



MASONVILLE DREDGED MATERIAL CONTAINMENT FACILITY: ENVIRONMENTAL PLANNING, COMPLIANCE AND COMPENSATORY MITIGATION

ABSTRACT

The Masonville Dredged Material Containment Facility (DMCF) was designed to accommodate Baltimore Harbor dredged material, which is statutorily required to be placed in a confined disposal facility. Limited options for placement facilities in Baltimore Harbor led the Maryland Port Administration (MPA) to develop an in-water facility that required the fill of 141 acres, including 130 acres of tidal open water, 10 acres of upland within the Chesapeake Bay Critical Area, and one acre of wetlands. The project required permits or licenses from the U.S. Army Corps of Engineers, Maryland Board of Public Works, and Maryland Department of the Environment, approval from the Maryland Critical Area Commission and U.S. Environmental Protection Agency, and consultation with the U.S. Fish and Wildlife Service, Maryland Department of Natural Resources, National Marine Fisheries Services, and Maryland Historical Trust.

To evaluate project impacts, an Environmental Impact Statement was prepared in accordance with the National Environmental Policy Act (NEPA) and a compensatory mitigation plan was developed to offset identified impacts. The mitigation plan incorporated both in- and

out-of-kind mitigation projects vetted through the Bay Enhancement Working Group, a technical advisory body established by MPA. A site-specific habitat condition analysis was developed to assess the sufficiency of the compensatory mitigation package, which included substrate improvement, wetland creation and enhancement, stream restoration, and trash interceptors. The project also faced regulatory challenges related to air quality and required the purchase of credits to offset construction-related emissions. Despite the many regulatory challenges, the approvals and permits necessary to begin construction were obtained within 28 months of public scoping as a result of the Port's collaborative decision-making process which incorporated numerous stakeholders and regulatory agencies.

Additional permitting activities are ongoing to support the operation of the DMCF, including application for a National Pollutant Discharge Elimination System (NPDES) Permit. Lessons

learned from this project will be used as MPA assesses future DMCF development within the Baltimore region.

The author would like to thank her collaborators on this project and paper: Peggy A. Derrick, Senior Scientist and Project Manager, EA Engineering, Science, and Technology, Inc.; Nathaniel K. Brown, Environmental Planner, Maryland Port Administration, Harbor Development Office; George H. Harman, Consultant, Phoenix Engineering, Inc.; and the late Jane A. Boraczek. She was the driving force behind the environmental planning, permitting, and mitigation project development for the Masonville DMCF and her value in implementation of the project cannot be overstated. This paper was previously published in the *Proceedings of the WEDA 30 ITAMU 41* conference in June 2010 and is reprinted here in a slightly updated version with permission. Photographs have been provided by Gahagan & Bryant Associates.

Above: Aerial overview of the Masonville DMCF: Limited options for placement facilities in Baltimore Harbor led the Maryland Port Administration to develop an in-water facility, which required numerous permits and licenses from Federal and State authorities and stakeholder regulatory agencies.

INTRODUCTION

The Port of Baltimore's geographic location as the most inland port on the Atlantic Coast and its proximity to railroads and other methods of ground transportation allow

for rapid transportation of materials to the midwest and central portion of the United States. Safe passage at the Port of Baltimore is ensured by regular maintenance dredging of Baltimore Harbor's federal navigation channels and new work projects to support upgrades and changes to the Port. The Maryland Port Administration (MPA) and the U.S. Army Corps of Engineers (USACE) are responsible for maintaining the navigation channels within Baltimore Harbor.

Baltimore Harbor maintenance and new work dredging projects generate approximately 1.1 million cubic metres (mcm) (1.5 million cubic yards (mcy)) of dredged material annually. Maryland law requires all sediments dredged within Baltimore Harbor to be placed in a confined facility (Annotated Code of Maryland – Environmental Article §5-1102). A shortfall of annual placement capacity will begin in 2010, as a result of the mandatory closure of an existing placement site by state law. To address the predicted dredged material placement capacity shortfall, the MPA worked with the State Dredged Material Management Program (DMMP) committees to identify and screen potential placement options (Figures 1 and 2). The State DMMP screening process is described in detail by Hamons and Wilson (2010) and resulted in the selection of the Masonville Dredged Material Containment Facility (DMCF) as a preferred option to address the shortfall of annual placement capacity in the near term.

The screening of potential alignments for the Masonville DMCF, resulted in the selection of an alternative with a total footprint of approximately 57 hectares (140 acres), of which, 53 hectares (130 acres) was tidal open water (Figure 3). The remaining 4.5 hectares (11 acres) of DMCF footprint consisted of 4 hectares (10 acres) of upland and 0.4 hectares (1 acre) of vegetated wetlands.

The 53 hectares (130 acres) of open water included 1.2 hectares (3 acres) of existing unauthorized fill in the form of a dry dock.

MPA's preferred alternative would provide 11.8 mcm (15.4 mcy) of dredged material placement capacity with an annual storage capacity of 0.4 mcm (0.5 mcy) to 0.8 mcm (1.0 mcy) for a 19-year site life (Table I). The DMCF is composed of two sections, the wet basin and the main DMCF.

To date, only the main portion of the DMCF has been constructed. The main DMCF structure is composed of cofferdam cells, an armored rock dike, a fringe wetland, and a shoreline dike (Figures 4 and 5).

The wet basin will be enclosed by a rock dike. The cofferdam portion of the DMCF containment structure was designed to support a future pier, to be known as Masonville Berth 3. The DMCF, including the wet basin area, will have an ultimate end use as a port facility, such as a roll-on/roll-off cargo terminal.

REQUIRED PERMITS, CONSULTATIONS AND APPROVALS

Prior to construction of the DMCF, multiple permits, consultations, and approvals were required. These included: Section 10 and Section 404 permits from the USACE, tidal wetlands license from the Maryland Board of Public Works, a nontidal wetland permit from the Maryland Department of the Environment (MDE), plus approval from the Critical Area Commission for the Chesapeake and Atlantic Coastal Bays. Because the project required a federal permit, compliance with National Environmental Policy Act (NEPA) was required. Because of the potential for significant impacts associated with the fill of 53 hectares (130 acres) of open water, an environmental impact statement (EIS) was required. To comply with NEPA and to support the required federal permits, consultation in accordance with other federal regulations were required. These included: endangered species (Section 7) consultations with the National Marine Fisheries Service (NMFS) and the U.S. Fish and Wildlife Service (FWS), essential fish habitat (EFH) consultation with NMFS, and Section 106 (National Historic Preservation Act) consultation with the State Historic Preservation Officer (SHPO). A list of major permits and approvals required for construction and operation is included as Table II.

