Joint Expeditionary Base (JEB) Little Creek: Application of Active Materials as a Component of Contaminated Sediment Remediation

John A. Collins (jcollins@aquablok.com) (AquaBlok, Ltd., Swanton, Ohio)
Stavros Patselas and Steve McGee (Tetra Tech)

Background/Objectives. The Joint Expeditionary Base (JEB) Little Creek (Norfolk, VA), now known as JEB Fort Story, is the major east coast operating base supporting Overseas Contingency Operations for maximum military readiness. The command provides front-line support for Sea, Air, Land (SEAL) Teams, Explosive Ordnance Disposal (EOD), and Riverine Squadrons. The facility is home to 155 shore-based resident commands and 18 home-ported ships. It is located in the Atlantic Coastal Plain within the Tidewater Region of Southeast Virginia occupying approximately 3,915 acres within the Chesapeake Bay watershed. On May 10, 1999, JEB Little Creek was placed on the National Priorities List (NPL) with the United States Environmental Protection Agency (USEPA) designated as the lead regulatory agency; a Federal Facility Agreement (FFA) was finalized in October 2003.

Approach/Activities. The remediation of sediment at SWMU 3 came with various challenges that made removal of all impacted media difficult and expensive to implement. Significant disruption to JEB Little Creek's mission would take place with respect to the adjacent marina. Although the implementation of a dredge removal action was possible across most of the site, various areas of the site were inaccessible, due to proximity to bulkheads and piers, without the use of engineering controls, such as sheet piling or complete demolition and rebuilding. A site closeout strategy was developed for SWMU 3 that utilized a treatment technology to address contamination in these areas. Through the placement of powdered activated carbon (PAC) to the sediment surface as part of a dense, granular aggregate (AquaGate+PAC), the bioavailability of sediment contaminants were addressed in the upper biologically active zone, which was the primary source of exposure to benthic organisms and the water column. The addition of the amendment was intended to sequester contaminants in the sediment that would otherwise enter pore water through dissolution. Unlike a capping technology, it was determined that the use of an In-situ amendment would not require post-placement maintenance. Following completion of the TCRA, no further action for sediment was required.

Results/Lessons Learned. This presentation will focus on the materials used and describe both the conceptual approach and best available technology in materials and methods that have been proven to minimize the potential movement and impact of contamination from the sediments or difficult to dredge areas. These methods can also address adverse environmental impacts that come from the formation of preferential pathways. Project examples will also be presented.