneration, forestry practices maintaining monoculture Loblolly Pine stands, logging and utility lines resulting in conversion of forested wetlands.
- Reductions in overall functions caused by excessive recreational use in areas of high ecological integrity, development within the Critical Area, encroachment and degradation of wetlands from surrounding development, wetland and stream corridor fragmentation, livestock in streams, wetlands being farmed, fish blockages caused by poorly designed or poorly maintained structures, loss or degradation of riparian zone, and development within the floodplain.
- Pollutants entering the aquatic systems, including excessive nutrients, sediments, toxins, and metals from indirect sources (e.g., septic tanks and residential, urban, and agricultural runoff) and direct sources (e.g., waste water treatment plants and industrial discharge), and acid mine drainage (e.g., Potomac River Service Area).
- Older dams having reduced capacity and being in need of major repairs (e.g., Conowingo Dam)

Sea Level Rise is predicted to be a major concern in some portions of the State, especially within the Eastern Chesapeake Bay and Coastal Bays Service Areas (Figure 5), where significant portions of land are vulnerable to inundation and flooding. DNR predicted that by 2050, there will be a 2 foot increase in sea level and by 2100, there will be a 3.4 foot increase in sea level.

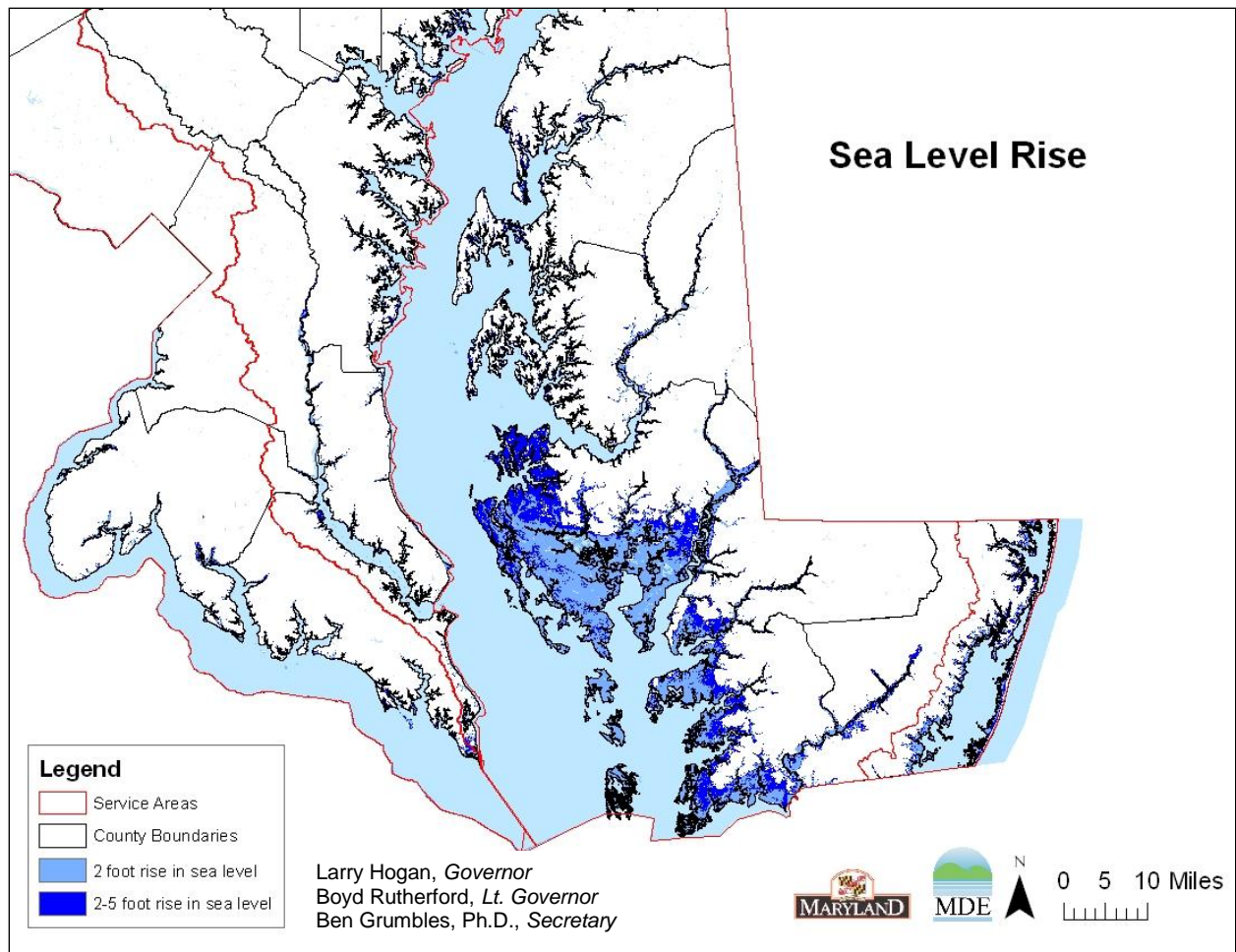


Figure 5. *Predictions of Sea Level Rise in Maryland. The Center for Geographic Information Sciences at Towson University and DNR developed data to identify inundation areas in the event of two foot sea level rise and two to five foot sea level rise.*

While there is a large amount of protected land within Maryland (Figure 6), many aquatic resources and areas supporting these aquatic resources are still unprotected.

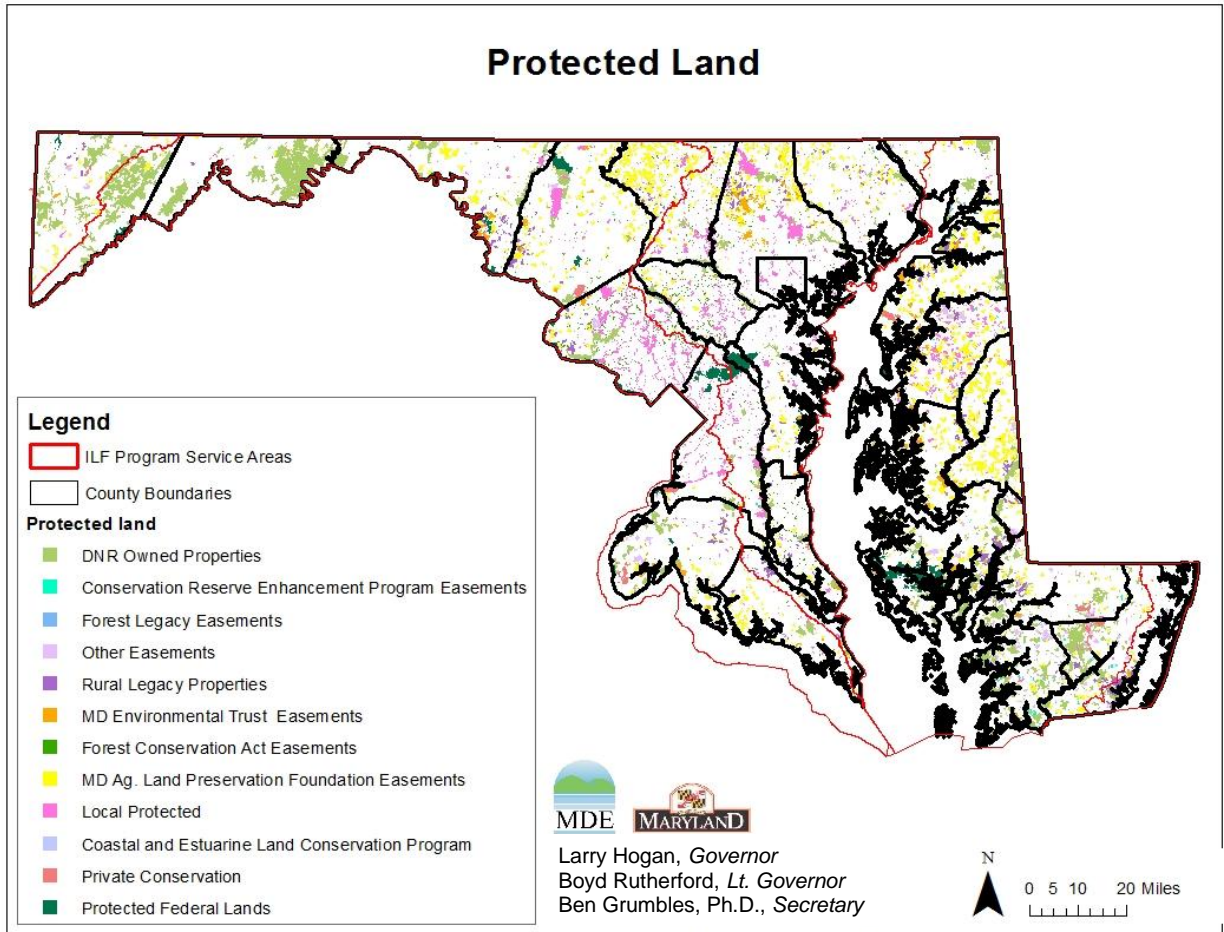


Figure 6. *Protected Land in Maryland. Data from MD iMap, DNR, Maryland Department of Agriculture, and Maryland Department of Planning.*

4.7.3. Historic Aquatic Resource Loss (Element 3)

The Mitigation Rule states that the Compensation Planning Framework should include an analysis of historic aquatic resource loss in the service area(s). It has been estimated that Maryland has lost 45-65 percent of its original wetlands. Tiner and Burke (1995) estimate that roughly 540,000 acres of wetlands have been lost since pre-settlement. In addition to direct loss of aquatic resources, there has also been loss of function, as many of these systems have been degraded. Some of the lost wetland functions include water quality, wildlife habitat, floodwater storage, groundwater recharge/discharge, and recreation. Many wetlands have been converted to agriculture, especially on the Eastern Shore. There are extensive areas throughout the State with hydric soils that have historically been ditched or otherwise drained. Livestock grazing in wetlands has resulted in a loss of function. Many tidal and nontidal wetlands have been filled for development. Mining (e.g., coal mining, peat mining, etc.) has resulted in wetland losses in Western Maryland³². The creation of some reservoirs (e.g., Deep Creek Lake) and ponds has resulted in the conversion of vegetated wetlands to open water. Forestry activities have resulted

in loss of wetland function. The extent of Atlantic white cedar swamps has been reduced significantly, due in part to vegetative type conversion from forestry practices³². Many diverse forested wetlands were converted to monoculture pine plantations, reducing wildlife habitat. Water pollution from direct sources (e.g., industrial, waste water treatment plants, etc.) and indirect sources (stormwater runoff, agriculture) has resulted in lost aquatic resources function. Utility lines have converted many forested wetlands to emergent wetlands, fragmenting Forest Interior Dwelling Species habitat. Invasive species have resulted in a loss of wildlife habitat in many urban areas of the State and in coastal wetlands. Tidal marsh has been excavated for marinas or to improve navigation. Extensive areas of tidal wetlands have been lost or degraded due to shoreline erosion, construction of bulkheads and shoreline revetments, and mosquito ditching and ditch maintenance. Submerged Aquatic Vegetation (SAV) acreage in the Chesapeake Bay is only a fraction of what it was historically, likely due to degradation of the water quality in the Bay. In addition, there are numerous waterways that have been physically, chemically, or biologically degraded due to development, forest clearing, intensive agriculture, and channelization. These waterways may now be unstable, acting as sediment sources, and resulting in reduced in-stream habitat and floodplain connectivity.

