
Memorandum

Date: November 7, 2006

To: Frank Hamons, Dave Bibo

From: Jennifer Harlan

Reference: Bulk sediment analysis for BWI Sparrows Point Shipyard, October 2006 Sampling

Review of the bulk sediment analysis has been completed for the above referenced project. Severn Trent Laboratories analyzed 4 samples of sediment collected from the proposed dredging project in October 2006. The attached spreadsheet lists the results of each of the tested samples, presents the data in a table format, and allows comparison with several calculated averages and minimum and maximum concentrations for other sediments previously placed at Hart-Miller Island (HMI). Approximately 300,000 cubic yards of this material will be placed at HMI.

Findings:

Organics: Overall, thirty-four individual organics were detected in the four grab samples. Detected organic compounds per sample ranged from a high of thirty-two compounds to a low of seventeen compounds. Each of the organics detected and its concentration is listed on the attached spreadsheet; the majority of the detections were in the parts per billion (ppb) range. There were 5 detections of individual organics in one sample that were in the part per million (ppm) range; however, the concentrations were all less than 3 ppm.

Oil and grease (O&G) was not detected in 2 of the samples. One detected concentration of O&G was almost half of the inner harbor average concentration, while the other detected concentration was above the inner harbor average. The total solids (TS) percentages for three of the four samples were above the inner harbor average. The TS percentage for the remaining sample was lower than both the inner harbor and outer channel averages. The pH levels were slightly higher than both the inner harbor and outer channel averages, but remained below both the recorded maximums. The total organic carbon (TOC) levels for three of the four samples were below both the inner harbor and outer channel sediment averages. The TOC concentration for the remaining sample was below the inner harbor average.

Nutrients: Three of the four sediment grab samples had individual total Kjeldahl nitrogen (TKN) concentrations and total phosphorus (total P) concentrations below both the inner harbor and outer channel sediment averages. The remaining sample had TKN and total P concentrations that were higher than the inner harbor average.

Metals: Two of the BWI Sparrows Point Shipyard grab sediment samples contained at least 2 metal with concentrations over the respective inner harbor averages. Arsenic, copper, lead and zinc had at least one concentration over the inner harbor average, but all concentrations remained

significantly below the inner harbor maximum concentrations. In the remaining two grab samples, all the metal concentrations were below inner harbor averages. Many of the metal concentrations were also below the outer channel averages.

Conclusions and Recommendations:

There were 34 priority pollutant organics detected in the four grab samples, but the majority of the concentrations were in the parts per billion range and are not expected to have an impact on water quality. Since the majority of the O&G concentrations were lower than the outer channel averages, the formation of oil slicks is not expected. TOC levels were lower than the average for inner harbor sediments.

Nutrient levels (TKN and total P) varied in comparison to inner harbor and outer channel sediment. TKN and total P levels in three of the four samples averaged lower than both the inner harbor and outer channel averages. The remaining sample had TKN and total P concentrations above the inner harbor averages. The majority of the individual metal concentrations were below the inner harbor averages, with many also being below the outer channel averages. While there were five individual metal concentrations above the inner harbor average, none of these concentrations were close to the maximums that have previously been recorded in material deposited in HMI.

Over all, the chemical analysis shows the material to be similar to inner harbor sediments that have been placed at HMI previously. With the estimated volume expected (300,000 cy), the material should not cause any major handling problems associated with the chemistry of the material if standard practices for material inflow and management are followed.

Please call me if there are any questions.

Attachment

cc: Nat Brown
Ron Perry/HMI Inspection Staff
Cassandra Carr
HMI COC