Block E Soil Cleanup Photo Tour

February 2022

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Block E Soil Cleanup Project Accomplishments

This site cleanup project:

- Excavated about 21,700 cubic yards of contaminated soil;
- Disposed over 1900 truckloads (over 42,000 tons) of PCB-contaminated soil, concrete, and debris;
- Removed and disposed of about 105 truckloads (about 2064 tons) of non-hazardous wastes;
- Removed about 1900 feet of storm drain piping;
- Disposed of 4 drums of radiological- or mercury-contaminated waste and 10 drums of asbestos debris; and
- Recycled about 1315 truckloads (about 25,000 tons) of concrete and about 30 truckloads (about 350 tons) of scrap metal.

Site restoration:

- Placed about 2000 truckloads (about 44,000 tons) of clean soil;
- Installed about 2100 feet of new storm drain piping;
- In 2022, about 11-1/2 acres will be planted in meadow mix or grass seed; and,
- About 1 acre of replacement trees will be planted on the adjacent tax Blocks D and F, adjacent to Dark Head Cove.

The Block E project removed about 27,500 lbs of PCBs (polychlorinated biphenyls), in addition to the 442 lbs of PCBs removed during the sediment project.

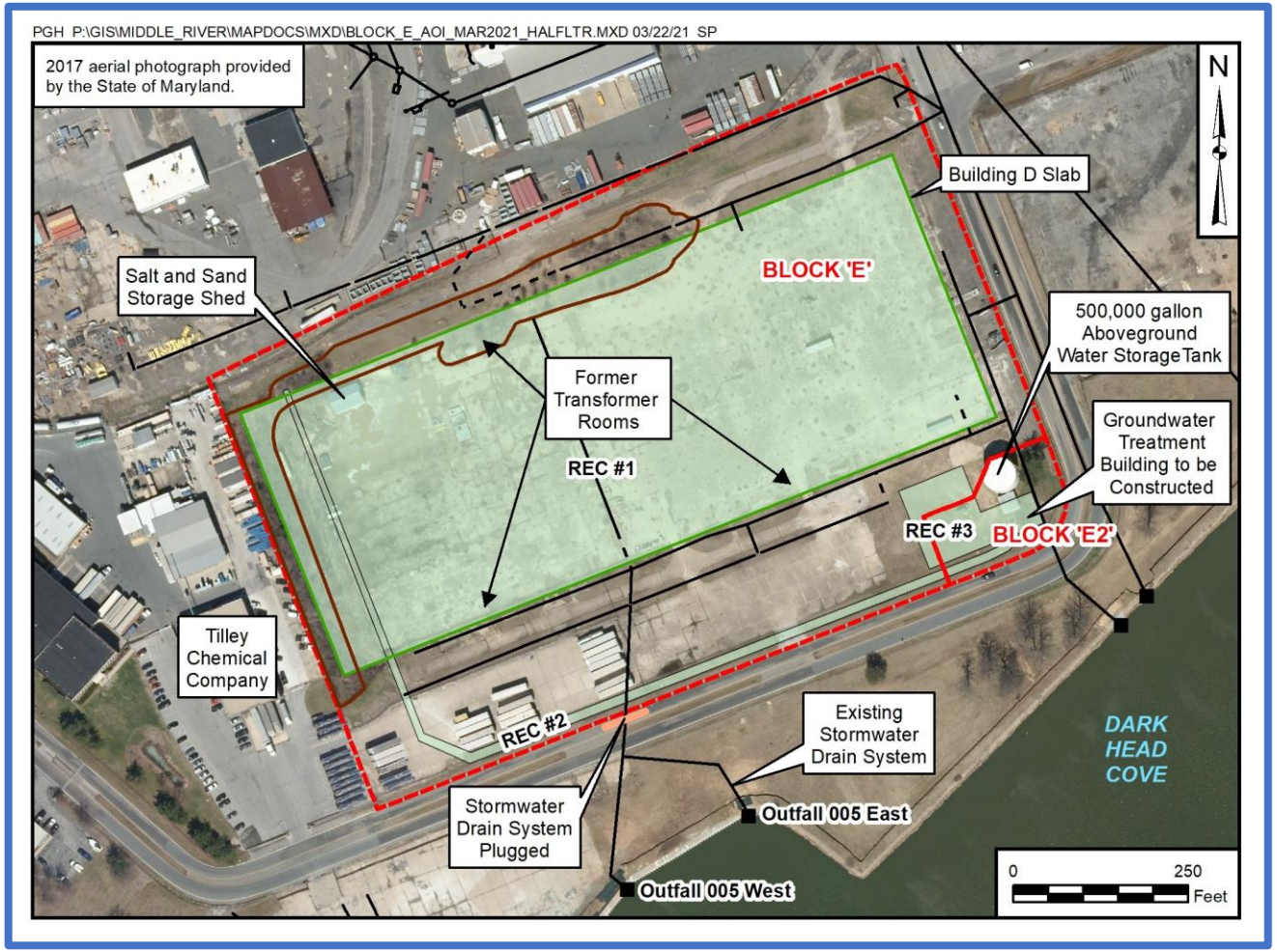
Historic Views of Former D-Building, Located In Tax Block E

