

## EXECUTIVE SUMMARY

The Maryland Department of the Environment's (MDE) Wetlands and Waterways Program has incorporated a nontidal wetland mitigation section since the program's inception in 1991. Maryland's Nontidal Wetlands Act requires a "no net loss" of wetland acreage and function. In order to achieve the goal of "no net loss," compensatory mitigation is required when wetland impacts are unavoidable. The mitigation section is tasked with ensuring that the compensatory mitigation is successfully completed. Some of the responsibilities of the mitigation staff include finding and/or approving locations of mitigation sites, determining the correct replacement ratios, reviewing design information/plans, collecting bonds, collecting monitoring reports, and following up to ensure that success standards are being met. Regulations and guidance exist for much of the mitigation process.

The purpose of this report is to determine the overall effectiveness of MDE's nontidal wetland mitigation section by critically analyzing all of the various aspects and components involved with mitigation projects, and then to provide recommendations on how to correct any deficiencies found. The ultimate goal is to generate new, up-to-date guidance that will allow the mitigation section to be more efficient and successful.

In order to gain a better understanding of the status of the mitigation projects, staff examined the records of 641 mitigation projects. Each project was classified under one of six categories: successful, somewhat successful, failure, too early to determine, not yet built, and unclear. After analyzing all of the projects mitigation staff established that 51 percent of the projects were considered successful, while 13 percent were failures. The remaining 36 percent were distributed into the four less defined categories.

Mitigation staff summarized other aspects of the program. For the Phase II mitigation plans, 12% were never submitted. Of those submitted, 26% were late. Nearly half of the approved Phase II mitigation plans were approved within the first year after the permit was issued, while some were not approved until several years after the permit was issued, or were never approved. Of the mitigation projects that were completed, the majority of projects (77%) were constructed within three years after the permit issuance date. MDE only received a bond for 3% of permits issued prior to January 1, 2007. Monitoring reports were submitted for 67% of the mitigation projects, with about half of the submitted reports being late.

Staff also analyzed and included information on a variety of other aspects relating to the mitigation program. Some of the other things covered in this report include an analysis of mitigation site locations; a summary of all consolidated mitigation sites; a summary of all programmatic mitigation sites; a summary of projects that paid into the Nontidal Wetland Compensation Fund; and an analysis of the use of GIS to assess wetland function.

In order to better assess the success of mitigation projects a new rapid scoring method was developed by MDE staff. This new Mitigation Site Scoring Method was derived from a report completed by University of Maryland Center for Environmental Science entitled "Measuring Success of Wetland Mitigation" and several other existing scoring

methods as well as by extensive trial and error. The Mitigation Site Scoring Method has a 100-point scale and the score is determined based on four basic wetland parameters: Vegetation, Soils, Hydrology, and Function. A total of 92 sites were scored from the start of the 2007 growing season through September 5, 2007 using this method. The average score for all sites was 74, with scores ranging from 20 to 108. While 79% (73 sites) of the total scored sites passed, these projects comprised 95% (317 acres) of the total scored acreage. These results reflect the scoring of larger sites directly overseen by MDE as programmatic mitigation sites. Common reasons for failure were related to hydrology: Sites were too dry or too wet (open water ponds).

MDE staff selected a subset of twenty mitigation sites on which to do more extensive monitoring. Hydrology was evaluated at least twice during the growing season for each site. MDE staff enlisted the use of a new technology, IRIS (Indicator of Reduction In Soils) tubes, to assist in determining if the soils in mitigation sites were reducing. Of the 57 IRIS tube sets installed in these sites, 10 sets did not have sufficient reduction. For the majority of these sites, we attributed this to the site being too dry. However, a few of the sites appeared to have problems with the soils (e.g. compaction to the surface, etc.) that may have limited soil reduction. Soil samples were taken from sites where the IRIS tubes indicated a lack of soil reduction to test for organic matter and pH levels. MDE staff also sampled eight programmatic mitigation sites, following the 1987 Corps of Engineers Wetland Delineation Manual. Of these eight sites, four sites had at least one transect that was either not wetland or possibly not wetland. These transect results largely matched our site observations.

After considering all of the information gathered for the production of this report, mitigation staff concluded that there are a variety of areas that can be improved upon. The more general observations about the mitigation program included the following: 1) the mitigation program is significantly understaffed; 2) there is too much data entry involved in the mitigation process; 3) there are inadequate requirements placed upon the applicant before the Permit/LOA is issued (i.e. bond, etc.); and 4) no regular periodic review of the status of mitigation projects occurs. It was also noted that the Compliance Program is significantly understaffed, which leads to inadequate enforcement and gives the mitigation section limited options for pursuing negligent permittees. Several other more specific problems are mentioned in the report, along with recommendations for solutions.