



Lockheed Martin is working collaboratively with the Maryland Department of the Environment (MDE) to clean up legacy waste at the Middle River Complex (MRC), including dredging contaminated sediments in Dark Head Cove and Cow Pen Creek. Cleanup will also include excavation of Cow Pen Creek, restoration of the creek and banks, placement of a clean sand layer, and adding protective carbon over certain areas of the remaining sediment of Dark Head Cove. Every step of the cleanup process, from the original environmental investigation to the current MRC site work, is reviewed, approved, and routinely inspected by MDE. We also actively engage and seek feedback at every stage of the process from the community through public meetings, newsletters, regular updates to \_\_\_\_\_, and a sediment working group.

Lockheed Martin's approved environmental remedy is a hybrid solution that minimizes dredging of sediment and maximizes in-place treatment (in-place treatment avoids additional dredging and disruption). All project design and planning were carefully reviewed and approved by the 12 responsible regulatory agencies before work began:

1. U.S. Environmental Protection Agency
2. U.S. Army Corp of Engineers
3. National Oceanic and Atmospheric Administration
4. U.S. Fish and Wildlife Service
5. Maryland Department of the Environment
6. Maryland Department of Natural Resources
7. Maryland Board of Public Works
8. Maryland Aviation Administration
9. Maryland Air National Guard
- 10.

water

required turbidity limits are exceeded more than twice within 60 minutes, work is stopped and steps are taken to lower the turbidity levels before work proceeds. If turbidity limits are exceeded, regulators are notified immediately and the likely cause is identified. For example, the propellers of the boats used to push barges could potentially increase turbidity on a temporary basis. A second curtain is available on site to install if necessary, but so far has not been needed.

Mobile monitoring of turbidity confirms that the great majority of solids associated with dredging settle out prior to reaching the silt curtain. However, the curtain will capture solids upon contact, and they will settle to the bottom during the slack tide. Data collected throughout each work day confirms that very little sediment or silt is arriving at the curtain. The curtain is designed to keep more than 90% of disturbed sediment within the work area. Turbidity monitoring has been well documented, including during the earlier project in Dark Head Cove during the winter of 2014-15 when the highest concentrations of PCBs were removed. Monitoring data collected to date confirms that only minute levels of stirred-up sediment could have escaped from the work zone. These tiny levels are barely discernable to the naked eye and require optical monitors for detection. Even at 100 turbidity measurement units, the quantities of particles are so small that they do not create a detectable quantity at the bottom of the curtain that could be swept away by the tide. Instead, the particles hit the curtain and fall to the bottom of the cove when the tide is slack, where they sit unless disturbed, such as by a boat propeller.

Any turbidity caused during dredging is temporary, very localized to the dredge area, and the sediment resettles quickly.

The mobile monitoring of water quality performed by the Water Quality Monitoring Technicians has confirmed what was determined during bench scale testing of the sediments during the design phase of the project: contaminants are tightly bound to sediments, so they are not released into the water. The layer of clean sand that will be placed on top of the dredged areas of the creek and cove following dredging, plus the layer of activated carbon that will be placed in areas of the cove where levels of residual contamination are too low to warrant dredging will isolate the waterway and aquatic organisms from the very low levels of remaining sediment contamination.

The deepest portion of Cow Pen Creek, which is nearest Dark Head Cove, is being dredged at the same time as the cove during the winter 2016-

Sediments will be dug out in the dry areas and trucked directly onto the Lockheed Martin property. These sediments will be handled similarly to the earlier dredged sediments and mixed with Calciment® (a product used to dewater and solidify sediments). The Calciment-sediment mixture will be trucked to a licensed landfill. During this part of the project, a silt curtain will be in place at the bottom of the creek primarily as a safety measure to restrict access to the work area.

Algae growth and blooms occur throughout the Chesapeake Bay and the world and have become a significant problem. Studies show the growth of algae in bodies of water is linked to excessive nutrients, especially nitrogen and phosphorus, which come from various sources, including fertilizers and air emissions. However, the contaminants removed in the first Lockheed Martin dredging project are not chemically similar to either nitrogen or phosphorus compounds. MDE found no known relationship between algae growth and polychlorinated biphenyls (PCBs) dredged in a small area within Dark Head Cove during the winter of 2014-15, nor do PCBs have immediate, severe, or acute effects on fish. As with the 2014-15 d