The MPA employed numerous time-saving measures throughout the permitting and NEPA process in order to meet the Masonville DMCF project's expedited schedule. These measures were:

- Completing cultural resource surveys prior to project scoping
- Incorporating the biological assessment (BA) and essential fish habitat (EFH) assessments into the draft environmental impact statement (DEIS) to allow a single review by NMFS rather than requiring two separate reviews, one for the BA and one for the DEIS
- Concurrently preparing the DEIS with and coordinating with the Joint Evaluation Committee (JE) regarding potential mitigation requirements associated with the MPA's preferred project alternative
- Integrating a review of the preliminary DEIS by other state and federal agencies prior to issuance of the DEIS, which allowed MPA to work on comment resolution during the public comment period



Figure 1. Baltimore Harbor waterways: Areas shaded in black were unavailable for use/development.



On the podium at WEDA 30, Kaitlin McCormick (left) receiving the IADC Award for the Best Paper by a Young Author from René Kolman, Secretary General of the IADC.

IADC YOUNG AUTHORS AWARD PRESENTED AT WEDA 30/TAMU 41, PUERTO RICO, JUNE 6-9 2010

An IADC Best Paper Award for a Young Author was presented to Kaitlin E. McCormick of EA Engineering, Science and Technology, Inc. of Maryland at the WEDA 30th Technical Conference and the 41st Texas A&M Seminar. Ms. McCormick is an environmental scientist with experience preparing technical reports, environmental impact statements (EIS) and environmental assessments, endangered species consultations, essential fish habitat assessments, and documents to support permit applications. Her responsibilities include coordination and participation in field activities and in community and public meetings, consultation with regulatory and resource agencies, and the preparation of NEPA and permit documentation to support proposed port and harbour development and dredged material management initiatives. Each year at selected conferences, the International Association of Dredging Companies grants awards for the best papers written by younger authors. This was the second award presented in 2010 as part of IADC's efforts "to stimulate the promotion of new ideas and encourage younger men and women in the dredging industry".

- Scheduling public hearings during the public comment periods rather than awaiting formal request for hearings
- Timing the release of the supplement to the DEIS with the first public hearing to allow USACE and MPA to provide copies of the supplement and information on the new alternative at the hearing
- Integrating draft federal conformity determination with final environmental

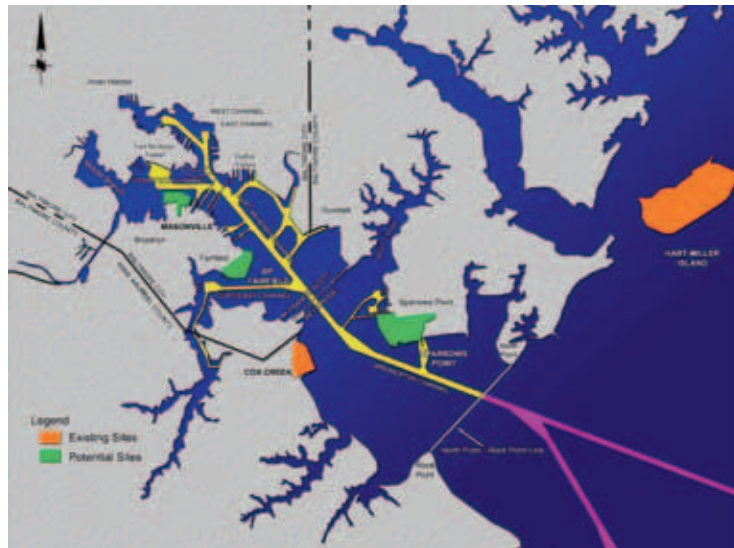


Figure 2. Areas in orange are existing sites one of which will close as of 2010. Areas in green are identified options. Masonville, top left, was selected for accelerated development.

impact statement (FEIS), ensuring that the DEIS was not delayed as a result of the federal conformity process

- Providing MPA contractor support to MDE and USACE to expedite the preparation of the report and recommendations and record of decision (ROD), respectively
- Coordinating with USACE, MDE, and the Board of Public Works (BPW) to keep MDE and USACE permit schedules in sync so that the Maryland Tidal Wetlands License and the USACE permit were issued simultaneously

FAST-TRACKED ENVIRONMENTAL COMPLIANCE PROCESS

After identifying Masonville as the preferred site for a DMCF and as the next DMCF alternative to be constructed, the MPA initiated the permitting process by meeting with the JE for a pre-application meeting. The JE is a group of federal and state regulatory and resource agencies within the State of Maryland that meets monthly to discuss projects requiring extensive or multiple permits within the Chesapeake Bay and provides recommendations to permitting agencies. These recommendations are often related to project alternatives, methods to minimize potential project impacts, and mitigation requirements. Agencies that regularly participate as part of the JE are: USACE, MDE, NMFS, FWS, U.S. Environmental Protection Agency (EPA), Maryland Department of Natural Resources (MDNR), Maryland Historical Trust (MHT), and Maryland Board of Public Works (BPW).

The first meeting with the JE was held prior to submission of the Joint Permit Application (JPA), which is a joint federal/state application for the alteration of any floodplain, waterway, tidal or nontidal wetland in Maryland. This pre-application meeting provided an opportunity for participating agencies to identify concerns related to the project and to discuss potential mitigation requirements. The JE confirmed the need for an EIS under NEPA.

After the first meeting with the JE, the MPA met with the USACE and MDE to develop a schedule for site permitting. This schedule changed and evolved as the project developed, and the final permitting schedule is listed below. To the extent possible, tasks were completed concurrently to optimize the project schedule.

The duration of the environmental compliance process from Notice of Intent (NOI) to issuance of permits necessary for construction was only 28 months for a complex project with major impacts:

- Publish Notice of Intent	May 2005
- Agency Pre-application Meeting	May 2005
- Consultation Letters	June 2005
- Conduct Scoping Process	
- Public Meeting	June 2005
- Comments Due	July 2005
- Draft EIS (DEIS)	May 2006
- DEIS/Permit Application	May 2006
- USACE/MDE Public Notice	May 2006
- USACE/MDE Joint Hearing	June 2006
- DEIS Supplement	June 2006

Table I. Site characteristics

Site Characteristic	Quantity
Dredged Material Placement Capacity	11.8 mcm (15.4 mcy)
Anticipated Annual Usage	0.4 – 0.8 mcm (0.5 – 1.0 mcy)
Footprint Area	57 hectares (141 acres)
Affected Tidal Open Water	53 hectares (130 acres)
Affected Upland Area	4 hectares (10 acres)
Affected Wetland Area	0.4 hectares (1 acre)
Site Life	19 years

- USACE/MDE Joint Hearing July 2006
- Circulate Final EIS (FEIS) May 2007
- Record of Decision August 2007
- Permit Decision August 2007

The permitting schedule for the proposed project (Figure 6) was driven by the MPA’s need to meet an annual dredged material placement capacity shortfall after the closure of the Hart-Miller Island DMCF, which closed December 31, 2009. The identification of this capacity shortfall presented an urgent need to study, select, and construct a new placement option capable of accepting an annual volume of 1.5 mcy of material. The Masonville DMCF was identified as the only viable placement option that could be brought online in time to assist in meeting the dredged material placement capacity need. The need for a placement site, beginning in 2010, required permitting to be completed to allow sufficient time to construct the DMCF before the placement capacity shortfall began.