The following information is based on a Tiner and Finn study³⁴ as summarized in Tiner and Burke³²:

Maryland's vegetated wetlands declined substantially between 1955 and 1978, whereas vast acreages of freshwater ponds were created. About 8 percent of the estuarine vegetated wetlands (largely emergent wetlands) and almost 6 percent of the palustrine vegetated wetlands (mostly emergent types) were lost. Annual net losses of these two types averaged about 450 acres and 650 acres, respectively. About two-thirds of the estuarine vegetated wetland losses were due to conversion of tidal marshes to coastal deepwater habitats. This resulted from a combination of both natural and human-induced factors such as coastal submergence due to rising sea level, coastal erosion, dredging projects, and creation of saltwater impoundments. Of the other factors causing losses of estuarine wetlands, urbanization and freshwater impoundment construction were important, combining for about 76 percent of the losses directly attributes to human impacts.

Roughly 15,000 acres of palustrine vegetated wetlands were lost. Most of this loss impacted freshwater emergent wetlands. Agriculture and other factors (mostly channelization related to agriculture) were equally responsible for about two-thirds of the palustrine vegetated wetland losses. Pond construction in these wetlands was also a significant factor, accounting for nearly 30 percent of the losses. By contrast, urban development caused only 8 percent of the losses. The Lower Coastal Plain region (e.g., Eastern Shore) was by far the most heavily impacted area of the state: about 91 percent of the state's palustrine vegetated wetland losses occurred here.

³⁴ Tiner, R. W., and J. T. Finn. 1986. Status and Recent Trends of Wetlands in Five Mid-Atlantic States: Delaware, Maryland, Pennsylvania, Virginia, and West Virginia. U.S. Fish and Wildlife Service, Region 5, Newton Corner, MA and U.S. Environmental Protection Agency, Region III, Philadelphia, PA.

The following information is based on a Tiner and others study³⁵, as summarized by Tiner and Burke³² for the Chesapeake Bay watershed:

From 1982 to 1989, Maryland experienced a net loss of 4,324 acres of palustrine vegetated wetlands and 562 acres of estuarine vegetated wetlands, and a net gain of 1,074 acres of estuarine nonvegetated wetlands (tidal flats) and 3,236 acres of palustrine nonvegetated wetlands (ponds). In addition, a net total of 2,062 acres of farmed wetlands were effectively drained and converted to upland agriculture.

During the period 1982 to 1989, filling or conversion to open water resulted in the loss to approximately 2,534 acres palustrine forested wetland, 2,370 acres palustrine emergent wetland, 454 acres of palustrine scrub-shrub wetland, and 671 acres of estuarine emergent wetlands³². During this same time period, 7,500 acres palustrine forested wetland was harvested for timber. Much of this loss occurred on the Eastern Shore. Comparisons of annual historic estuarine wetland loss with more recent loss shows that wetland loss has slowed in recent years, largely due to the success of the Maryland Tidal Wetlands Act and the Federal Clean Water Act³².

Since wetland conditions result in the formation of hydric soils, comparing existing wetlands with hydric soils provides a good estimate of amount and location of historic wetland loss (Figure 7). While wetlands have been lost throughout Maryland, the highest amount of wetland loss occurred within the Eastern Shore Chesapeake Bay Service Area and the Coastal Bays Service Area. This loss is higher because these areas started with significantly more wetland than the rest of the State. Since these Service Areas are not highly developed, the majority of wetland losses occurred from artificially draining sites for agriculture.

³⁵ Tiner, R. W., I. Kenenski, T. Nuerminger, D.B. Foulis, J. Eaton, G.S. Smith, and W.E. Frayer. 1994. Recent Wetland Status and Trends in the Chesapeake Watershed (1982 to 1989): Technical Report, U.S. Fish and Wildlife Service, Region 5, Ecological Services, Hadley, MA. Prepared for Chesapeake Bay Program, Annapolis, MD.

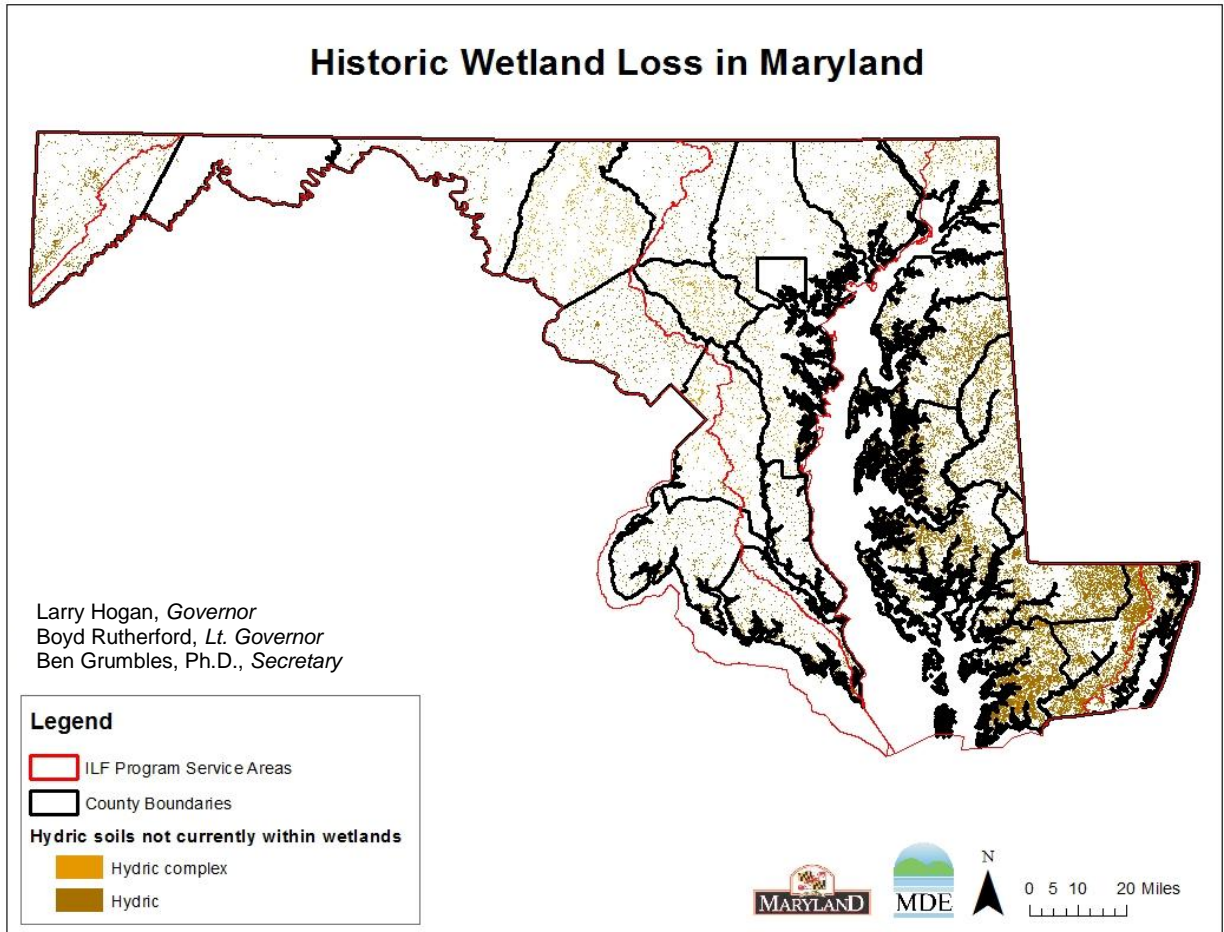


Figure 7. *Historic Wetland Loss in Maryland. Estimated through comparisons of mapped hydric soils and existing mapped wetlands. Wetland loss was compiled using data from the Natural Resources Conservation Service, DNR, and USFWS.*

The Department’s prioritization documents further describe the historic wetland loss for each 8-digit watershed within Maryland. For example, regarding the Coastal Bays watershed, the MDE prioritization document *Prioritizing Sites for Wetland Restoration, Mitigation, and Preservation in Maryland* states:

There has been a 10% loss of salt marsh area since 1900, with losses concentrated in the northern Coastal Bays (northern Coastal Bays had a loss of 37% salt marsh, or 1,530 acres, while the Southern Coastal Bays had a loss of 228 acres). The northern bays, excluding Fenwick Island, had 580 acres of salt marsh loss, concentrated in Ocean Pines and Ocean City north of the inlet. Fenwick Island had 950 acres of salt marsh loss. A large portion of the once extensive zone of emergent salt marsh along the bayside of Fenwick Island is gone. In addition to direct wetland losses, coastal engineering and maintenance of the ocean city inlet may have prevented the natural formation of wetlands in some areas such as the bay side of Assateague Island.

Loss of forested wetland in the Coastal Bays due to conversion (e.g., filling) to agriculture and development was estimated at 44% or 24,768 acres total (21,000 acres converted to agriculture and 3,700 acres to development) (USACE, 1998). Once again, these losses were worse in the north than the south (52% or 13,562 acres and 37% or 11,205 acres, respectively). Most of the remaining wetlands (26,300 acres) have been hydrologically modified by artificial drainage to create forested uplands (e.g., timber plantations), agriculture, and urban area, so are no longer wetlands. Sea level rise is also contributing to losses in wetland area (USACE, 1998). Structural shoreline stabilization practices, such as bulkheads and riprap, prevent encroachment from sea level rise that would have resulted in new tidal wetlands. Some threats to wetland function include jet skis, boating, and feral horses (Conley, 2004). Construction of long piers across the tidal marsh destroys wetland habitat under the pier, accelerates erosion, fragments the marsh system (degrading bird habitat), and allows invasion by non-native species (Ayella, 2004). In an attempt to reduce mosquitoes, ditches have been created in many of the tidal wetlands. Although the success of these efforts in reducing mosquitoes is questionable, these ditches clearly impact the natural wetland system.

Additionally, the WRR locates areas of historic wetland loss based on hydric soils and prioritizes these areas for wetland restoration opportunities. Regulated wetland loss since 1991 can be found by Service Area in Tables 1 and 2 and by HUC in Tables 4 and 5.

4.7.4. Current Aquatic Resource Conditions (Element 4)

The Mitigation Rule states that the Compensation Planning Framework should include an analysis of current aquatic resource conditions in the service area(s), supported by an appropriate level of field documentation. The Coastal Bays Service Area includes 185 square miles of land, all within the Atlantic Coastal Plain Province (Figure 8). The Eastern Chesapeake Bay Service Area includes 3,080 square miles of land, all located within the Atlantic Coastal Plain province, except northern Cecil County, which is within the Piedmont Plateau Province. The Western Chesapeake Bay Service Area includes 2,741 square miles of land, within the Atlantic Coastal Plain Province and Piedmont Plateau Province. The Potomac River contains 3,399 square miles of land, and ranges from the Atlantic Coastal Plain Province to the Appalachian Plateaus Province. The Youghiogheny River Service Area contains 417 square miles and is completely within the Appalachian Plateaus Province.

