

**Dredged Material Management Program
Bay Enhancement Working Group
Meeting Summary
March 29, 2011
10:00 AM, Maryland Environmental Service**

ATTENDEES:

ARCADIS: Gwen Gibson

Ducks Unlimited: Kurt Dyroff

EA Engineering, Science, and Technology (EA): Peggy Derrick, Kaitlin McCormick

Ecologix Engineering, Inc. (EcoLogix): Chris Correale

Environmental Protection Agency: Sherilyn Morgan, Renee Searfoss

Gahagan & Bryant Associates (GBA): Carter Stinchcomb

Maryland Board of Public Works: Doldon Moore

Maryland Department of the Environment (MDE): Matt Rowe, Robert Rushlow, Robert Cuthbertson, Elder Ghigiarelli

Maryland Department of Natural Resources (DNR): Roland Limpert

Maryland Environmental Service (MES): Lauren Franke, James Jett, Melissa Slatnick

Maryland Geological Survey (MGS): Jeff Halka

Maryland Port Administration (MPA): Steve Storms

Moffatt & Nichol (MN): Pete Kotulak, Kristen Piggott

Phoenix Engineering, Inc. (Phoenix): George Harman

University of Maryland, CES (UMD): Court Stevenson

Upper Bay Charter Captains Association: Ken Jeffries

U.S. Army Corp of Engineers, Philadelphia District (USACE): Timothy Kelly

U.S. Army Corps of Engineers, Baltimore District (USACE): Robert Blama, Mark Mendelsohn, Joseph DaVia, Jon Romeo

U.S. Fish and Wildlife Service (USFWS): Bob Zepp

Action Items:

- Ms. Franke will update the parameter descriptions document to indicate that the intent for the Tidal Wetlands parameter is to evaluate potential impacts to vegetated tidal wetlands.
- Ms. Franke will review the draft scoring for the other options for consistency based on the BEWG progress and input thus far.
- Ms. Franke will also be sending out a revised draft scoring matrix for review and comment by BEWG members.

Welcome and Introductions

Lauren Franke, MES

Meeting Goals

Ms. Franke stated that the goals of today's meeting are:

- Mr. Stevenson from the University of Maryland Center for Environmental Science will discuss the Open Water Placement Options regarding environmental considerations;
- Mr. Kotulak will aid in the discussion of Open Water Placement Options regarding the technical considerations for Confined Aquatic Disposal (CAD);
- Begin scoring of the current list of Harbor Options.

Presentations on Open Water Placement Options

Environmental Considerations

Court Stevenson, UMCES

Mr. Stevenson gave an overview of the most significant environmental considerations relative to CAD versus upland placement of dredged material. Mr. Stevenson stated that issues with pH, and especially oxidation have always been problematic when placing dredged material at upland sites. He explained that once the material settles, there are many color changes that occur along the sediment surface, as a result of the chemical characteristics of the material, and once the material dries; there are many potential oxidation opportunities.

Mr. Stevenson stated that the high iron content of the Baltimore Harbor sediment results in substantial amounts of iron oxide production. Mr. Stevenson stated that the sulfate reduction process produces hydrogen sulfide, which causes death in organisms via preventing respiration. He added that the sulfide is basically in the form of free-sulfide ions that readily react with iron oxides, which are supplied via shoreline erosion or freshwater tributaries; as the reaction proceeds, the resulting product is a significant amount of pyrite. Subsequent to pyrite production, the material becomes oxidized and hydrolyzed, which generates sulfuric acid. Mr. Stevenson added that sulfuric acid is toxic, especially to plants in areas where there is low pH. Mr. Stevenson added that it pyrite production occurs in a very short time-period; however, it takes much longer for it to dissipate from the material.

Mr. Stevenson stated that a disposal technique, such as CAD, that prevented the oxidation of sediments would generate less mobility of metals. Mr. Stevenson stated that sand could be used as a cap, and it could be an effective method of maintaining the disposal material in the deeper regions and preventing nutrients from precipitating into the water column. Mr. Stevenson added that the thickness of such a sand cap would most likely depend on the velocity and grain size of the material used for capping. Mr. Stevenson stated that high resolution modeling may be necessary to capture impacts to sediment transport, velocities, or both, as a result of a CAD cell. Additionally, it might be useful to understand the stratification of the sediment with regards to the thickness of the existing sand layer.

Mr. Stevenson stated that there are many biological considerations regarding the plankton and benthos communities. He added that there are genomic tools available that can quickly characterize DNR and/or RNA sequences of organisms within the sediments or water column.