SCOPING AND CONSULTATION

A public scoping meeting was scheduled following the publication of the NOI for the Masonville Project. This meeting was held, in accordance with NEPA, to obtain public input on the proposed project prior to the selection of alternatives for analysis. A public meeting was held where concerned citizens, port stakeholders, and other concerned entities were invited to learn about the project and provide input.

Concurrently with the public scoping process, informal coordination letters were sent to state and federal resource agencies to obtain input on the proposed project. These letters were sent to FWS, NMFS, MDNR, and SHPO. The letters sent to FWS, NMFS, and MDNR requested information on the presence of

state and federally listed threatened and endangered species present within the vicinity of the proposed Masonville DMCF. Prior to submitting a coordination letter to Maryland’s SHPO, a submerged cultural resources survey was completed. The results of this survey were submitted to the SHPO along with a request for concurrence with the determination that the proposed project would not affect cultural resources.

Comments made during the public scoping meeting addressed both the proposed DMCF project and the proposed mitigation package (to be described in detail in the following sections). Prior to public scoping, MPA had identified the Masonville DMCF as a placement site and had identified the adjacent Masonville Cove as a site for a potential restoration project as mitigation to offset the potential impacts of the proposed project. The placement site and mitigation had been identified as part of an extensive screening and planning process (detailed in Hamons and Wilson 2010) that integrated the public through an

organization called the Harbor Team, which is composed of Port of Baltimore stakeholders, private citizens, local officials and agencies.

Many of the local community members spoke out in support of the project because of their strong support of the restoration of Masonville Cove and plans to develop a community environmental education site adjacent to the Cove. Multiple comments were received noting the economic importance of the Port of Baltimore and speaking out in support of MPA’s efforts to maintain safe passage through the Harbor. Finally, there was a comment noting the overall condition within the Patapsco River and the need to continue restoration of the River, as well as concerns about the changes to water circulation in the Harbor as a result of the proposed project. None of these comments raised concerns that would cause the MPA’s preferred alternative to change substantially.

Prior to the release of the DEIS responses were obtained from FWS, NMFS, MDNR, and SHPO. NMFS initially responded to the request by identifying the following federally listed species as those that may occur within the vicinity of the proposed project: shortnose sturgeon (*Acipenser brevirostrum*), loggerhead sea turtle (*Caretta caretta*), leatherback sea turtle (*Dermochelys coriacea*), Kemp’s ridley sea turtle (*Lepidochelys kempii*), and green sea turtle (*Chelonia mydas*). NMFS further noted that a “Species of Special Concern” also had the potential to occur within the project area, Atlantic sturgeon (*Acipenser oxyrinchus*

Table II. Major permits and approvals required for the Masonville DMCF

Permit or Approval	Agency
Tidal Wetland License	Board of Public Works
Nontidal Wetland Permit	MDE
Water Quality Certification	MDE
Coastal Zone Consistency Determination	MDE
Section 10/404 Permit	USACE
Federal Conformity Determination	USACE
National Environmental Policy Act Compliance (EIS)	USACE
Section 7 Consultation	NMFS, FWS, MDNR
Magnuson Stevens Fishery Conservation and Management Act Compliance	NMFS
Section 106 Consultation	SHPO
Critical Area Approval	Critical Area Commission
National Pollutant Discharge Elimination System (NPDES) Permit	MDE

oxyrinchus). While this was a species of concern for NMFS, there was no regulatory authority to require any mitigation measures to protect this species.

FWS's response noted the presence of the federally listed bald eagle (*Haliaeetus leucocephalus*) within a quarter of a mile of the project footprint within adjacent Masonville Cove. No other federally listed species within the jurisdiction of the FWS were documented within the vicinity of the proposed project.

MDNR identified two state listed bird species of concern that were not documented within the project area. However, the range for these species included the project area. If the habitat for these species were present within the project area, then further measures to protect these species, such as time-of-year restrictions would be recommended.

These species were: hooded merganser (*Lophodytes cucullatus*) and common moorhen (*Gallinula chloropus*). MDNR also noted in their letter that the area adjacent to the proposed DMCF is a known historic waterfowl concentration area.

SHPO responded and issued their concurrence with the findings of the cultural resources survey completed by MPA's contractors. No further coordination on cultural resources was required.

Coordination was also completed with NMFS related to essential fish habitat (EFH), which is designated under the Magnuson Stevens Fishery Management Act (MSFMA). The MSFMA (16 USC 1801 et seq. Public Law 104-208) establishes the Secretary of Commerce and Fishery Management Council authority and responsibilities for the protection of EFH. The Act specifies that each federal agency shall consult with the Secretary with respect to any action authorized, funded, or undertaken, or proposed to be authorized, funded, or undertaken by such agency that may adversely affect any EFH identified under this act. EFH is defined as "those waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity." MPA's coordination with NMFS regional office identified two EFH species likely to occur within the project area: adult and



Figure 3. Project footprint indicating disposal area and wetlands.

juvenile summer flounder (*Paralichthys dentatus*) and adult and juvenile bluefish (*Pomatomus saltatrix*).

DRAFT ENVIRONMENTAL IMPACT STATEMENT

After identifying all resource concerns, the MPA and its contractors, hereafter referred to as the Masonville Project Delivery Team (PDT) began preparation of the DEIS in consultation with the USACE. The USACE was determined to be the lead federal agency for the project and the EIS was completed to meet the USACE regulatory requirement for an EIS under the NEPA. As previously stated, the EIS was required because the project required a federal permit and had the potential for significant adverse impacts to aquatic resources. Preparation of the DEIS identified resources within the project vicinity of particular concern. Some of these concerns were identified by other regulatory agencies through the scoping and consultation processes, such as federally listed species; others were identified by analyzing site-specific data.

The greatest area of concern identified during coordination with the JE, was the loss of 53 hectares (130 acres) of open water habitat. This area would result in the loss of a significant amount of aquatic habitat that had the potential to support species of concern.

This loss of open water was identified in the DEIS as the most substantial impact of the project, and was described in detail, including a description of effects to resources that are dependent upon open water habitat. These include, federally listed aquatic species, such as shortnose sturgeon and sea turtles, and essential fish habitat (EFH) species, such as summer flounder and bluefish. Coordination with NMFS had identified a need to complete a biological assessment (BA) for shortnose sturgeon and sea turtles, which was completed concurrently with the DEIS to streamline the review process. This allowed for a single review and single submission of both the DEIS and the BA by NMFS, FWS, and DNR. MPA also completed an EFH assessment, in accordance with the guidance received from the NMFS regional office.

The EFH assessment was included as an attachment to the DEIS and was summarized within the EIS. As with the BA, this allowed NMFS to review both documents concurrently.

The Masonville PDT first prepared a preliminary DEIS for internal review and review by the USACE to verify the document was sufficient for use as the USACE EIS as part of NEPA compliance. The document was initially reviewed by technical staff at the USACE and key contributors within the Masonville PDT.