- Block E is located in the southern portion of the Middle River Complex and is about 16 acres in size.
- The former D-Building encompassed much of Block E. The building was constructed in the early 1940's for final assembly of aircraft. After World War II, part of the building was converted for various production and research purposes. The building was demolished in the early 1970s, but part of the building's foundation and basement-level floor slab remained.
- Environmental investigations have been conducted since 2003 and identified polychlorinated biphenyls (PCBs) and polycyclic aromatic hydrocarbons (PAHs) as contaminants of concern.

Block E Soil Project

The Block E soil cleanup project includes:

- Removal of D-Building floor slab and foundation and salt and sand storage shed;
- Removal of contaminated soil;
- Management of storm and groundwater throughout soil removal;
- Removal of storm drain system and creation of new storm drainage system;
- Recycling of uncontaminated concrete;
- Transport to appropriately licensed facilities for both contaminated and uncontaminated soil, concrete, and metal;
- Backfill of all areas and return to original grade; create and plant a natural meadow; and
- Removal of trees as needed; restore in-kind planting of approximately 1 acre of trees on Tax Blocks F and D.



The soil removal project began in late April 2021.

Block E Storm Drain and Sediment Project - History

Some PCBs appear to have previously moved off Block E. This movement appears to be limited to sediment transported through the Block E stormwater drain system into Dark Head Cove. Lockheed Martin removed contaminated sediment from the storm drains and inlets in 2011, and in 2014-15 removed PCB-contaminated sediment from the lower portions of the Outfall 005 stormwater drain system. Portions of the Outfall 006 and 008 systems were cleaned in 2016 as part of the full sediment remedy for Cow Pen Creek and Dark Head Cove. To prevent the potential for further movement of contaminated soil and debris, the Outfall 005 system near Block E was plugged in 2015 to prevent contaminants from moving into Dark Head Cove. At the conclusion of the sediment remedy, Lockheed Martin began monitoring and cleaning out PCB-impacted sediments in the Block E storm drains annually, most recently in January 2021.

During sediment cleanup in 2016, new outfalls and manholes were installed.

Photo tours of sediment cleanups are available at:
https://www.lockheedmartin.com/middleriver

Block E Soil Removal – Initial Activities

Activities required prior to soil cleanup in Block E included removal of fencing and about one acre of ‘volunteer’ trees, that is, trees that have self-seeded in the area, their seeds having been carried to the spot by natural dispersal— by wind or animals.

Because the trees were within the Chesapeake Bay Critical Area, Baltimore County requires that the effect of the trees’ removal be mitigated.

New trees will be planted elsewhere at the Middle River Complex to compensate for the removal in Block E. Trees were chipped and used as bedding material for breaking concrete footers.

Block E Soil Removal – Initial Activities, Continued

Air monitoring at the perimeter of work ensures dust from the site is managed.

The work site was prepared for equipment arrival during the last week of April 2021.

Block E Soil Removal – Initial Activities, Continued

Silt fences protect the surrounding area from storm water runoff.

A Portable Water Treatment System Is Used

A water treatment system was used to treat any groundwater or storm water collected from excavations. Once treated, water was released to the sanitary sewer system. Treated water was tested regularly for Baltimore County Permit compliance.

Storm Water Management

A turbidity curtain was installed at Outfall 005 in Dark Head Cove to manage any sediments in storm drain piping that might be released to the cove.

Radiation Testing

The project team anticipated removing radiologically-contaminated pipe from the southeast quadrant of the foundation. As a result, scanning for radiation occurred throughout the project, including an initial scan prior to beginning demolition work. Radiation monitoring identified several pieces of pipe in the southeast area that had elevated activity levels. These pipes were separated from the rest of the waste and disposed of at an appropriate facility. All trucks containing waste leaving the site are scanned for radiation using portal monitors (shown below).