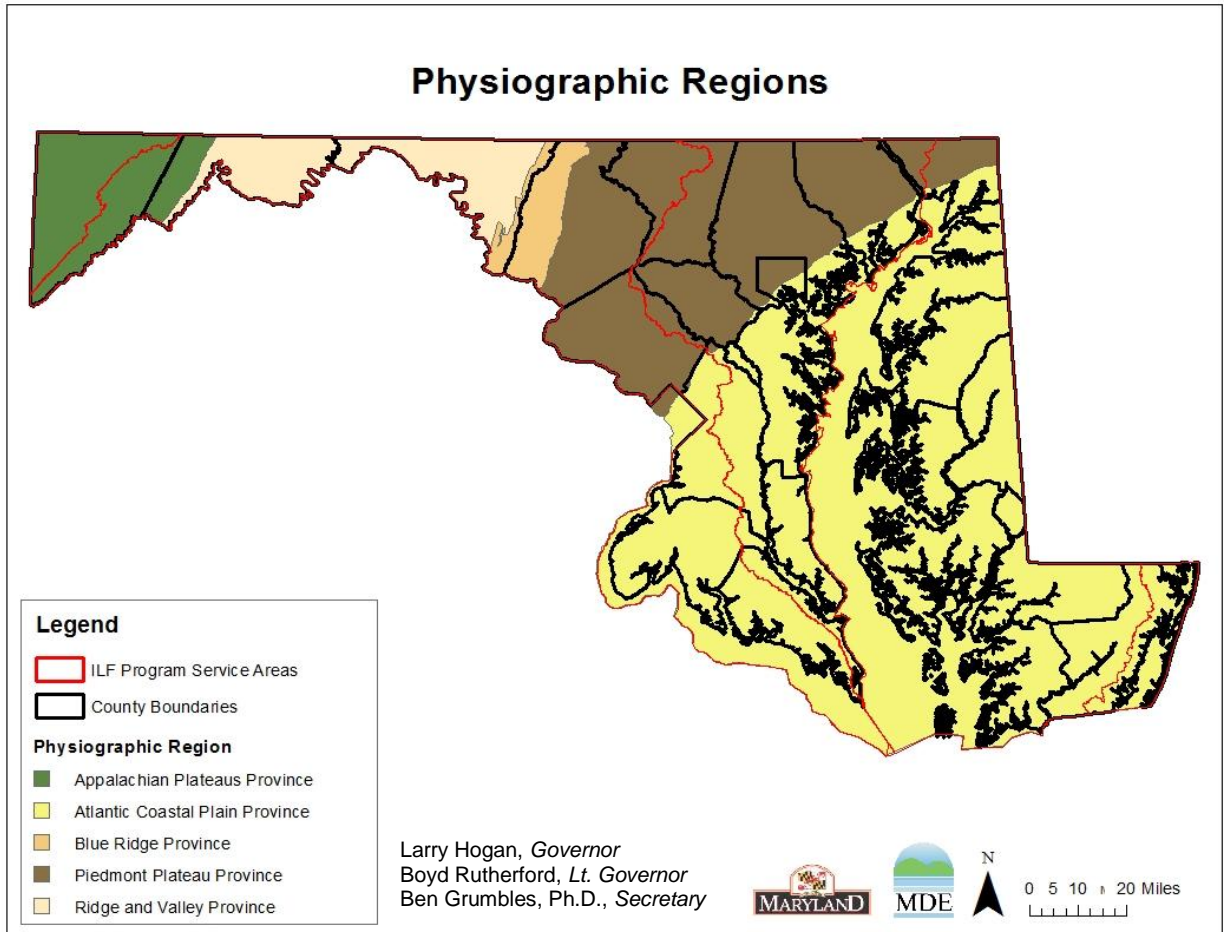


Figure 8. *Physiographic Regions within Maryland. Data from MD iMap, Maryland Geological Survey, and U.S. Department of Agriculture.*

The 2003 *Maryland State Watershed Conservation Plan*³⁶, as summarized from *Wetlands of Maryland*³², characterized wetland distribution, occurrence and type according to the five physiographic Provinces of Maryland.

Coastal Plain Province

This region likely has the highest diversity of emergent estuarine and palustrine (freshwater) wetland communities in the state, since both tidal and nontidal freshwater marshes occur here. Wetlands are abundant in the Coastal Plain due to the low topographic relief and high groundwater table characteristic of the region.

³⁶ The summary of “An Overview of Maryland’s Wetlands and Water Resources” (Clearwater et. al. 2000) is from Maryland State Wetland Conservation Plan. Maryland Department of the Environment and Wetland Conservation Plan Work Group. 2003. Funded by U.S. Environmental Protection Agency State Wetland Program Development Grant CD 993568-01-6

Estuarine Wetlands

Estuarine wetlands are common throughout the Coastal Plain. These systems consist of salt and brackish tidal waters and contiguous wetlands where ocean water is at least occasionally diluted by freshwater runoff from the land. These wetlands extend extensively upstream in tidal rivers to freshwater areas. Differences in salinity and tidal flooding within estuaries have a significant effect on the distribution of these wetland systems. Salt marshes occur on the intertidal shores of tidal waters in areas of high salinity. Brackish marshes are the predominant estuarine wetland type in Maryland. They are found along the shores of Chesapeake Bay, mostly on the Eastern Shore, and for considerable distance upstream in coastal rivers. Estuarine shrub swamps are common along the Maryland coastal zone. Aquatic beds, comprised mostly of submerged aquatic vegetation, are abundant in shallow water zones of Maryland's estuaries, especially the Chesapeake Bay and its tributaries.

Palustrine Wetlands

Forested wetlands are the most abundant and widely distributed palustrine wetland type on the Coastal Plain. These wetlands are found on floodplains along the freshwater tidal and nontidal portions of rivers and streams, in upland depressions, and in broad flat areas between drainages. Tidal freshwater swamps occur along coastal rivers in areas subject to tidal influence. Semi-permanently flooded swamp forests, uncommon to Maryland, are found along Battle Creek on the Western Shore and the Pocomoke River on the lower Eastern Shore. Seasonally flooded swamp forests occur in these same areas as well as part of Calvert, Somerset, Wicomico, and Worcester Counties. Temporarily flooded swamp forests occur on isolated floodplains, in isolated depressions surrounded by uplands, or in interstream divides, and are particularly abundant on the Eastern Shore. Scrub-shrub swamps are not abundant on the Eastern Shore. Bog wetlands are rare in Maryland; sixteen have been identified in Anne Arundel, Charles, and Prince Georges Counties on the Western Shore. Emergent wetlands on the coastal plain comprise both tidal and nontidal freshwater marshes and are highly diverse wetland communities. Tidal fresh marshes are common along large coastal rivers, such as the Nanticoke, Chester, Choptank, Pocomoke, Patuxent, and Potomac Rivers. Interdunal wet swales are found on Assateague Island. Seasonally flooded marshes are common to the coastal plain. On the Eastern Shore, isolated wetlands, commonly referred to as potholes or Delmarva Bays, are most common in Caroline, Kent, and Queen Anne's Counties.

Piedmont Province

Overall, wetlands are less abundant and diverse in the Piedmont Province compared to the Coastal Plain, due to greater topographic relief, regional geology, a lower groundwater table and lack of tidal influence. Isolated palustrine and riverine wetlands are common in the region. Forested wetlands within the Piedmont are typically found on floodplains in stream valleys and are characterized by the relatively short frequency and duration of flooding (seasonally flooded and temporarily flooded forested wetlands). Scrub shrub wetlands are found in wide river floodplains, valleys and meadows. Emergent wetlands can occur in areas of former forested wetlands that were cleared for

agricultural, meadows and valleys and are characterized by the greater frequency and duration of flooding (seasonally flooded marshes and meadows, and temporarily flooded wet meadows). The greater duration and frequency of flooding typically favors emergent plant species over scrub shrub and forested plant communities.

Western Maryland Provinces

The Appalachian Plateau, Valley and Ridge, and Blue Ridge Provinces comprise the region of western Maryland. Wetlands are uncommon in this region when compared with other regions of Maryland. Wetlands are often found in topographic depressions and associated with riverine and palustrine environments. Although less common, the wetlands of western Maryland are rather diverse, including forested, scrub-shrub (wet thickets and shrub bogs), emergent (seasonally-flooded wet meadows and marshes), palustrine (aquatic bed), riverine, and lacustrine (aquatic bed) wetlands.

According to Tiner and Burke (1995), Maryland has nearly 600,000 acres of wetlands and 1.6 million acres of deepwater habitat, with about 9.5 % of Maryland's land surface comprised of wetlands. Dorchester County alone accounts for 28% of the wetlands. The majority (99%) of Maryland's wetlands are classified as palustrine or estuarine wetland. There are over 250,000 acres of salt and brackish wetlands. The majority (82%) of estuarine wetlands are emergent. Of the palustrine wetlands, the majority are nontidal wetlands (89%) and are forested (85%). Of the palustrine wetlands, 59% are deciduous forest.

Based on the USFWS National Wetlands Inventory and DNR digitally mapped statewide wetlands, there are 757,000 acres of wetlands in Maryland³⁷ (Figure 9), with highest concentrations in the Eastern Chesapeake Bay Service Area. Some of these wetlands are designated as Wetlands of Special State Concern (WSSC) because they contain rare, threatened, endangered species or unique habitat (e.g., Zekiah Swamp WSSC within the Potomac River Service Area). These wetlands receive higher levels of protection under the Code of Maryland Regulations.

³⁷ While these mapped wetlands are considered to be a conservative estimate, showing less wetland than is actually present, they are currently the best statewide estimate of wetlands.