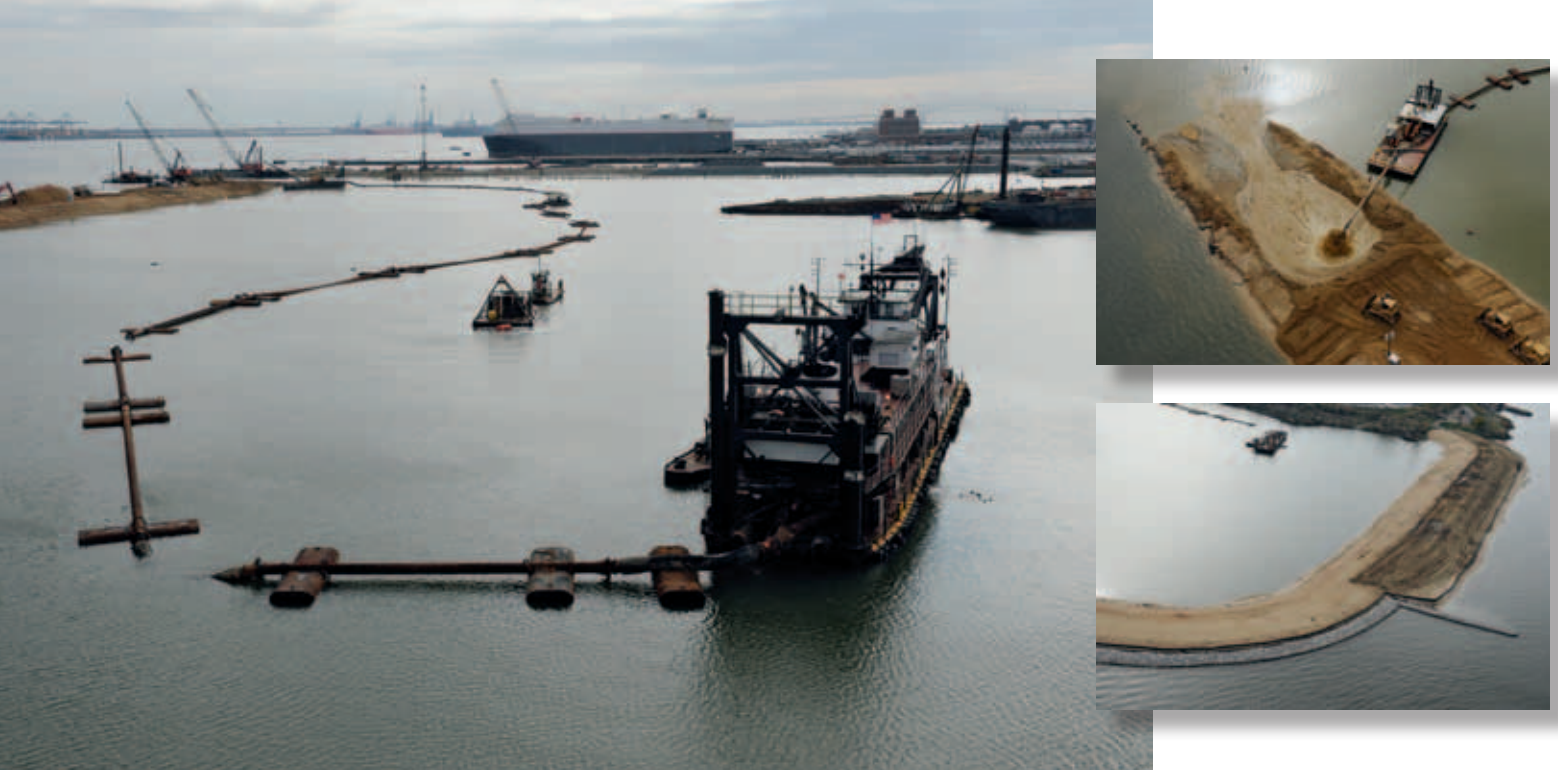


Figure 4. Overview of the armored rock dike under construction. Inserts: close ups of the direct placement of onsite-borrow material into the dike section.

All comments were consolidated and integrated into the document, prior to formal submission to the USACE for supervisor and legal review. At this time, a meeting between the USACE and MPA occurred and the USACE determined that it would be prudent to incorporate MDE as an informal cooperating agency on the EIS, because of its jurisdiction over the fill of open water and wetlands.

Both agencies were considering the potentially significant impacts of the proposed project relative to the permit request and could most efficiently work together by partnering in the development of the EIS and determination of project impacts and required mitigation.

Concurrently with the development of the DEIS with USACE and MDE, MPA coordinated with the JE regarding potential mitigation requirements associated with the MPA's preferred project alternative. This mitigation package, discussed further in the following subsections, was incorporated into the mitigation and impacts sections of the DEIS, to comprehensively document the project impacts and mitigation. MDE and USACE both had regulatory authority to require the MPA to offset document impacts associated with the fill of wetlands and open water.

Additional mitigation was required for compliance with Maryland's Critical Area Act, which is discussed further below.

After integrating MDE and USACE's predicted mitigation needs into the DEIS, MPA provided a revised preliminary DEIS to both agencies for their review and comment. The initial review process for the DEIS was time consuming, with many rounds of review and comment. During this review and comment process, MPA was cognizant of the need to expedite the internal review of the DEIS, so that the overall project schedule could be met. After addressing all MDE and USACE comments on the preliminary DEIS, MPA, USACE, and MDE implemented a plan to allow review of the preliminary DEIS by other state and federal agencies prior to issuance of the DEIS to the public. MPA desired to proactively address agency concerns early in the process, by identifying agency concerns upfront, which would allow MPA additional time to address and respond those concerns. Any minor comments received as part of the preliminary DEIS review were addressed prior to the issuance of the DEIS. More substantive comments that could not be resolved prior to issuance of the DEIS, were resolved during the public comment period. By having agency comments prior to the issuance of the DEIS, MPA gained the public comment period as time to work on a resolution to those comments rather than awaiting comments.

The DEIS was issued by the USACE in May 2006, which initiated the public comment period for the project.

PUBLIC COMMENT PERIOD AND HEARINGS

MPA worked with MDE and USACE to schedule public hearings on the proposed project in advance of the issuance of the DEIS. These public hearings were not required, but could be requested by the public. If a member of the public requests a public hearing of MDE or USACE during the public comment period, then a hearing must be held. To avoid potential delays associated with scheduling a hearing that would occur after the closure of the comment period, a public hearing was planned to occur during the public comment period. If the hearings were not planned in advance, then the schedule could have been delayed for weeks or months as a result of the need for additional public hearings after the comment period closed. The public meeting was held in the community adjacent to the Masonville DMCF project site during evening hours to be convenient to area residents.