Establishing A Waste Management Area

Soil and other debris that were identified as containing high PCB levels were stored on a waste management area pad, created by forming an outside berm and covering that with a heavy plastic liner. Stored soil piles are then covered with plastic to keep the soil from being dispersed.

Removing The Concrete Building Foundation

The building's concrete foundation was broken up in sections. Concrete was further broken into manageable sizes. Any contaminated concrete was transported to a licensed landfill. Uncontaminated concrete was transported offsite to a local concrete recycling facility.

Other Infrastructure Removal

Other items found beneath the concrete foundation included metal and building debris contained within the elevator pits, electrical ducts, metal such as sump linings shown at upper right, and piping (lower right). Some of the foundation footings were contaminated with PCBs, and those that were contaminated required transportation to a licensed disposal facility.

Soil Removal Began

To be able to limit impacts, concrete foundation was removed in sections, and then soil was removed. The depth and location for soil removal was anticipated by previous investigations. Once soil was removed to the anticipated depth, floor and side walls were sampled to confirm contamination removal met planned goals which were established in collaboration with the Maryland Department of Environment (MDE) and the U.S. Environmental Protection Agency (EPA).

Creating A Soil Nail Wall

A slope existed on the western portion of the site adjacent to Tilley Chemical Company. A soil nail wall was installed to create a stable side wall for the excavation area. A new, steeper wall was created where soil needed to be removed to access the underlying former building slab and foundation. It will remain in place, and will be covered with fill and topsoil. The final restoration will be a hill as before, but at a slightly steeper slope than was there before. The photo at bottom left shows where fill has been placed in the western area, closest to Tilley Chemical Company.

Deep Excavation Areas - Locations

Three areas located beneath former transformer rooms were planned to be excavated to depths of up to twenty feet. These deep excavations required metal sheets to be driven into the ground to shore up the side walls. Given the proximity to the airport, use of pile-driving cranes was approved by the Federal Aviation Administration and the Maryland Aviation Administration. When the holes are refilled with clean soil, the steel sheets will be removed using the crane.

The locations of the deep excavations shown here are approximate.

Site Preparations For Deep Excavations

Temporary steel sheets were installed to shore up the sides of work areas where deeper soils were removed. Excavation at the area shown in this photo will be completed to 20 feet deep. This is the deepest excavation area.

Deep Excavations

Once shoring was installed, deep excavations were completed in lifts from various points both outside and within the excavation. A ramp was established to allow access by equipment into each excavation.

Deep Excavations, Continued

Walers (along the perimeter of the sheeting) and struts (going across the excavation) were installed at approximately 12 feet to support the sheeting at further depths.

Deep Excavations, Continued

Once the excavation was complete, confirmation samples were collected.

Deep Excavations, Continued

Backfill began after confirmation sampling results confirmed the excavation had removed all of the contaminated soil and met planned goals which were established in collaboration with the Maryland Department of Environment (MDE) and the U.S. Environmental Protection Agency (EPA). Due to wet conditions at the bottom of the deep excavations, backfill consisted of placing a layer of geotextile fabric, followed by crushed stone and/or recycled concrete for approximately 6-10 feet, then another layer of geotextile fabric, and then clean fill. Using the fabric as a barrier before and after the crushed stone prevented the soil from settling into the stone layer.

Deep Excavations, Continued

Once the crushed stone was placed, backfill continued using clean soil up to the existing surface.

Deep Excavations, Continued

As backfill was completed, the walers and struts were removed from the excavation, decontaminated, and taken off-site. Generally, once backfill neared the surface, the sheeting was pulled, decontaminated, and removed from the site. In one area on the northern side of the site, some sheeting was cut 4 feet below the surface and left in place to avoid damaging an active water utility in that area. The walers, struts, and sheeting will be reused on other projects.

Soils Contaminated With PCBs

Soils contaminated with polychlorinated biphenyls (PCBs) were stored onsite in a lined and contained area, then loaded into lined trucks, and covered with tarp before leaving the site for disposal at a licensed landfill. Truck containers are shipped by rail for most of their trip to the landfill.

Soil Sampling And Backfilling

Once an excavated site has had floor and side walls confirmed that the cleanup objectives were accomplished, confirmed clean soil is used to return the hole to its original surface height.

Salt Shed Demolition

The existing road salt storage shed at Block E was emptied prior to beginning the construction work and has been demolished. Due to the removal of the concrete surface, this location is no longer practical for equipment or materials storage by the facility. A new salt storage area was created inside the Middle River facility.

Median Work On Chesapeake Park Plaza

The road was closed while the median was excavated, removing the top soil which was found to contain PCBs. Work occurred in September-October 2021 and the community was notified of the road closure. The lower right shows the restored median.