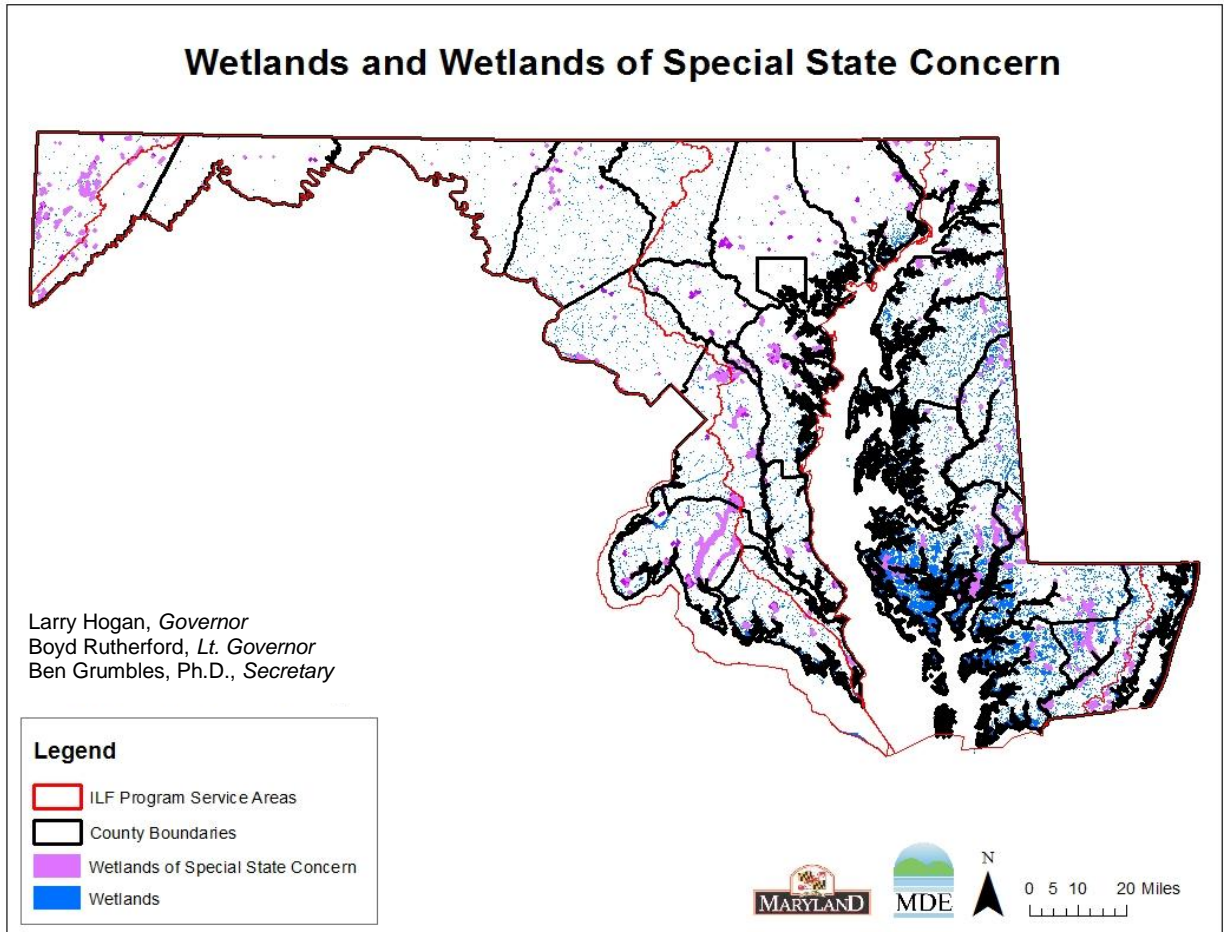


Figure 9. *Wetlands and Wetlands of Special State Concern within Maryland.*

There is an extensive amount of data available on the current condition of resources within Maryland. DNR’s GreenPrint Targeted Ecological Areas identifies areas that rank exceptionally high for various ecological criteria and have a high potential for preservation (Figure 10). GreenPrint areas are located within every Service Area.

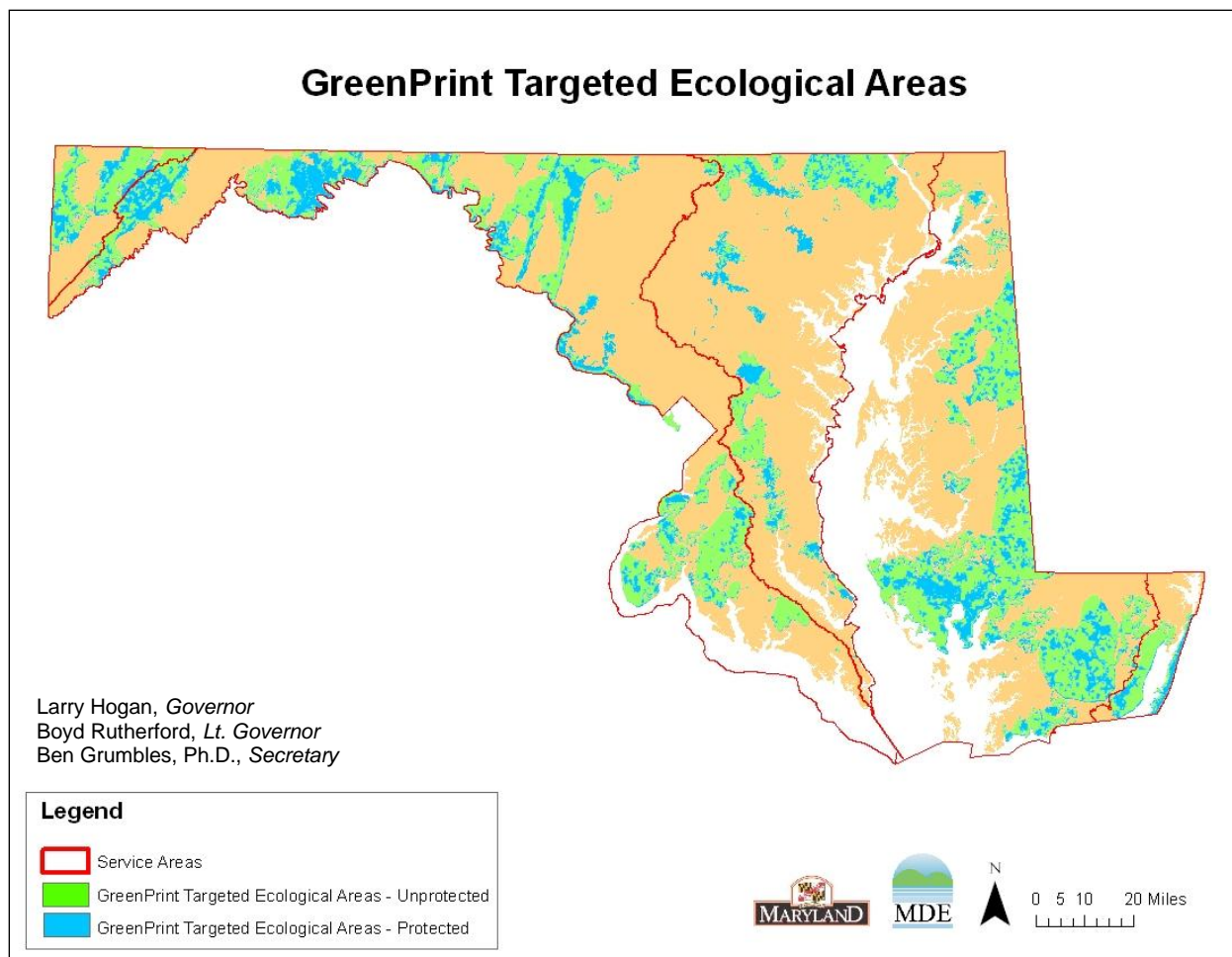


Figure 10. *Protected and Unprotected DNR GreenPrint Targeted Ecological Areas.*

DNR considers the GreenPrint Targeted Ecological Areas to be the most ecologically valuable areas in the State. GreenPrint was developed by combining the most ecologically important areas from several conservation efforts, including Green Infrastructure, rare habitat, aquatic life hotspots, and lands important to the preservation of water quality. The following areas are included within the GreenPrint Targeted Ecological Areas, with data criteria as described in the DNR GreenPrint Data Guide:

- Biodiversity Conservation Network Areas (BioNet) are areas that support rare, threatened, and endangered species, rare and high quality plant and animal communities, species of Greatest Conservation Need, wildlife concentrations, and important habitats needed for wildlife migration and movements related to climate change (Figure 11).

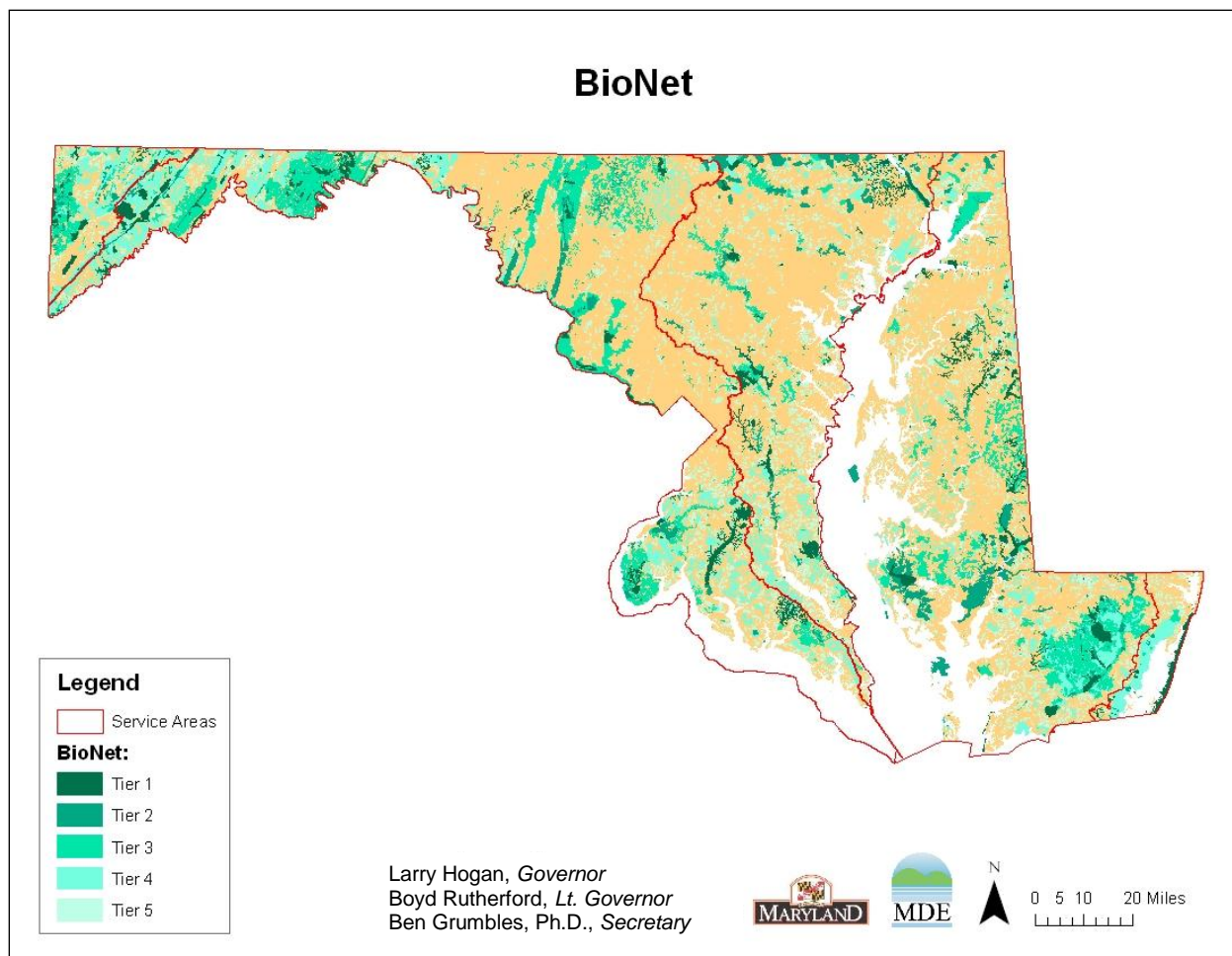


Figure 11. *DNR BioNet Areas in Maryland. Tier 1 areas are critically significant for biodiversity conservation. Tier 2 areas are extremely significant for biodiversity conservation. Tier 3 areas are highly significant for biodiversity conservation. Tier 4 areas are moderately significant for biodiversity conservation. Tier 5 areas are significant for biodiversity conservation.*

- Green Infrastructure identifies a landscape-scale hub and corridor network where hubs are composed of large blocks of important forest and wetland habitats and corridors connect hubs and support the movement of plants and animals (Figure 12).



Figure 12. *Green Infrastructure Hubs and Corridors in Maryland. Data is from MD iMap and DNR.*

- Forests Important for Water Quality identifies forests that are the most effective in preventing pollution to streams, rivers and bays and maintaining healthy stream hydrology.
- Stronghold Watersheds identify Maryland 12-digit watersheds that support high fish, amphibian, reptile and mussel biodiversity (Figure 13). DNR developed the Stronghold Watersheds by utilizing 17 years of MBSS data to identify watersheds that are most important for preservation of aquatic biodiversity.