Public comments on the DEIS were noted by the USACE, MDE, and MPA and were addressed, as appropriate. Comments were made in support of the Masonville DMCF project and in support of the Masonville Cove restoration component. There were comments from area residents requesting changes, modifications, or additions to the proposed compensatory mitigation package and some requests for additional detail about the potential impacts of the DMCF to specific

resources, such as changes to Patapsco River hydrology and hydrodynamics. Most of the comments received were from private citizens and community organizations. Other commenters included state and federal agencies issuing their formal comments on the project, a representative from a private marine terminal, and local non-profit organizations, such as the Living Classrooms Foundation and the National Aquarium in Baltimore.

All comments were recorded and integrated into a comment and response table, for integration in the FEIS.

CHANGES TO THE PROJECT DESIGN AFTER FINALIZING THE DEIS

During the public comment period for the DEIS, a new alternative to the existing MPA preferred alternative was identified by MPA. The new alternative linked the Masonville DMCF project to the Seagirt-Dundalk Marine Terminal Deepening and Widening project (Seagirt Project). The Seagirt project was expected to generate approximately 380,000 cubic meters (cm) (500,000 cubic yards (cy)) of dredged material consisting of sand and gravel and potentially suitable for construction of the Masonville DMCF. The linking of the projects eliminated the need to purchase construction material for the DMCF and the need to place that material from the new work project at Seagirt-Dundalk Marine Terminals in a confined placement facility. The linking of the projects provided

a significant cost savings to MPA and also produced environmental benefits associated with regional air quality by reducing the transport and offloading emissions associated with the Seagirt project and by reducing the need to transport clean construction material for Masonville from an upland location.

This new alternative changed the impacts and alternatives identified in the DEIS and resulted in the need to either reissue the DEIS or issue a supplement to the DEIS. To lose as little time as possible from the project schedule, while still gaining the cost savings associated with the new Seagirt alternative, MPA prepared a supplement to the DEIS (supplement) that described the new alternative and its potential impacts. MPA timed the release of the supplement to be the same date as the public hearing for the DEIS. USACE, MDE, and MPA also determined that it would be prudent to schedule a public hearing related to the new alternative during the required public comment period for the supplement. This required MPA, USACE, and MDE to have the supplement prepared more than one week prior to the public meeting, so that the notice of availability for the supplement could be published prior to the hearing. The USACE and MPA arrived at the public hearing with copies of the supplement, information on the upcoming public hearing, and posters and informational material describing the new alternative. All participants at the DEIS hearing were invited to attend the public hearing on the supplement.

Only four individuals spoke at the second public hearing. These individuals were residents of the surrounding communities and included representatives of the community groups. These individuals raised concerns about crime and safety at the site, oversight of the facility, viewsheds in the project vicinity, and public access of the Masonville Cove restoration area. No comments were made opposing the new project design and the public comment period officially closed at the end of the second public hearing.

AIR IMPACTS – FEDERAL CONFORMITY DETERMINATION

The U.S. Environmental Protection Agency (USEPA) has set National Ambient Air Quality Standards (NAAQS) for six pollutants: ozone, carbon monoxide, nitrogen dioxide, sulfur dioxide, particulate matter, and lead. Any area where a pollutant does not meet the air quality standards set by the USEPA is considered to be in non-attainment.

Non-attainment categories for ozone range from sub marginal to extreme. It was determined the proposed project was in a region in moderate non-attainment for ozone standard and in non-attainment particulate matter 2.5 (USEPA 2010). The entire State of Maryland is part of the Northeast Ozone Transport Region (OTR), which was established in the 1990 Clean Air Act Amendments in recognition of the long-standing ozone non-attainment problems in the northeast.



Figure 5. Construction of the cofferdam portion of the Masonville Dredged Material Containment Facility.

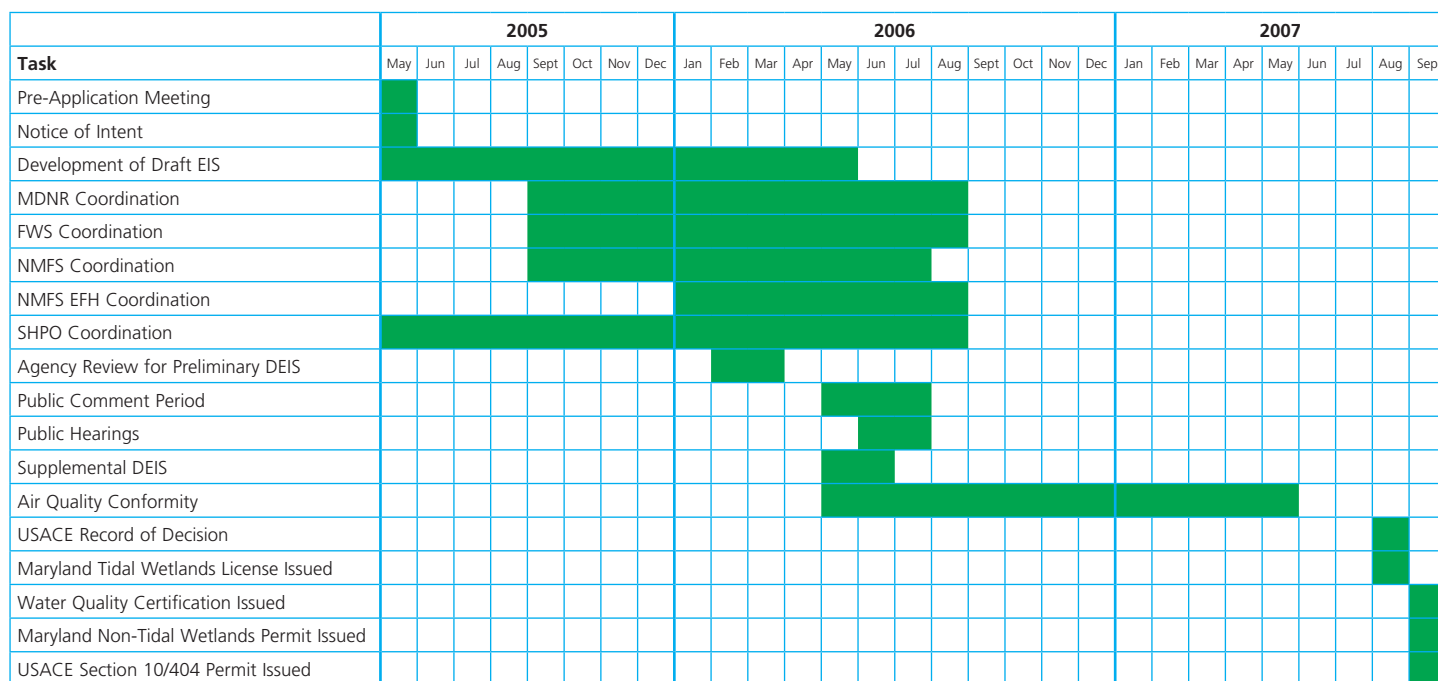


Figure 6. Construction permitting and compliance.