Storm Drain Removal/Replacement On Chesapeake Park Plaza

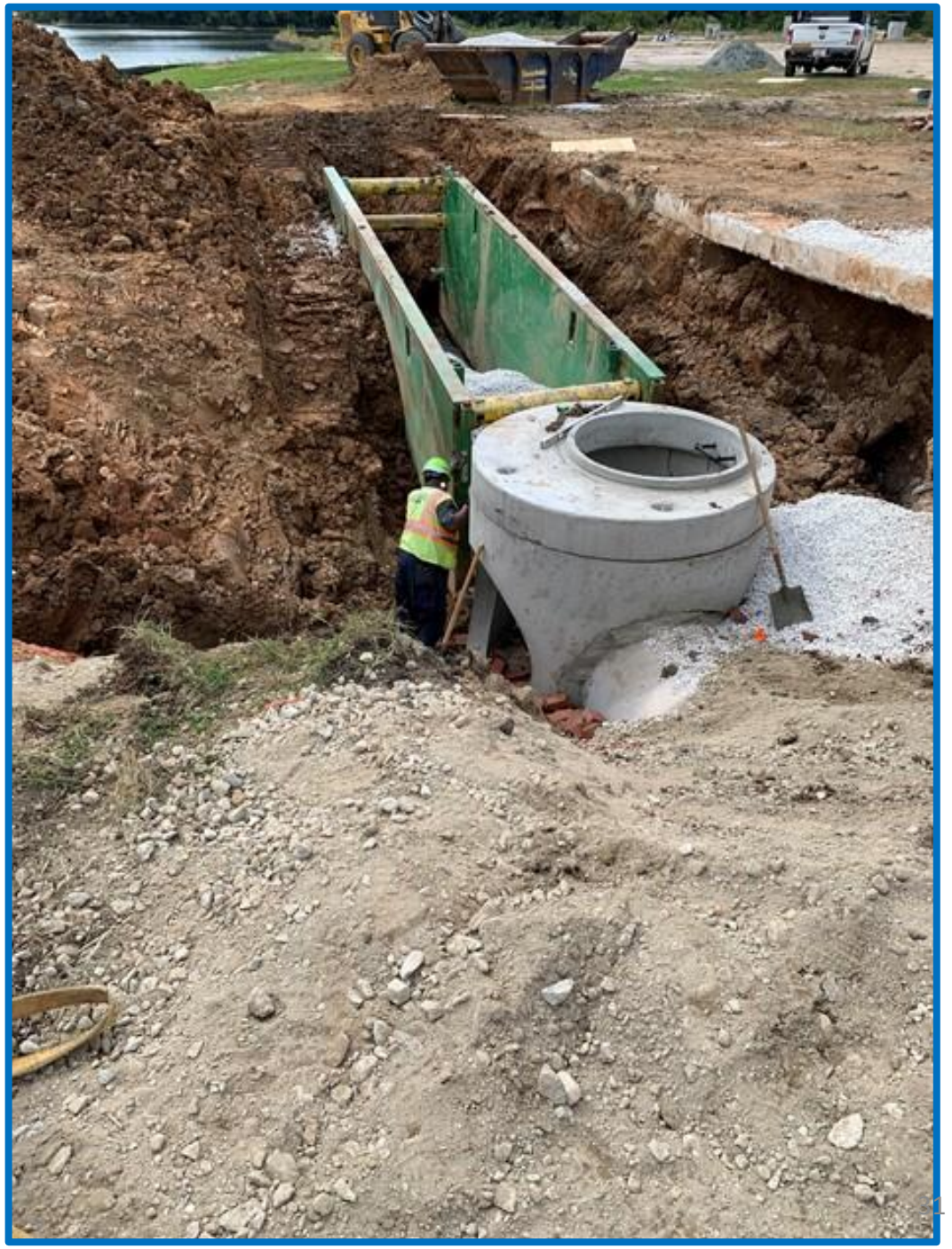
Storm drains underneath Chesapeake Park Plaza that are connected to the storm drain system in Block E were removed and replaced, and the roadway surface restored.

Replacing Removed Storm Drain System

New piping and storm drain structures were brought onsite and are being installed, to replace the removed storm drain system.

Replacing Removed Storm Drain System, Continued

Storm drain structures were installed to replace the removed storm drain system.