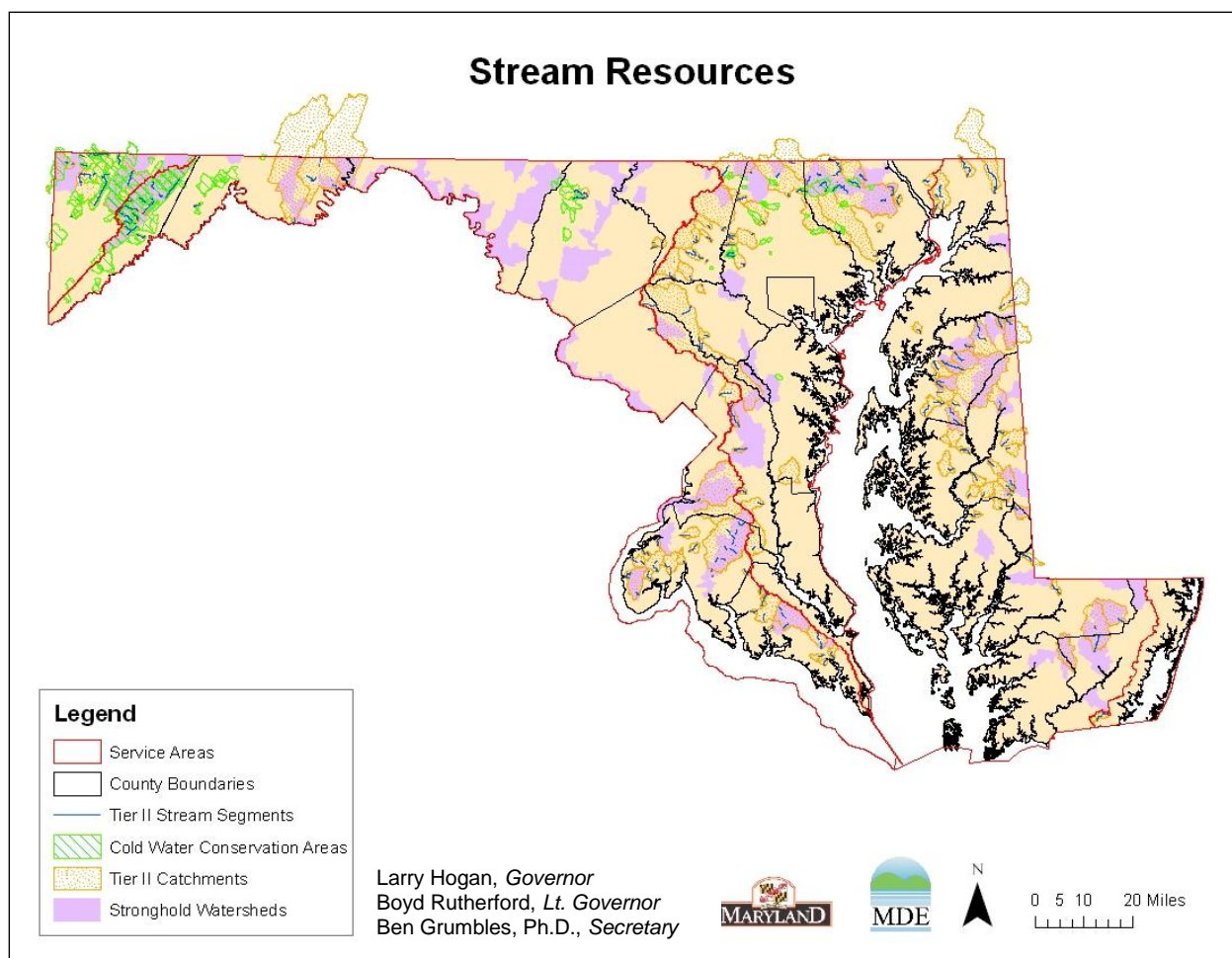


Figure 13. *MDE Tier II Watersheds, DNR Stronghold Watersheds, and DNR Cold Water Conservation Areas in Maryland.*

- Sentinel Site Watersheds identifies Maryland 12-digit watersheds that support high quality, long-term monitoring sites important for understanding the effects of environmental and land use change.
- Cold Water Conservation Areas identifies the State’s remaining watersheds that still support native fish species dependent on pristine, cold water habitats (Figure 13). Cold water dependent species, such as Brook trout, typically cannot survive when water temperatures exceed 68 degrees Fahrenheit. Anthropogenic alterations to Maryland’s environment, such as forest clearing for development and agricultural production, have altered the extent of pristine, cold water habitats.
- Tier II Watersheds and Segments identify non-tidal stream segments and their watersheds, under regulatory anti-degradation protection, that exceed minimum applicable water quality criteria and standards (Figure 13). Currently, Tier II streams are identified according to fish and benthic indices of biotic integrity.

- Blue Infrastructure Priority Shoreline Areas identifies unique shoreline segments (1 Km x 100 m) and associated aquatic areas that support high quality coastal habitat, critical natural resources and associated human uses in tidal waters and near-shore areas (Figure 14).

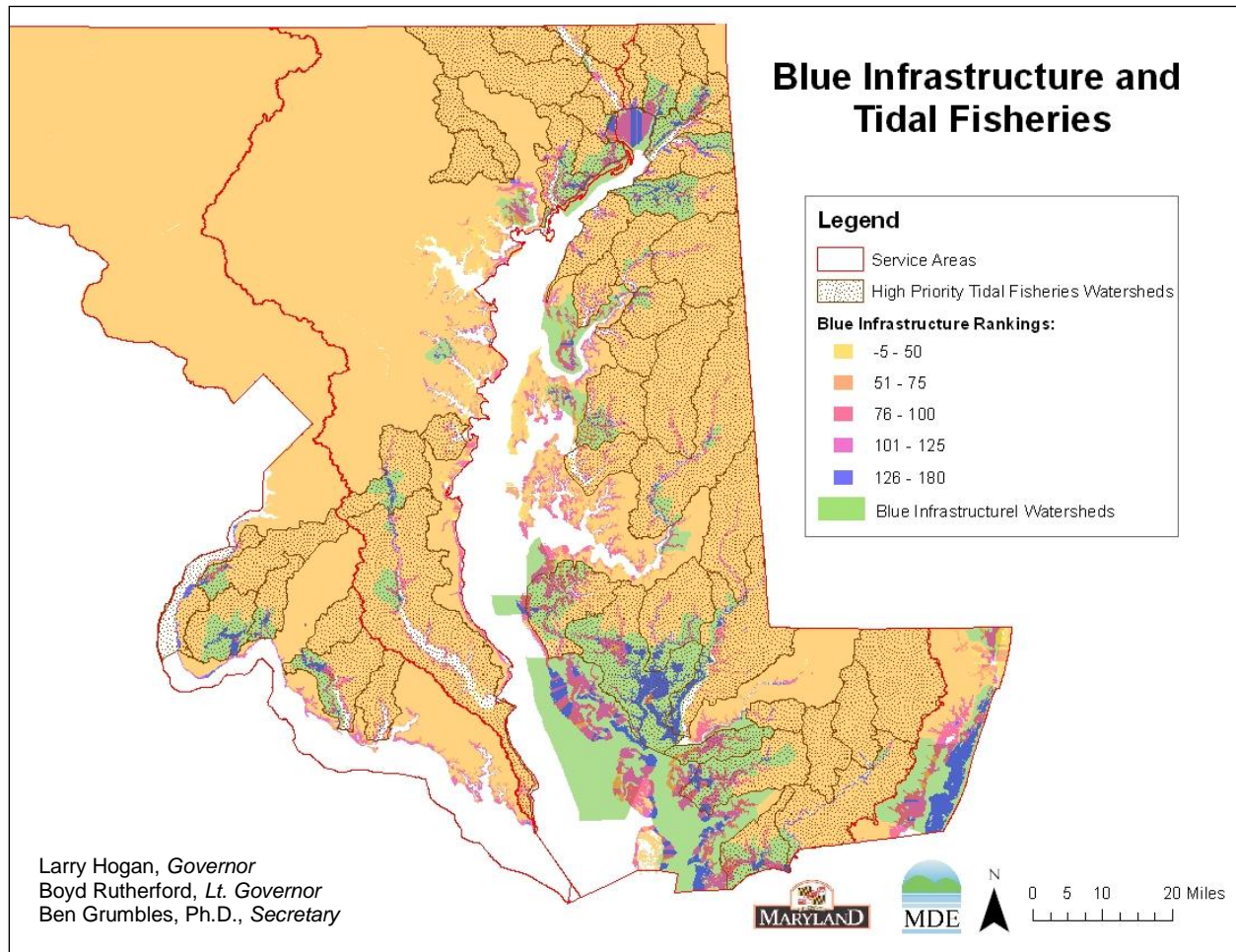


Figure 14. DNR’s Blue Infrastructure and High Priority Tidal Fisheries Watersheds. Blue Infrastructure is ranked from lowest to highest.

- Blue Infrastructure Priority Watersheds identifies Maryland 12-digit watersheds that have the greatest frequency of high priority Blue Infrastructure shoreline segments (1 Km x 100 m) and associated aquatic areas that support high quality coastal habitat, critical natural resources and associated human uses in tidal waters and near-shore areas (Figure 14).
- High Priority Tidal Fisheries Watersheds identifies Maryland 8-digit watersheds that provide important spawning and nursery habitat for commercial and recreational anadromous fisheries such as striped bass, shad, herring and perch (Figure 14).

- Wetland Adaptation Areas identify areas likely to be important future wetland habitats and/or that provide migration or transition zones for wetlands to move landward as sea levels rise. These areas represent forecasted wetland adaptation areas for the year 2100 that would help to facilitate landward movement of coastal wetlands subject to dislocation by sea level rise. Priorities for conservation value were based on 1) maintaining particular wetland classes, upland areas suitable for future wetlands, a diversity of wetland types and intact or continuous natural habitats and 2) avoiding features (e.g., impervious surface or hardened shorelines) that would constrain landward movement.
- New Wetland Areas, Year 2100 identify areas that currently exist as undeveloped dry land likely to change to wetlands by the year 2100 as sea level rises.

The MDE prioritization documents and the WRR also describe current aquatic resource conditions. Numerous sources were used to develop the MDE prioritization documents, such as planning documents, scientific studies, local watershed plans, Watershed Restoration Action Strategies, MBSS, Stream Corridor Assessments, State plans, local water quality monitoring reports, 303(d) lists, 305(b) reports, and Total Maximum Daily Load calculations. Since these prioritization documents contain very specific aquatic resource conditions for each 8-digit State watershed (of which there are 138 watersheds in the State), it is not feasible to include all of the watershed-specific information here.

Similarly, the WRR includes several GIS layers, many discussed above, that incorporate current aquatic resource conditions, including Green Infrastructure, Blue Infrastructure, GreenPrint Targeted Ecological Areas, Stronghold Watersheds, WSSCs, Tier II Watersheds. The WRR also includes additional GIS layers:

- Locally Impaired Waters – Nitrogen, Phosphorus, and Sediment (Figures 15-17), which identifies waters assessed as not meeting the water quality standards established in COMAR 26.08.02 and which may require a Total Maximum Daily Load to determine the maximum amount of an impairing substance or pollutant that a particular water body can assimilate and still meet water quality criteria.