Screening-level calculations of project emissions were completed and compared to *de minimis* thresholds as identified under the authority of the federal conformity provisions of the Clean Air Act. If the total of direct and indirect emissions from a proposed federal action in a non-attainment area are below the *de minimis* thresholds specified in 40 CFR 93.153(b)(1) and the total emissions are not “regionally significant,” comprising 10 percent or more of the region’s total emissions of that pollutant, as specified in 40 CFR 93.153(i), the Federal Action is exempt from the requirements of the general conformity provision. Because these screening calculations indicated that the project would exceed the *de minimis* thresholds, a general conformity analysis was completed for the project. The general conformity provision requires mitigation to be completed for all project emissions of a pollutant, if the project exceeds the *de minimis* thresholds for that pollutant or precursor. The Masonville DMCF project emissions of NO_x exceeded the thresholds and required mitigation to offset those emissions. MPA and its contractors worked closely with MDE and USEPA to identify credits to offset the impacts of the proposed project. NO_x credits were leased from another project that would not be releasing its full allocation of emissions. This was a unique,

one-time arrangement with MDE and USEPA. MDE and USEPA stated that in future, MPA would be required to develop emissions offsets for its air quality impacts.

The federal conformity analysis was prepared and extensive negotiations took place between MDE, USEPA, and the USACE regarding the calculations of impacts and the measures identified to offset those impacts. Because these determinations are made so infrequently, it was unclear at first which federal agency was responsible for issuing the required federal conformity determination. Though initially it was thought that this determination would be made by the USEPA, it was eventually decided that the lead federal agency for the project (USACE) was responsible for issuing the determination.

MPA prepared the conformity analysis and worked with MDE, USEPA, and USACE to gain concurrence from all three agencies for the project. USACE used MPA’s conformity analysis to prepare a draft conformity determination. Because the MPA and USACE did not want to delay the issuance of the DEIS, it was determined that the federal conformity determination would be finalized during the public comment period and would be incorporated, as draft, into the upcoming final environmental

impact statement (FEIS). This ensured that the project schedule was not delayed as a result of the federal conformity process.

WATER AND WETLAND IMPACTS – MITIGATION SUFFICIENCY

Concurrent with the development of the DEIS, SEIS, and preliminary phases of the FEIS, MPA continued to meet with the JE to develop a sufficient compensatory mitigation package to offset the impacts of the proposed project. USACE required MPA to provide a detailed alternatives analysis of all efforts to avoid and minimize impacts in the DEIS and supplement. After impacts were avoided and minimized to the extent possible, the overall project impacts were considered. MPA solicited recommendations from state and federal resource agencies, Baltimore City, and other participants on the JE. The mitigation projects focused on the restoration of the adjacent Masonville Cove, but also incorporated offsite and out-of-kind mitigation projects. Because of many out-of-kind or unusual mitigation components incorporated into the project, the JE and USACE required a mechanism to determine the overall sufficiency of the mitigation package to offset the total project impacts.

In order to demonstrate that the proposed mitigation options would replace the open-

water habitat functions lost by the development of the proposed project, a project-specific Habitat Condition Analysis (HCA) was developed based on the National Oceanic and Atmospheric Administration (NOAA) Habitat Equivalency Analysis (HEA) approach. The HEA approach assesses the values and functions lost by environmental perturbations and gained through mitigative measures.

The project-specific HCA involved a multi-metric evaluation of the loss of functions as a result of project impacts and functions gained by implementation of the mitigation package. The condition factors derived for the analysis (Table III) came from commonly used, regionally appropriate and broadly accepted measures of environmental quality, such as sediment quality criteria and the Chesapeake Bay Benthic Index of Biotic Integrity. These factors were reviewed by the regional Bay Enhancement Working Group and the JE. A consensus building approach was used to gain support for the HCA process from regional experts and project stakeholders.

As part of the evaluation, initial and final condition factors were assigned for the project area and the proposed mitigation options.

The difference between the initial and final conditions of the project was scaled by the acreage affected to determine the required mitigation to offset project impacts. The same calculation was then completed for each of the components of the mitigation package based on pre- and post-mitigation activities. The gain in habitat functions as a result of mitigation components was balanced against the calculated loss (Table IV).

Community enhancements and other environmental benefits associated with the proposed project were also evaluated using the HCA but were not included in the balance sheet for mitigation of aquatic impacts.

The HCA estimated that the mitigation package would generate approximately 15 mitigation credits in excess of those needed to compensate for the loss of open water and wetlands. The analysis and results were reviewed by the BEWG and JE and demonstrated that the lost habitat functions would be replaced within the watershed by the proposed mitigation package. The HCA was then incorporated into the FEIS to demonstrate the sufficiency of the mitigation package.

CONCLUSION OF CONSULTATIONS

During the public comment period, comments were received from MHT, MDNR, NMFS, and the U.S. Department of the Interior (on behalf of FWS). MHT's comment resulted in the conclusion of Section 106 with no additional comments beyond the determination that the proposed project would not adversely affect historic resources. MDNR noted that it would not request TOY restrictions for the bald eagle, but that it would request TOY restrictions to protect spawning anadromous fish. No other substantial comments were made about the protection of habitat or species.

NMFS responded with a letter stating its concurrence with the determination that the Masonville DMCF project was unlikely to adversely affect listed sea turtles or shortnose sturgeon, but requested additional consultation on large whale species when the end use of the DMCF site is developed. No further consultation was required for the construction and operation of the Masonville DMCF. DOI responded on half of FWS and had no further comments specific to listed species or habitat under the jurisdiction of FWS. No further consultation was required with FWS. The Chesapeake Bay Field Office of

Table III. Condition factors used in the HCA

Condition	POOR (<i>Eutrophic backwater</i>)				IDEAL (<i>Barren Island</i>)
Indicator or Feature	1	2	3	4	5
Chesapeake Bay Index of Biological Integrity (B-IBI)	Servery degraded (poor abundance and diversity)	Degraded	Fair (meets restoration goals)	Good	Excellent (good diversity; stable community)
Fish (community)	Little or no fish	Poor diversity; abundance in one species	Moderate diversity and abundance	Good diversity; abundances across several species	High diversity and good abundances in alle seasons
Fish (population)	Populations not sustainable; on verge of extirpation	Population marginally sustainable; poor recruitment relative to available habitat	Population struggling with wide variations in recruitment success	Population strong; recruitment successful in most years	Population fully sustainable and at full carrying capacity for available habitat
Contaminants	Many exceed effects range median (ERM); some more than two times	Several > ERM; many > probable effects level (PEL) or ERM-Q	Some exceed PEL of ERM-Q; many greater than TEL	Several greater than threshold effects level (TEL); few other exceedances	Few or none > TEL
Aquatic Habitat (estuarine)	No cover; bulkheaded; poor water quality and forage	Little cover; low dissolved oxygen (DO) seasonnally; degraded forage	Moderate cover; some submerged aquatic vegetation (SAV); DO usually supportive; adequate forage	Good cover; soft shorelines; SAV present; good DO; stable forage	Diverse cover; stable SAV; good DO; abundant forage in alle seasons
Aquatic Habitat (stream)	Highly entrenched; very low width to depth ratio; low sinuosity; riffles highly embedded; poor instream cover and benthic habitat				No entrenchment, width to depth ratio very high; high sinuosity; little riffle embeddedness; excellent instream cover and benthic habitat
Wetland and Riparian vegetation	Dominated by pioeer or invasive species; lots of human debris				Dominated by stable balanced communities of native species; little trash of debris

Note: To the extent possible, these definitions follow standard ecological measures for sediment quality, water quality, B-IBI, etc. The general approach is a multi-metric scoring technique following the IBI work of Karr and others.