Confined Aquatic Disposal

Pete Kotulak, Moffat & Nichol

Mr. Kotulak explained that CAD would involve excavating below the Harbor channels and filling in up to the required channel depth with maintenance dredged material. He added that in certain areas, sand and gravel may be excavated and used as construction material, as was done when the Seagirt Marine Terminal was dredged and the suitable material used for dike construction at the Masonville DMCF. The unsuitable material could be placed in the Cox Creek or Masonville DMCFs and the suitable material excavated and beneficially reused. He added that advantages of CAD would be that the material placed in the CAD area would be contained by a bottom confining clay layer of material after the sand is excavated and that CAD sites could potentially be directly adjacent to channels requiring maintenance dredging, which would reduce transportation distance and costs. Mr. Kotulak stated that material could either be excavated with a clam shell dredge and bottom-placed with a scow or hydraulically pumped from the dredge site into the CAD cell. The material could then be capped with cleaner material for the final depth for which the channel needs to be in order to accommodate navigation.

Mr. Kotulak added that the suitable material excavated for a CAD project could be beneficially used as capping material for remediating contaminated sediments in and around the Baltimore Harbor. Mr. Kotulak stated that given the channel and anchorage dimensions of the Baltimore Harbor, there is potential for capacity of up to 140 million cubic yards of placement, depending on the amount of suitable material excavated for CAD projects. This, in turn, could translate to a significant amount of suitable material for beneficial use.

Ms. Correale stated that Harbor Team members may have concerns regarding the need for continual maintenance dredging, as a result of settling, and the potential migration of contaminants. Mr. Kotulak responded that settling of the material will occur regardless; however, since the CAD area is initially deeper for placement than the 50 foot channel required for safe passage, turbidity will be minimized. He also clarified that the cap will be placed in a manner that maintains the 50 foot depth needed in the shipping channels and that data is still being collected to determine the necessary thickness for a sand cap.

Mr. Harman expressed a concern regarding the release of soluble nitrogen in the process of subsurface sediment placement. Mr. Kotulak stated that the release of soluble nitrogen would need to be further investigated.

Mr. Ghigiarelli asked if CAD would only be proposed within the legally defined Harbor. Mr. Storms stated that the objectives of the Harbor Team and the associated activities of the Bay

Enhancement Working Groups (BEWG) are primarily focused on placement sites within the Harbor; therefore, the teams have not considered how applicable CAD would be outside of the Harbor at this time. Mr. Ghigiarelli mentioned that placement of Harbor material outside of the North Point-Rock Point line is prohibited by State Law; however, if the CAD project was successful within the harbor, then the possibility arises that MPA might propose a similar type of disposal outside the Harbor, which would require changes in Maryland law.

Mr. Ghigiarelli asked if there has been any consideration as to the specific beneficial uses for the sand material. Mr. Kotulak responded that there are many potential applications such as construction and/or engineering purposes, capping of contaminated sediments, and shoreline stabilization; however, none have yet been fully established or investigated. Mr. Ghigiarelli asked what the Dredged Material Management Plan says in regards to beneficial use, relative to a specific date. Mr. Storms stated that there are no specific dates in the general DMMP; however, there are target dates for innovative reuse.

Mr. Ghigiarelli stated that from MDE's perspective, there are concerns that the lack of constraints on the placement options will result in options that are not feasible alternatives to dredged material placement sites, relative to the laws. Ms. Correale stated that when the Harbor Team began investigating site options, there were no constraints against any option, regardless of whether or not it was within the guidelines of the law. She added that if a site option had the potential to amend and/or change the law(s), as a result of the environmental considerations, economics and community acceptance, then it received continued consideration as a placement option.

Review of Draft Scoring for Harbor Options

Lauren Franke, MES

Overview of 2011 Harbor Options and Fact Sheets

Ms. Franke reviewed the list of Harbor Options and their associated fact sheets. Mr. Harman inquired about the CAD disposal areas adjacent to the channels shown on the fact sheet figure. Mr. Kotulak responded that this figure also shows anchorages whose depths vary; however, the anchorages are too shallow and will potentially contain substantial amounts of unsuitable material on top to make a CAD site there economically viable. Mr. Harman mentioned that studies show that depths below 30 feet begin to indicate the presence of anoxic conditions. Mr. Ghigiarelli agreed and added that 30 feet is the cutoff below which MDE would require mitigation; however, if the intent is to bring the depth back up to grade, then no new volume is created and mitigation may not be necessary.

Review of Draft Scoring Matrix

Confined Aquatic Disposal

Mr. Ghigiarelli suggested that the Dissolved Oxygen parameter receive a score of -1, considering the potential anoxic conditions and the creation of a greater volume of anoxic water by excavating a CAD cell below the depth of the existing channel. Mr. Rowe stated that since the plan would be to bring the CAD cell back up to the existing channel depth, no new volume of anoxic water has been created. Ms. Franke reminded the group that the scoring applies to long-term impacts. The team agreed to assign a score of 0 for the Dissolved Oxygen parameter for CAD considering the channels are already anoxic and conditions would remain unchanged.

Mr. Rowe stated that if placement of dredged material is kept underwater, than the impacts of nutrients and metals to the water column may be little to none, considering upland placement has a higher potential for nutrient enrichment. The team agreed to maintain a score of 0 for the Nutrient Enrichment parameter.

Ms. Franke clarified that the score for Groundwater depends on the location and depth of the sand material to the confining layer; the group agreed to maintain a score of 0 for this parameter.