Local Watersheds Impaired by Nitrogen

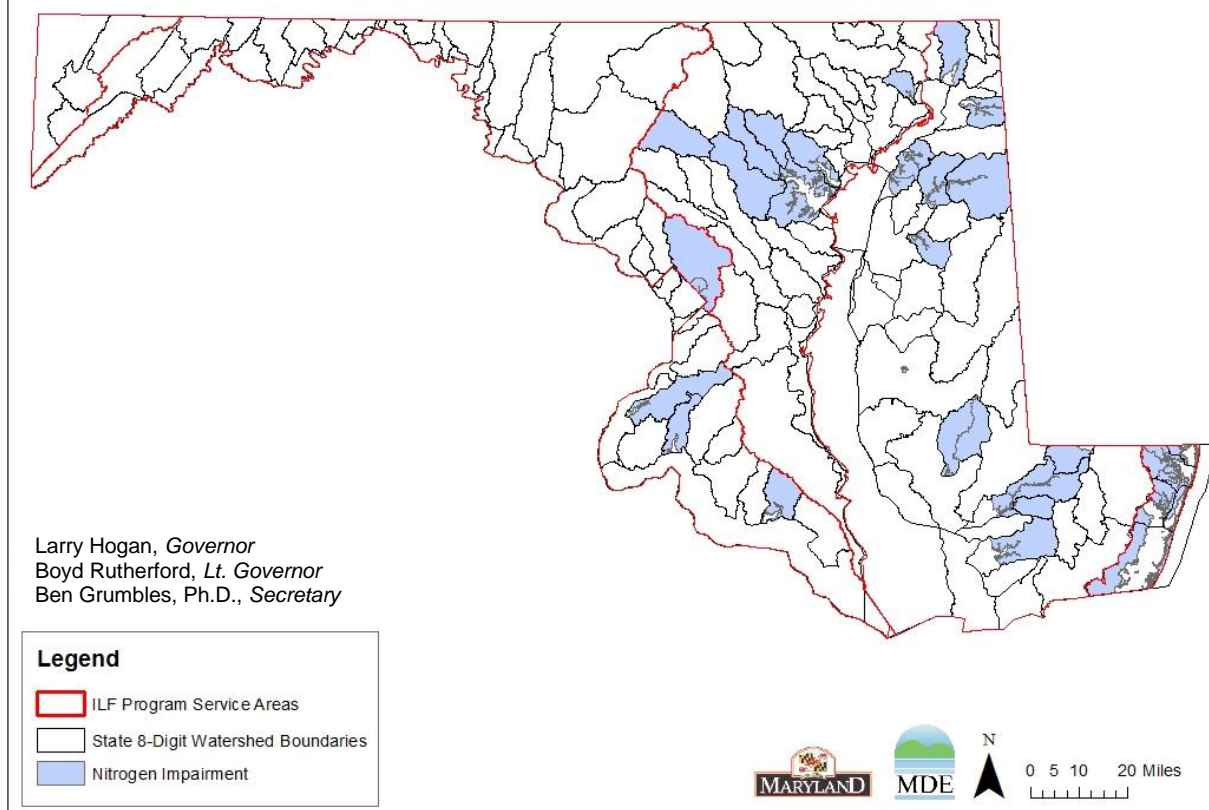


Figure 15. *Local Waters Impaired by Nitrogen. 2012 Integrated Report of surface water quality listings by 8- digit State watersheds, as developed by MDE Science Services Administration. The Integrated Report combines the 305(b) water quality assessments and the 303(d) list of waters not meeting water quality standards.*

Local Watersheds Impaired by Phosphorus

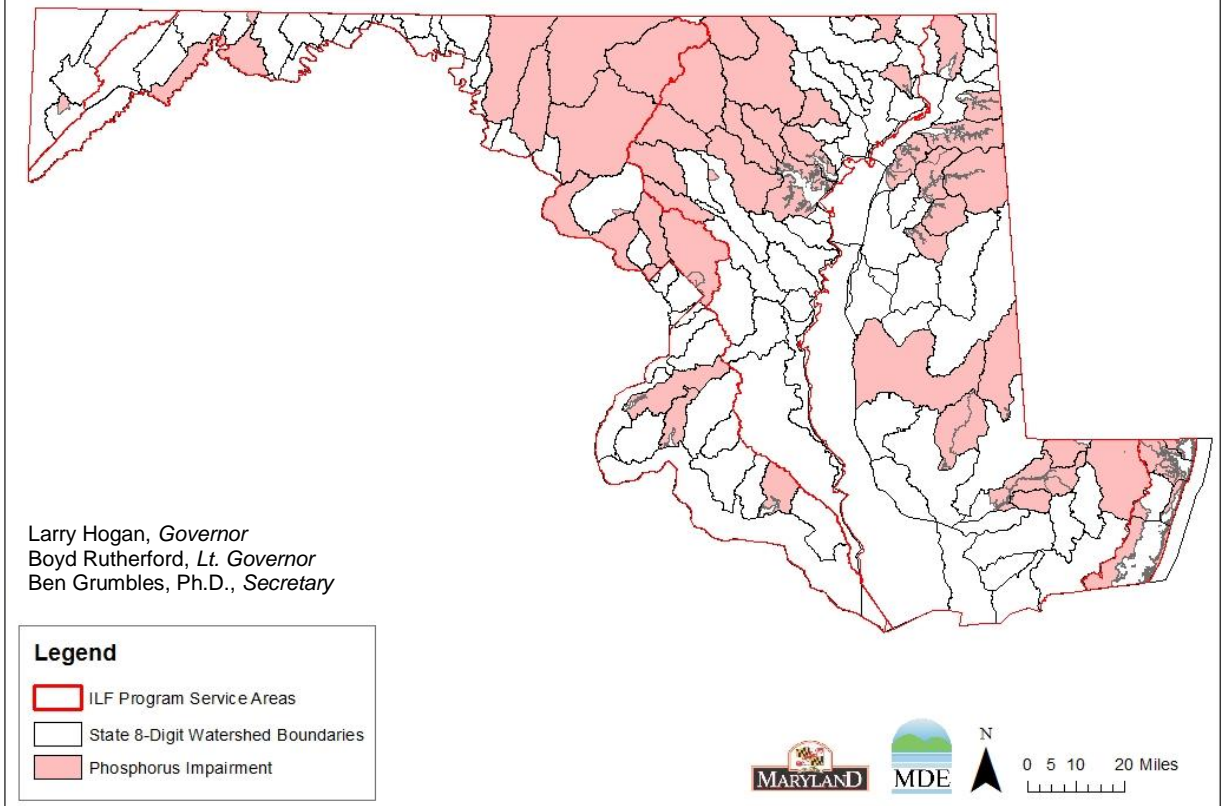


Figure 16. *Local Waters Impaired by Phosphorus. 2012 Integrated Report of surface water quality listings by 8- digit State watersheds, as developed by MDE Science Services Administration. The Integrated Report combines the 305(b) water quality assessments and the 303(d) list of waters not meeting water quality standards.*

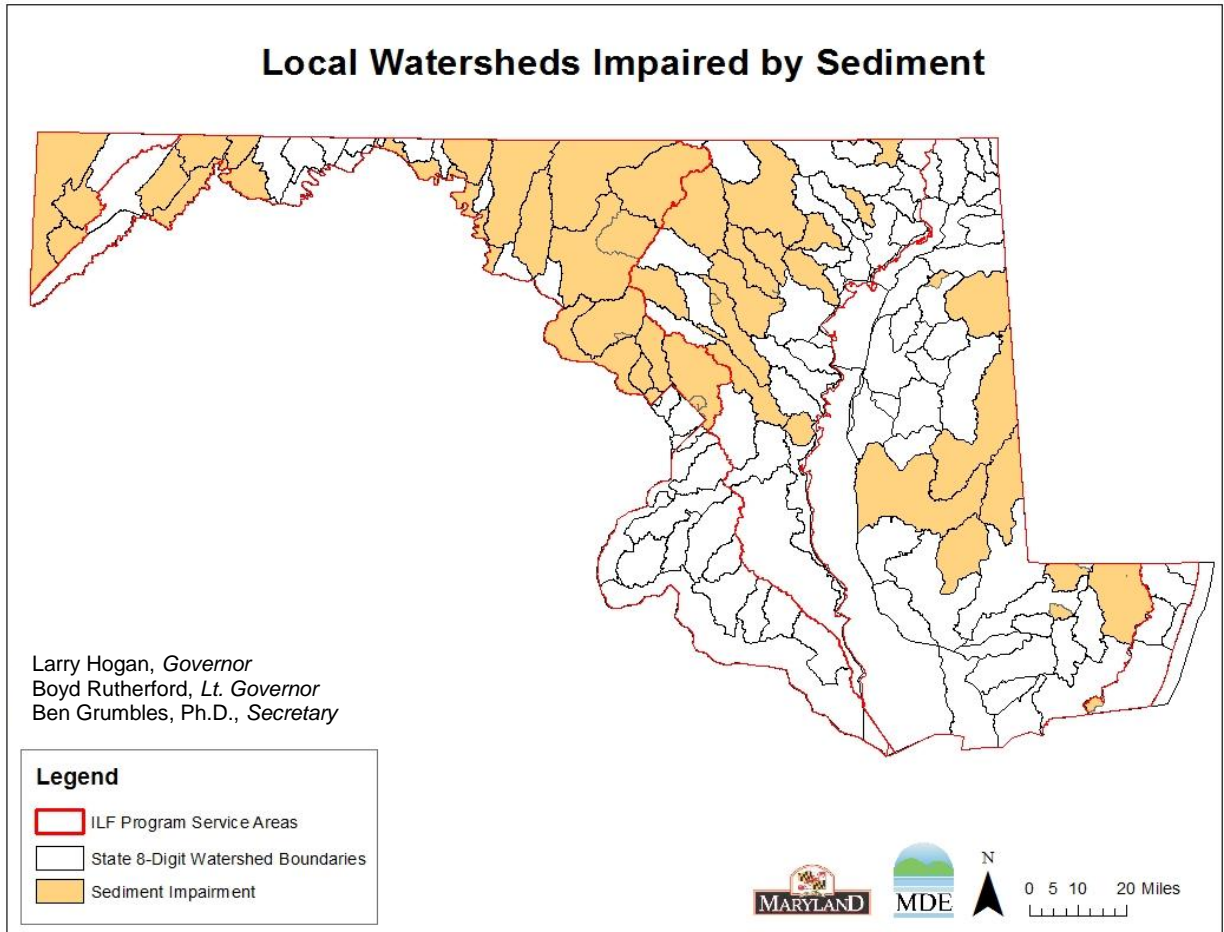


Figure 17. *Local Waters Impaired by Sediment. 2012 Integrated Report of surface water quality listings by 8- digit State watersheds, as developed by MDE Science Services Administration. The Integrated Report combines the 305(b) water quality assessments and the 303(d) list of waters not meeting water quality standards.*

- DNR Biological Restoration Initiative Watersheds, which target streams with the greatest recovery potential identified using the MBSS data;

While Maryland does have an abundance of diverse aquatic resources, many aquatic resources are degraded. There are many aquatic resources throughout the State where hydrology has been altered. Many nontidal wetlands have reduced hydrology due to partial drainage from artificial ditches. Some of these wetlands are now being farmed or logged. Some wetlands have been planted with monocultures for forestry activities. Many tidal wetlands are currently degraded due to erosion, shoreline stabilization, and mosquito ditching. In addition, there are numerous waterways that are physically, chemically, or biologically degraded due to development, forest clearing, intensive agriculture, and channelization. These waterways may now be unstable, acting as sediment sources, and having reduced in-stream habitat and floodplain connectivity. Most waterways are on the Integrated Report for impairments such as sediment, nutrients, or

bacteria. Aquatic resources throughout the State, but especially near urban areas and along the shores, have a high percentage of invasive species.