The benthic, stream and estuarine habitat and fisheries community definitions are derived from various published multi-metric approaches.

Source: Boraczek et al. 2008

Table IV. Masonville DMCF HCA balance sheet

Description	Hectares or Hectare Equivalents	Acres or Acre Equivalents	Initial Condition (score 1-5)	Final Condition (score 1-5)	(Final condition - initial condition) x hectares	Mitigation Balance Credit	Notes or Existing Condition
Project Impact							
Affected Area	53.0	131	1.7	0	-90	-90	Initial conditions of 1.7 x 53 hectares (131 acres) (52.6 hectare (130 acre open water) and 0.4 hectare (1 acre) vegetated tidal and notidal wetlands)
Mitigation Options: Aquatic Projects							
Wetland Enhancement	0.8	2	2	3.5	1	-89	Current wetlands dominated by <i>Phragmites</i> sp.
Wetland Creation	1.3	3.1	2	4	3	-86	Shallow areas with little to no vegetation
Non-Tidal Wetland	4.0	10	1	4	12	-74	Non-tidal area not currently a wetland. Devoid of plants and/or dominated by pioneer species
Reef and Fish Habitat (subtotal)	38.8	95.8					Fish community current conditions: outside cove are 2 (poor diversity with abundance in single species); Current conditions inside cove (shoreline) are a 4 (good diversity diversity with abundance across several species).
Reef Balls and Fish Habitat (Inner Cove)	12.5	31	3.5	4	6	-68	Some instream cover (artificial), natural shoreline and SAV present
Reef Balls and Fish Habitat (Outer Cove)	17.0	42	2	3	17	-51	Little cover and poor substrates and benthic conditions
Shallow Water Substrate Improvement	9.2	22.8	2.5	3	5	-46	Benthic conditions poor in some shallower parts of Cove; much debris
Fringe Wetland Creation (along dike)	0.8	2	2	4	2	-45	Current beaches small with little natural cover and poor substrates
Eel Passage (Bloede/Simpkins Dam, Daniels Dam, Sawmill Creek, Deep Run)	2.3	5.6	2	4	5	-40	The populations of herring/shad and eels in the Patapsco drainage are at record low levels and sustainability is questionable
Shad and Herring Restoration	2.4	6	2	4	5	-35	
3 Trash Interceptors	8.1	20	1.5	3	12	-23	Abundant trash which is a large problem for habitat quality
Biddison Run Reach O (926 meters (3,039 linear feet) of stream)	2.5	6.1	1.5	4	6	-17	Poor channel stability and instream habitat
Biddison Run Reach P (1,737 meters (5,700 linear feet) of stream)	5.7	14	2	4	11	-6	Poor channel stability and moderate instream habitat
2 Trash Interceptors	5.4	13.3	1.5	2.5	5	0	Abundant trash which is a large problem for habitat quality
Western Run (6 reaches, totaling 1,450 meters (4,758 linear feet) of stream)	6.2	15.2	1.5	4	15	15	On average, poor channel stability and poor to moderate instream habitat

Acreage for items having 'project' units are calculated by dividing the item by \$30,400 (per hectare cost for MD Wetland resoration; per acre is \$75,000). Totals indicated in Green.

Source: Boraczek et al. 2008

NMFS responded with comments related to the EFH assessment and concluded that the Masonville DMCF project "should not adversely affect managed species and their EFH". No further coordination related to the MSFMA was required.

PREPARATION OF THE FEIS

Completion of the FEIS (USACE 2007) first required MPA and its contractors to integrate the DEIS and the supplement. This integration was completed first to ensure that comments on all of the alternatives and resources were consistent throughout the FEIS. The new project alternative integrating dredged material with construction grade properties from the nearby Seagirt Marine Terminal project was incorporated into the FEIS. All sections of the

impacts chapter of the document were revised to include the new alternative. The new alternative changed the preferred alternative for the project to the alternative that incorporated dredged material from the Seagirt project. After the new alternative was fully integrated into the document, the project-specific studies and consultations completed after the issuance of the DEIS were integrated into the FEIS. These included the federal conformity analysis, the HCA, and the concurrences obtained from resource agencies. The mitigation chapter of the FEIS was expanded to add the HCA and justification of the sufficiency of the compensatory mitigation package.

All comments received during the public comment period were also compiled and

summarized in a comment response table. These comments and the accompanying table were integrated into a new appendix for the FEIS. After summarizing all of the comments into a comment response table, edits were incorporated to the relevant sections of the EIS, which were then cross-referenced in the comment response table. This table was completed to demonstrate due diligence with regard to addressing public comments.

The FEIS was revised and updated and submitted to the USACE for review, including legal sufficiency review to ensure that regulatory requirements were satisfied.

After several tiers of review by USACE, the FEIS was adopted and was publicly issued.

MDE AND USACE PERMIT PREPARATION AND ISSUANCE

Prior to issuance of state and federal permits, two key regulatory documents were required. The MDE Water Quality Certificate required the preparation of a “report and recommendations” for the BPW prior to their issuance of a tidal wetland license. The USACE permit process required the preparation of a record of decision (ROD) that identified its preferred alternative with a decision to either issue or deny the permit. The ROD also incorporated the final conformity determination.

Under normal circumstances, the MDE report and recommendations are prepared internally by MDE staff; however, for this project, MPA provided staff support to MDE to initiate the preparation of this document. MPA contractors drafted documents for MDE to revise and finalize as appropriate to the agency’s requirements. MPA further expedited MDE’s generation of the report and recommendations by making one of its contractors available to MDE to modify and revise the permit application figures for use in the report and recommendations. This contractor was available onsite as the document was finalized so that there was no delay between modification requests and delivery of the figures. It should be noted, that MDE was solely responsible for the generation of the recommendation text and that MPA contractors did not provide input to MDE’s internal decision process.

The MDE permit process also included the preparation of a state water quality certification which was required for the USACE permit, and the issuance of a nontidal wetland permit. No report and recommendations or equivalent document is required for the nontidal permitting process. MDE also integrates the coastal zone consistency process into the tidal permit process. In Maryland, the coastal zone consistency determination is typically incorporated as a condition of both the tidal wetlands license and the water quality certification.

The USACE ROD was prepared internally by USACE with support from MPA contractors. MPA contractors assisted USACE staff by summarizing conclusions and other content from the FEIS and providing a succinct summary of the project actions. The decision to issue the permit was made solely by USACE.