Ms. McCormick stated that the state of Maryland considers all open water to be tidal wetlands. Mr. Ghigiarelli stated that under Maryland State law, a submerged bottom qualifies as a tidal wetland; he suggested changing the definition of a tidal wetland to include the word “vegetated.” Ms. Franke will update the parameter descriptions document to indicate that the intent for the Tidal Wetlands parameter is to evaluate potential impacts to vegetated tidal wetlands.

Mr. Ghigiarelli expressed a concern regarding the distinction between the fish categories (spawning and rearing habitats) and feels that a score of -1 for the Essential Fish Habitat (EFH) seems inconsistent. Ms. McCormick clarified the distinction: there are two EFH species that are not specifically associated with spawning or rearing habitats; however, blue fish and summer flounder are found in the Patapsco River and ultimately travel into the freshwater tributaries to spawn. The group agreed to a score of 0 for the EFH parameter.

Mr. Jeffries stated that on behalf of the fisherman, the construction aspect of CAD could have a direct impact on fisheries, especially the commercial sector. Mr. Jeffries feels that CAD has no impact on larval transport, considering they are not contained in deep water. He also mentioned that many fishermen are active from November-February. Relative to the EFH, Mr. Jeffries stated that the federal government has recently invested a significant amount of money into yellow and white perch population restoration. The group agreed to a score of -1 for the Commercially Harvested Species and Habitat parameter.

Mr. Harman stated that the team must consider that CAD involves three dredging operations: 1.) removal of overburden; 2.) removal of sand; and 3.) placement of dredged material into the CAD cell. He added that these are three activities that all involve sediment movement within the water column, which may suggest that the impacts of CAD should be multiplied by three in terms of sediment release.

Mr. Ghigiarelli stated that the differences between short and long-term impacts are not clear, and need to be distinguished, considering the impacts depend on the definitions of short and long-term. Ms. Piggott stated that the fact sheet for CAD assume two years of impacts.

Relative to the Waterfowl Use parameter, Mr. Limpert suggested that since dredging is already an occurring activity in the channels, the score should be changed to a 0. The team agreed to change the score for Waterfowl Use from -1 to 0.

Regarding the Substrate/Soil Characteristics and Toxic Contaminants parameters, the team agreed to change the scores from a 1 to a 0 since the capping material over the filled CAD cell will eventually be covered with sediments as would the rest of the channels. This is to indicate that, in the long-term, there is little potential for substrate composition to change (Substrate/Soil) and the potential for toxic contaminant release would not be decreased (Toxic Contaminants).

Ms. McCormick stated that there are no active permits for fossil shell mining in Maryland. Mr. DaVia responded that despite the absence of active permits, there is currently an application filed to conduct shell mining. Based on this information, the team agreed that this parameter should be 0 shaded.

Mr. Harman stated that considering CAD would require three times the amount of normal dredging, there will be three times the amount of diesel emissions. Ms. McCormick stated that the degree of air emissions would have to be evaluated and quantified since the Baltimore area is currently in non-attainment; she suggested changing the score to -1. The group agreed to maintain a score of 0 since any impacts to air quality would be handled through the conformity analysis and permitting process.

Mr. Mendelsohn stated that regarding Environmental Justice and Commercial Socioeconomics, there could be potential issues with respect to local watermen; the team agreed to change these scores to 0.

Ms. McComrick suggested creating a general beneficial use parameter in order to capture that there may be another beneficial use, such as using the sand material for construction that is not captured by the other beneficial use parameters. Mr. Ghigiarelli stated that it is unlikely that the sand acquired from the Harbor will be used to create a wetland outside of the Harbor,

considering it is against the law; he does not believe the wetlands parameter should have a score of 1. Mr. Rowe suggested that the material could be used to cap shallow water, thus creating wetlands. Ms. Piggott stated that the sand could be used to create habitat at a location such as Masonville Cove. She added that this method could provide an inexpensive sand source that makes wetland restoration projects economically viable that may not have been before.

Mr. Kotulak stated that CAD was initially a beneficial use concept. Mr. Kotulak stated that it should be made clear that this option has an integral beneficial use component. Ms. McCormick stated that if you remove the scores of 1 in the Beneficial Use parameters, CAD would go from a positive to negative score indicating that the Beneficial Use parameters will affect the overall score for some of the sites. She suggested that since it is not known what type of beneficial use will be a component of a CAD project that a general beneficial use parameter be created and the remaining Beneficial Use parameters are scored a 0 for CAD. The team decided to give the new general Beneficial Use parameter a weight of 3 and give CAD a score of 1 for this parameter; the other Beneficial Use parameters will receive a score of 0 for CAD.

Other Updates & Next Meeting

Lauren Franke, MES

Next meeting

Ms. Franke will review the draft scoring for the other options for consistency based on the BEWG progress and input thus far. She will also be sending out a revised draft scoring matrix for review and comment by BEWG members.

The next meeting will be held on April 26th, 1pm, in the Maryland Environmental Service Conference Room.