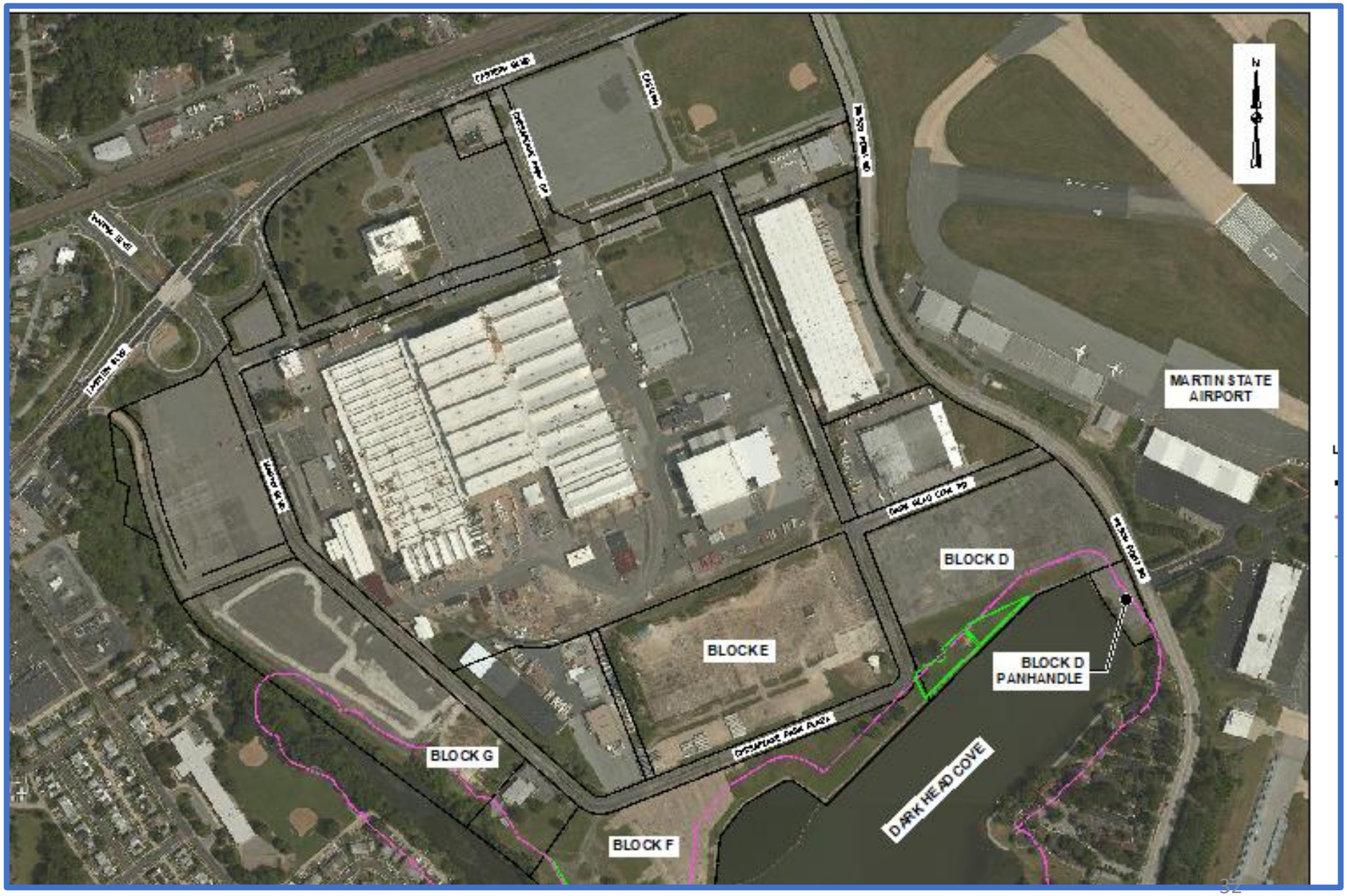


Tree Mitigation Location

After completion of the soil work, during Winter 2022, trees will be planted on Blocks F and D to replace – or mitigate for – those trees removed during Block E soil cleanup.

Originally, the tree mitigation location was planned for Block D Panhandle. After working with the local community and leaders, the project was relocated further west, preserving the view to the waterway from Wilson Point Road.

The new location for the tree mitigation area is shown outlined in green in this photograph.



Project Completion

Construction and final site work completed in Winter 2022. Site restoration, which includes planting a pollinator meadow along with nearby tree mitigation planting, will occur in Spring 2022.

Thank you for your interest!
More information is available at www.lockheedmartin.com/middleriver.
For questions please contact 800.449.4486 or krista.alestock@lmco.com.