With both USACE and MDE, MPA provided contractor support to expedite the preparation of the ROD and report and recommendations, respectively. This contractor support kept the project moving steadily forward through the regulatory review process by allowing regulators to focus on the analysis and decision/recommendations rather than on the summarization of facts and the project description. MPA further coordinated with USACE, MDE, and BPW to keep both permit schedules synchronized so that the Maryland tidal wetlands license and the USACE permit were issued simultaneously. MPA first assisted MDE with the generation of its report and recommendations so that it would meet the deadline for review by the BPW prior to one of its regularly scheduled meetings. MPA then shifted its focus to the ROD so that it was prepared for release concurrent with the BPW decision. The coordinated actions resulted in the issuance of the tidal wetlands license on the same day as the BPW decision, which reduced processing time by several days.

While both MDE and USACE issued permits for the proposed project, both agencies, as well as other participants in the JE, indicated that this would most likely be the last in-water placement site approved for MPA. The agencies stated that all future placement sites would need to be upland. MDE, USACE, and the JE encouraged the further development of innovative reuses of dredged material as part of MPA’s innovative reuse committee.

CRITICAL AREA APPROVAL

The Chesapeake Bay Critical Area is defined as all tidal waters and all land within 300 m (1,000 ft) of tidal waters and wetlands (COMAR 27.01.01.01.01). The critical area buffer is the first 30 m (100 ft) landward from the mean high water (MHW) line of tidal waters, tributary streams, and tidal wetlands (COMAR 27.01.09.01.01).

The Masonville DMCF project is entirely within the Chesapeake Bay Critical Area. The project area is owned by the State of Maryland and falls under the jurisdiction of the State Critical Area Commission rather than the Baltimore City department normally responsible for enforcing Critical Areas Regulations within the boundaries of the City. The site is also within an Intensely Developed Area (IDA)

of the critical area. IDAs are areas of concentrated development where little natural habitat exists. As required by Maryland law, new development and redevelopment of an IDA must be accompanied by techniques to decrease water quality impacts due to storm-water runoff, by greater than 10 percent. Construction of a containment site or beneficial use project involved shoreline impacts and required review and approval by the Critical Area Commission.

MPA filed its request to develop the Critical Area with the Commission and followed up with detailed information on the project. MPA was then required to present the project to the Commission. This process was completed concurrently with the joint permit application for MDE and USACE permits. MPA worked with the Critical Area Commission to develop mitigation measures to offset the potential impacts to the Critical Area Buffer and redevelopment of the land portion of the Critical Area. Mitigation measures to offset the impacts to the Critical Area Buffer included planting areas of the DMCF containment structure, where feasible, and plantings within Masonville Cove. Redevelopment of the land portion of the Critical Area was mitigated through MPA’s Institutional Plan for reducing nutrient loads within (or from) the Critical Area.

OPERATIONAL PERMITTING

The Clean Water Act requires states to develop lists of its impaired waters. Impaired waters are those waters that are too polluted or degraded to meet state water quality standards. The Act requires that states establish priority rankings for waters on the lists and develop total maximum daily loads (TMDLs) for these waters. The TMDL is a calculation of the maximum amount of a pollutant that a waterbody can receive and still safely meet water quality standards. The Patapsco River is impaired for dissolved oxygen (caused by nitrogen and phosphorous), metals, PCBs, trash, bacteria, total suspended solids, and pesticides (MDE 2010).

The operation of the Masonville DMCF requires a national pollutant discharge elimination system (NPDES) permit that regulates point source discharges to surface waters. MPA began the NPDES permitting process by meeting with MDE, which administers the

NPDES program, to identify issues and concerns associated with discharges from the Masonville DMCF. The first meeting was held soon after the construction permits were issued. These pre-application meetings included the submission of several draft permit applications to MDE for review prior to the formal application to MDE in August 2008.

MPA has another DMCF within the Harbor, Cox Creek. This facility was assigned load allocations for nitrogen and phosphorus in the TMDL modeling for discharges. Discussions were held with MDE regarding use of the Cox Creek DMCF load allocation under a “bubble permit” that would cover multiple DMCFs within Baltimore Harbor. MDE requested additional information on the potential for localized impacts associated with a shift of a portion of the Cox Creek allocation to the Masonville facility. A study was funded by MPA and completed by the Virginia Institute of Marine Science (VIMS) to model potential water quality impacts to dissolved oxygen that could potentially be caused by a discharge from the Masonville facility. Initial modeling utilized the existing Baltimore Harbor model used for that TMDL. Future scenario runs of the model will be updated to include the most recent revisions to the USEPA Chesapeake Bay model. Initial modeling indicated no localized impacts as a result of the Masonville DMCF’s operation. MPA and its contractors have also calculated acute and chronic mixing zones for selected toxic pollutants and provided that information to MDE for the use in developing the draft permit for the project.

An individual discharge permit will be established for the Masonville DMCF. A public notice related to the Masonville discharge permit was released by MDE in May 2010 and a public hearing was held in June 2010. MDE is currently addressing the public comments provided during the public comment period. The permit issuance is anticipated in Fall 2010.

After the release of the draft permit, there will be a public comment period, during which the public can provide comments and request a public meeting or hearing. MPA, in keeping with its policy of transparency in the development of DMCFs, is planning to request the scheduling of a public meeting in anticipation of public interest in this project. Scheduling of

public hearings for draft permits at the time of their issuance can shorten the timeframe for permit approval rather than waiting for those requests during the formal comment

period. The issuance of the NPDES permit is the last step required to support the operation of the DMCF and the permit award is anticipated in late 2010.

CONCLUSIONS

Despite the many regulatory challenges, the approvals and permits necessary to begin construction were obtained within 28 months of public scoping because of the Port’s collaborative decision-making process. The ability to move multiple project and permitting components forward simultaneously provided evidence of the benefit for proactive outreach efforts. MPA took advantage of every opportunity available to streamline the permitting process so that all necessary permits and approvals were obtained in the shortest period of time. Time savings were realized by measures such as:

- scheduling public hearings and meetings during the public comment period,
- interacting early and often with the JE and BEWEG,
- providing agencies with the opportunity to comment on the project as a preliminary DEIS rather than awaiting the public comment period, and
- using the public comment period as an opportunity to concurrently complete additional studies and information requests associated with the preliminary DEIS.

It is noteworthy that the MPA managed to obtain permits for the project in just over two

years despite concerns with open water fill and multiple resources of particular concern, such as listed species and EFH.

The Masonville DMCF had a unique permitting and approval process that integrated many agencies and stakeholders in the project development. Statements by the agencies that no additional in-water placement sites would be allowed have shifted future development considerations to upland sites around the Harbor, which makes the approval process for future sites different from the process used for the Masonville DMCF. MPA developed a valuable understanding of the NEPA process for large, complex projects. In particular, MPA gained an understanding of the cooperating agency process and will use its knowledge to integrate additional partners in future efforts.

MPA also developed a valuable project specific HCA process, which will also be incorporated into future projects to determine the sufficiency of compensatory mitigation packages. If additional DMCF facilities are developed with the potential for substantial impacts, the HCA process will allow MPA to simultaneously present potential mitigation options and demonstrate their sufficiency.

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