4.7.5. Aquatic Resource Goals and Objectives (Element 5)

The Mitigation Rule states that the Compensation Planning Framework should include a statement of aquatic resource goals and objectives for each service area, including a description of the general amounts, types and locations of aquatic resources the program will seek to provide. MDE's mission is to "protect and restore the quality of Maryland's air, water and land resources, while fostering smart growth, a thriving and sustainable economy and healthy communities". The goals for the agency include:

1. Promoting land redevelopment and community revitalization;
2. Ensuring safe and adequate drinking water;
3. Reducing Maryland citizens' exposure to hazards;
4. Ensuring the safety of fish and shellfish harvested in Maryland;
5. Improving and protecting Maryland's water quality;
6. Ensuring the air is safe to breath; and
7. Providing excellent customer services to achieve environmental protection.

The ILF Program will meet these agency goals, allowing for planned growth while maintaining and improving upon the State's aquatic resources. MDE will replace the amount and type of aquatic resources lost due to regulated impacts by service area. The Department will also focus on completing mitigation in watersheds with the highest permitted wetland loss and the greatest projected development. MDE will consider overall statewide goals and objectives when considering mitigation projects. The ILF Program aquatic resources goals and objectives are largely based on recommendations by the WRR and the prioritization documents. The ILF Program will focus on protecting high quality resources and restoring impaired resources by:

- Supporting the restoration and permanent protection of large continuous habitats through targeting projects within or adjacent to these areas (e.g., Forest Interior Dwelling habitat, Green Infrastructure, Blue Infrastructure, Rural Legacy Areas);
- Maintaining biodiversity of plants and wildlife through conservation of targeted areas (e.g., Biodiversity Conservation Networks, GreenPrint Targeted Ecological Areas, Stronghold Watersheds, Wetlands of Special State Concern, Tier II) and control of invasive species;
- Reducing pollutants entering aquatic resources, including 303(d) Listed waters, through projects that provide water quality functions;
- Encouraging Best Management Practices (BMPs) in agriculture, including grassed filter strips and fencing livestock out of wetlands and waterways.

- Maintaining and enhancing riparian zones;
- Enhancing floodplain connectivity;
- Reducing sediment supply from eroding streambanks through stream stabilization;
- Improving aquatic habitat for macroinvertebrates and native fish populations, including by improving in-stream habitat and removing barriers to fish passage;
- Restoring stream base flow conditions;
- Restoring engineered shorelines back to tidal wetlands, where appropriate;
- Restoring functions to tidal wetland impaired by mosquito ditches;
- Offsetting effects of sea-level rise through preservation of potential migration zones for wetlands;
- Restoring wetlands drained by agricultural ditches;
- Restoring and protecting resources within the headwaters;
- Avoiding wetland restoration on areas considered as Prime Farmland;
- Protecting and restoring resources within the Chesapeake Bay Critical Area;
- Protecting and restoring wetlands in watersheds of surface drinking reservoirs;
- Promoting public education of the importance of aquatic resources; and
- Working with other agencies and organizations to develop policies to conserve aquatic resources.

The MDE prioritization documents provide additional recommendations.

4.7.6. Prioritization Strategy (Element 6)

The Mitigation Rule states that the Compensation Planning Framework should include a prioritization strategy for selecting and implementing compensatory mitigation activities. The Department will use recommendations developed in the WRR, the prioritization documents, and site specific evaluations, to prioritize the selection of desirable sites for aquatic mitigation. The Department will select mitigation projects within specified watersheds, including where losses have occurred. Projects that will restore or create an aquatic resource will be ranked higher than enhancement. The highest ranked wetland enhancements will be to farmed wetlands, partially drained wetlands, and wetlands with threatened or endangered species. Most other wetland enhancement projects will not receive high rankings. Wetland preservation will be funded only if the preservation is a relatively small part of a project package that includes wetland restoration or creation. Preservation sites will be ranked and considered using the methods described in Element 7. Sites will be screened using GIS layers for historic cultural resources and Rare, Threatened and Endangered (RTE) Species. If the site is near a historic cultural resource, RTE species habitat or is designed to enhance or create RTE species habitat, the Department will work with the resource agencies to develop a mitigation plan designed to protect or enhance those resources. All projects must be consistent with the requirements of the Mitigation Rule. Land must be owned by an individual or entity that will agree to permanent protection and access by MDE, the Corps, and the IRT.

Because the WRR allows the user to compare various mitigation opportunities, giving each site an overall score, MDE will use the WRR as one tool to rank multiple restoration projects in order

to achieve the highest overall watershed benefit. MDE will also consider the ILF Program goals and objectives, defined in Element 5 and in the prioritization documents, when locating and ranking potential projects. For example, restore/create wetlands that provide water quality improvements for Mattawoman Creek, an important anadromous fish spawning area.

When evaluating the ability of a potential project to replace particular resources, MDE will consider how that project may address threats to those resources. For example, to address the threat of sea level rise on tidal wetlands, MDE may consider projects that preserve tidal wetland buffer, allowing landward migration of tidal wetlands. For wetland restoration, MDE may consider the risk of conducting wetland restoration projects within areas predicted to be inundated by 2050. To address the risk of development on nontidal wetlands, MDE will consider development risk when prioritizing areas for nontidal wetland preservation. MDE may consider wetland restoration/creation projects that provide water quality improvements in areas with known nutrient and sediment impairments. To address the effects of development and impervious surface on waterways, MDE may consider projects that provide stormwater to areas where stormwater is not currently managed.

For all types of projects, sites will first be evaluated using a watershed approach, considering how the site fits in and contributes to the surrounding landscape. This evaluation may include how the site is ranked within the WRR. The landscape-level attributes of the WRR were determined by the interagency Technical Advisory Committee (TAC). The WRR locates technically feasible sites for specific mitigation requirements (e.g., wetland restoration sites would need to be on hydric soil, not currently wetland or forested), then prioritizes these sites based on watershed goals (e.g., contributes to Green Infrastructure and GreenPrint, restores stream corridors along Tier II streams, or improves waters within a locally impaired watershed). As more data becomes available and as the science progresses, the factors utilized in the WRR will be revised.

For nontidal wetland restoration, the site may be ranked on a landscape-level based on several factors:

- Within a Service Area in need of an ILF Project that provides Compensatory Mitigation;
- Cannot already be forested or contain another resource with high ecological value. On a case-by-case basis, MDE may consider projects that restore wetlands in areas of low-quality forest (e.g., pine plantations);
- Adjacent land use must be compatible with a wetland restoration project; and
- Must be very poorly drained, poorly drained, or somewhat poorly drained soils. For wetland creation, soils may not meet these soil drainage classes.

Relative factors in which the potential site may be ranked will be based on the WRR. Currently, the WRR ranks wetland restoration sites based on the following factors:

- Within a Biodiversity Conservation Network Area;

- Within a Blue Infrastructure Priority watershed;
- Within Chesapeake Bay Critical Area (Limited Development Areas and Resource Conservation Areas);
- Within a Biological Restoration Initiative watershed;
- Within a 100-year floodplain;
- Near an existing stream or wetland;
- Near Green Infrastructure hub or corridor and within a Green Infrastructure gap;
- Near a Wetland of Special State Concern or Sensitive Species Project Review Area;
- Near protected land;
- In Potential Migration Zones for wetlands;
- Within or near a GreenPrint Targeted Ecological Area (Since DNR considers the GreenPrint Targeted Ecological Areas to be the most ecologically valuable areas in the State, these areas are also a priority for DNR Stateside Program Open Space funding); and
- Within an impaired watershed (§303-d-listed waters).

When evaluating other types of mitigation projects (e.g. preservation, enhancement) and for other types of aquatic resources (e.g., waterways and tidal wetlands), MDE will use a similar approach, first evaluating the project based on a landscape-level approach. Some of the same absolute factors will be applied: all projects should be within a Service Area in need of an ILF project, that will not contribute to the loss of a system with high ecological value, with compatible adjacent land use. Then MDE will consider the relative factors to evaluate the benefit to the landscape based on State goals. Determination of these relative factors will be based on the recommendations of the WRR Technical Advisory Committee, as refined by the Department. For nontidal wetland preservation, MDE will consider the factors used in the WRR (e.g., Biodiversity Conservation Network, Blue Infrastructure, Green Infrastructure, Biological Restoration Initiative Watersheds, Tier II, Stronghold Watersheds, GreenPrint, WSSC), but the site will also be ranked higher if there is a high risk of development and if it is adjacent to already protected land. For tidal wetland projects, MDE may consider data on GreenPrint, Blue Infrastructure, High Priority Tidal Fisheries Watersheds, sea level rise data, shoreline erosion loss, SAV, and oyster bars. For stream restoration/enhancement, MDE may consider GreenPrint, Green Infrastructure, Stronghold watersheds, Tier II watersheds, impaired waters and Cold Water Conservation Areas. Additionally, if the U.S. Fish and Wildlife Service develops a comprehensive stream assessment showing statewide stream restoration and conservation needs, as has been proposed, MDE will consider this information.

MDE has developed a partnership with the Chesapeake Bay Trust for a Request for Proposal (RFP) to locate and evaluate potential tidal and nontidal wetland mitigation sites to be completed using ILF Program funds. Once the site is found to be desirable based on a landscape-level evaluation, projects will be evaluated based on additional criteria. While the process for the RFP is still being refined, in order to rate individual site proposals, MDE may evaluate the individual sites based on the following criteria:

- Feasibility of creating/restoring a successful wetland (this may include an assessment of wave energy, soil characteristics, past site disturbance, current and potential hydrology sources, potential plant establishment issues, condition of surrounding aquatic resources and potential benefit to these resources);
- Potential ecological benefit;
- Perceived long-term success and sustainability; This may also include consideration of future development trends in the area, and possible land use changes
- State watershed priorities;
- Watershed needs, including how the project fits into approved watershed plans, including MDE's wetland prioritization documents (with specific recommendations summarized in Sections 4.7.5) and Watershed Resources Registry;
- Cost/acre and cost-efficiency relative to functional improvement;
- Landowner willingness;
- Long-term protection potential, including who will hold the easements (while an easement is preferred, other protection mechanisms may be acceptable: e.g., a declaration of restricted covenants);
- Size;
- Experience of the contractor and applicant;
- Monitoring and maintenance plan;
- Ability to secure a bond or other acceptable financial assurance for 15% of bond amount and 100% of the contract price; and
- Readiness to proceed.

Selecting sites at the landscape and watershed scale, and then verifying the feasibility of the project using site-specific assessments, should increase the project success and benefits to the watershed.

4.7.7. Preservation Objectives (Element 7)

The Mitigation Rule states that the Compensation Planning Framework should include an explanation of how any preservation objectives identified in 4.7.5 of this section and addressed in the prioritization strategy in 4.7.6 satisfy the Mitigation Rule criteria for use of preservation in

§332.3(h). Preservation objectives will be identified based on the ability of preserved resources to contribute to important physical, chemical, and biological functions for the watershed. Preservation will also address identified threats to the resources (as identified in Element 2), such as development, water quality issues, sea-level rise, and invasive species. The ILF Program will generally rank potential preservation areas using many of the parameters utilized in the WRR:

- Within Biodiversity Conservation Network Areas;
- Within a Blue Infrastructure Priority watershed;
- Within GreenPrint Targeted Ecological Area;
- Within Green Infrastructure hub or corridor;
- In Potential Migration Zones for wetlands;
- Near protected lands;
- Within Healthy Watersheds (Stronghold Watersheds, important fish spawning areas, Cold Water Conservation Areas, Tier II Watersheds); and
- Within a Wetland of Special State Concern.

Preservation sites have been prioritized in the Watershed Resources Registry, based existing resources. However, only sites with a high development risk will be considered for ILF sites, except when preservation is a small component of the overall project. More specific preservation objectives will include recommendations from Sections 4.7.5, as well as the prioritization documents (e.g., preserve the Zekiah Swamp). Sites proposed for preservation should also be compatible with surrounding land use, under threat by development or adverse modifications, and meet watershed conservation goals. Since MDE considers streams to already be protected through State and federal regulations, “stream preservation” should include preservation of a sufficient stream buffer. Preservation sites will only be used that are appropriate and practicable to the Corps, in consultation with the IRT. All preservation sites must be protected in perpetuity through an IRT-approved protection mechanism. Prior to approving a site for preservation, it must be determined that the site provides high ecological functions and is a healthy system.

To meet compensatory mitigation requirements, however, preservation is generally a lower priority than restoration, creation, or enhancement. For example, MDE may consider preservation as part of an overall package if a site provides a large amount of wetland restoration credit and a small amount of preservation credit for an existing high value wetland, especially if the area meeting the preservation objective is threatened by development.

4.7.8. Stakeholder Involvement (Element 8)

The Mitigation Rule states that the Compensation Planning Framework should include a description of any public and private stakeholder involvement in plan development and

implementation, including, where appropriate, coordination with federal, state, tribal and local aquatic resource management and regulatory authorities. Much of this Compensation Planning Framework is based on the prioritization documents and the WRR, both of which included stakeholder involvement. Each effort involved extensive coordination among federal, State, county, and local aquatic resource management and regulatory authorities, as well as nongovernmental organizations. During the development of the prioritization documents, MDE conducted meetings with MDE and DNR representatives, as well as every county in Maryland and incorporated their objectives and priorities to the maximum extent possible. Similarly, the Technical Advisory Committee (TAC) for the WRR includes representatives from many Federal and State agencies. Local and non-profit organizations also contributed (e.g., Interstate Commission on the Potomac River Basin, Prince Georges and Charles Counties, The Conservation Fund, etc.). This TAC group met on a regular basis since 2007 and will continue to meet into the future to discuss revisions and updates to the WRR. The WRR is being promoted by EPA, Corps, and Federal Highways Administration as a national model of interagency cooperation. Members of the TAC committee are as follows:

Federal agencies:

- Environmental Protection Agency
- U. S. Army Corps of Engineers
- U. S. Fish and Wildlife Service
- Federal Highway Administration

State agencies:

- Maryland State Highway Administration
- Maryland Department of the Environment
- Maryland Department of Natural Resource
- Maryland Environmental Services
- Maryland Department of Planning

The WRR TAC is working to familiarize stakeholders with the WRR, including through the publicly-available website interface, publications, presentations at local and national conferences and through agency and public hands-on training sessions. Stakeholders are requested to provide feedback to be incorporated into the next version of the WRR, likely to be developed in late 2014. During future Compensation Planning Framework revisions, MDE will continue to incorporate feedback from our government partners, non-profit organizations, and the public.

4.7.9. Long-Term Protection and Management (Element 9)

The Mitigation Rule states that the Compensation Planning Framework should include a description of the long-term protection and management strategies for activities conducted by the in-lieu fee program sponsor. Mitigation sites will be protected in perpetuity through an easement, declaration of restrictive covenants, or other agreed-upon mechanism. If the mitigation site is purchased, MDE may later transfer ownership of the site to another agency or entity. For government property, long-term protection may be provided through facility management plans or natural resources management plans, if applicable, stating that the site will be managed for the resource in perpetuity. These management plans will only be utilized if the IRT determines they provide adequate site protection. All ILF sites will be subject to applicable regulatory requirements. The projects will be designed to be self-sustaining to the maximum extent practicable. The Department will be responsible for maintaining the projects, consistent with the Mitigation Plan, to ensure their long-term viability as functional aquatic resources. The Mitigation Plan for a particular ILF project will specify the amount of money required for long-term management of that ILF project. After project construction, MDE will transfer the required funds into the Monitoring and Remediation Account and the Long-Term Management Account, as discussed in the Program Account section. If the responsibility for the long-term management is transferred to another entity, MDE will also transfer all long-term management money to that entity.

4.7.10 Evaluation and Reporting (Element 10)

The Mitigation Rule states that the Compensation Planning Framework should include a strategy for periodic evaluation and reporting on the progress of the program in achieving the goals and objectives in 4.7.5, including a process for revising the planning framework as necessary. The Department will provide an annual report to the Corps discussing how the ILF Program has met the goals and objectives for each service area. This report will include how the ILF Program replaced the amount and type of aquatic resource lost due to regulated impacts for which the ILF Program accepted payments and how the specific ILF projects fit into the Compensation Planning Framework. The Compensation Planning Framework, including MDE's prioritization documents and the WRR, will be periodically updated as new or updated data is acquired or watershed goals and objectives are revised. The WRR TAC is anticipating annual revisions to the WRR, including incorporating a feedback loop whereby the Department and other stakeholders report completed projects and update watershed monitoring data. The Compensation Planning Framework watershed goals and objectives may be updated based on this new information.

4.8 Program Account

The Department will establish and maintain a system to track the transaction of credits and funds between MDE and permittees authorized to satisfy their compensatory mitigation requirement by paying an in-lieu fee. Credit production, credit transactions, funds received, and funds expended will be tracked by service area and for each individual project. The Department will provide these reports to the Corps on an annual basis.

The Tidal Wetlands Fund, Nontidal Wetlands Fund, and Waterway Fund will each be divided into two distinct accounts: the ILF Program Account and the Programmatic Account. The ILF

Program Account will accept money to satisfy compensatory mitigation for impacts to resources regulated by the Corps, while the Programmatic Account will accept money from other entities and for other purposes, e.g., funds resulting from fines and court actions, fees for mitigation of resources not regulated by the Corps, projects authorized as MDSPGP-4 Category B when mitigation is not required by the Corps, and money existing in the Compensation Fund prior to the execution of the Mitigation Instrument. Within the ILF Program Accounts, there will be two additional separate accounts, a Monitoring and Remediation Account and a Long-term Management Account. A portion of the payments received in the ILF Program Account will go into these accounts, the details of which will be discussed in the ILF Instrument. Annual reports will also show financial transactions for the Monitoring and Remediation Account and the Long-Term Management Account.

Funds from the Monitoring and Remediation Account will be used for the initial monitoring and remediation completed during that monitoring period.

The Long-term Management Account will be used for long-term management, including site monitoring after the initial monitoring period, controlling invasive species, and maintaining the site in perpetuity. The long-term management plan submitted with the Mitigation Plan for each site will include specific long-term management requirements.

The payments accepted for compensatory mitigation and all interest accruing from these payments will be used to provide and support compensatory mitigation for impacts to aquatic resources.

The Department may use money from the Programmatic Account to initiate ILF Program projects. This will allow MDE to build new or larger mitigation projects in approved service areas before funding is available under an approved ILF Instrument. Once an ILF Instrument is approved, a portion, e.g., 50%, of the revenue generated by the ILF Program for compensatory mitigation will be used to repay the loan. Without being able to utilize these other funds, MDE will not have enough money to build a sustainable mitigation site in each service area within a three year period. In order for MDE to continue to meet the goal of No-Net-Loss, MDE uses the money in the Programmatic Fund to complete mitigation for those authorizations with impacts too small to require the permittee to mitigate. For this reason, the money used from the Programmatic Fund to implement the project must be repaid. While MDE proposes to use money from the Programmatic Fund to construct sites initially, the ILF Fund and the Programmatic Fund will still be distinct accounts and all the money received for credit sales and interest will still be tracked and used for mitigation that meets the Mitigation Rule. This will be documented in the annual reports submitted to the Corps.

Applicants who have been approved to satisfy their compensatory mitigation requirement through payment into the ILF Program will be required to pay an amount based on the fee schedule established in regulation into the ILF Program prior to the issuance of any authorization. Fee schedules and rates will be adjusted as necessary to reflect increased costs for property, construction, maintenance, and long-term monitoring.

5. Conclusion

Maryland has a long history of successfully implementing compensatory wetland mitigation through the use of the Tidal and Nontidal Funds. The Department, which has operated a successful in-lieu fee program for over twenty years, is committed to making its revised ILF Program successful. The revisions to its ILF Program proposed in this Prospectus are not only consistent with the Mitigation Rule and necessary to a viable and successful program, but will also continue to replace the lost acreage and functions to aquatic resources due to authorized impacts, while ensuring that the State's ILF Program remains viable and successful.

Appendix A

The Watershed Resources Registry (WRR)



The (WRR), a Green Highways Partnership project, is a partnership of agencies who developed a framework for integrated watershed management. A GIS based targeting tool was developed to analyze watersheds and identify the best opportunities for the protection of high quality resources, restoration of impaired resources, resource conservation and environmental resource planning, and improvement of stormwater management. The WRR is intended to integrate the Clean Water Act (CWA) authorities by facilitating implementation of CWA Sections 319, 401, 402, and 404, TMDL implementation practices, and multiple state programs.

Partnering Agencies

EPA Region 3; US Army Corps of Engineers (ACE); MD State Highway Administration (SHA); US Fish and Wildlife Service (FWS); Federal Highways Administration (FHWA); Maryland Department of the Environment (MDE); Maryland Department of Natural Resources (MDNR); Maryland Environmental Service (MES); and Interstate Commission on the Potomac River Basin (ICPRB)

Prioritizing opportunities based on the ecological needs of the watershed

Eight (8) opportunity assessments were developed through the interagency partnership workgroup to identify the best opportunities for the following practices. Priorities were based on ecological needs as defined by water quality, habitat, and biological assessments.

- Upland Preservation
- Upland Restoration
- Preserving Natural Surface Hydrology for Stormwater
- Wetland Preservation
- Wetland Restoration
- Restoring/Mimicking Natural Hydrology for Stormwater
- Riparian Zone Preservation
- Riparian Zone Restoration

Status

Under development for three years, the WRR initially focused on a pilot region within Southern Maryland but is now available statewide. The tool is available through a web-based application developed by MES and funded by SHA. Field verification studies are being performed. EPA, ACE, FHWA and FWS are promoting the tool as a national model. Reviewers are asked to evaluate the models and tools at <http://www.watershedresourcesregistry.org>

Applications

- Focus federal funding and improve federal/state integration among CWA (319, 401, 402, 404, 303(d)) programs
 - CWA activities include Non-Point Source management, watershed planning, permit review, mitigation assessments and banking
 - TMDL Implementation and Phase 2 Chesapeake Bay WIP development
- NEPA and State environmental review
- Integrated transportation, energy and land use planning



Benefits

- Reduces costs through more efficient administration of regulatory and non-regulatory programs and less review/site assessment/coordination time
- Improves environmental outcomes
 - More informed and integrated decision making among multiple users
 - Uses a common watershed-based platform
 - Provides access to updated, consistent, and defensible data
 - Enhanced protection and targeted restoration of resources
 - Achieves multiple environmental objectives
- Model approach for addressing potential new stormwater requirements (offsite mitigation, credits, offsets) on a watershed basis
- Is transparent, predictable, and reliable
- Promotes stakeholder and public involvement
- Provides transferability to other states nationwide

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