



## ***Fact Sheet — Middle River, Maryland***

### ***Middle River Complex and Martin State Airport***

***September 2011***

#### **History**

In 1928, the Glenn L. Martin Company, a predecessor to Lockheed Martin Corporation, acquired land in Middle River, Maryland, to build and test aircraft. This land is now part of the Middle River Complex (known locally as Plant 1) and the Glenn L. Martin State Airport (known locally as Martin State Airport). Figure 1 (attached) shows the locations of these adjacent facilities.

In the 1940s, the Glenn L. Martin Company also leased factory space on land owned by the federal government known as the Old Navy Depot—Bengies (known locally as Plant 2), located across from the airport on Eastern Avenue.

In 1975, the airport was sold to Maryland Aviation Administration (MAA), a Maryland Department of Transportation agency, which currently owns and operates both Martin State Airport and the Thurgood Marshall Baltimore/Washington International Airport. Other surrounding land parcels also were sold in the same timeframe, including the properties occupied by Johnson & Towers, Tilley Chemical, North American Electric, the U.S. Post Office and Exxon, which continue to operate there. Figure 2 (attached) shows these land parcels shaded in yellow.

In 1995, Lockheed Corporation merged with Martin Marietta Corporation to form the current Lockheed Martin Corporation, which is conducting engineering activities at the Middle River Complex. The complex is owned by LMC Properties Inc., which provides global real estate and asset management services to Lockheed Martin business units. Lockheed Martin currently employs about 470 people at the facility. Aircraft parts assembly operations at the facility currently are performed in Buildings A, B and C by Middle River Aircraft Systems (MRAS), a subsidiary of General Electric Company (GE), on land owned and managed by LMC Properties.

#### **Background**

Lockheed Martin has conducted a series of environmental investigations of the Martin State Airport and Middle River Complex since the early 1990s, when two developments prompted the Corporation to begin these environmental studies. First, a possible link was uncovered between contamination on the airport property and the former Martin site when china, papers and other items apparently connected to the former Glenn L. Martin Company were found in excavations for utility work on the airport site. Then, around the same time, Baltimore County developed an economic revitalization plan for the Middle River community and inquired about Lockheed Martin's plans for vacant waterfront parcels at the Middle River Complex.

Since 1991, Lockheed Martin has conducted extensive environmental studies at the Martin State Airport in an area between the taxiway and Frog Mortar Creek (the Dump Road Area) in cooperation with the Maryland Department of the Environment's (MDE's) Controlled Hazardous Substance Enforcement Division (formerly the State Superfund Program). Additional environmental investigations have been performed around Strawberry Point, in Frog Mortar Creek and in Stansbury Creek.

Based on the initial findings for studies conducted at Martin State Airport, Lockheed Martin began to evaluate the Middle River Complex to determine if contamination existed around the plant. The Middle River facility is a valued part of Lockheed Martin's history, and these investigations are a proactive way to preserve this history, be a good corporate citizen and provide a safe environment for employees and neighbors. Since contamination associated with former operations was found on the Middle River Complex, Lockheed Martin has taken responsibility for addressing it. The Corporation entered into Maryland Department of the Environment's (MDE's) Voluntary Cleanup Program (VCP), and under this program, the state is overseeing Lockheed Martin's remediation efforts at the Middle River Complex.

### **Environmental Sampling**

Lockheed Martin has collected thousands of soil, sediment and groundwater samples at both the Middle River Complex and Martin State Airport since sampling began in 1988. The Nuclear Regulatory Commission and Lockheed Martin also conducted an investigation of a potential radiation source at Middle River, former Building D. There was no radiation above background level. Indoor air quality monitoring is ongoing at the Middle River Complex to evaluate if chemicals under the buildings have the potential to migrate into indoor air.

The samples were tested for chemicals — including solvents (such as trichloroethylene, or TCE), petroleum, metals, and polychlorinated biphenyls (PCBs) — known to have been used during aircraft manufacturing and assembly and related industrial operations. The sampling results were used to assess potential risks to human health and the environment, as well as to assess the level of cleanup needed to allow possible future development of the parcels and protect natural resources. Chemicals that were used in the operation of the facility were found beneath the pavement or buildings, in fenced-off areas that have limited access, and near stormwater outfalls along Cow Pen Creek and Dark Head Cove.

### **Middle River Complex Environmental Work**

#### **Risk Assessments**

Human health risk assessments were performed to evaluate potential impacts of soil, groundwater and sediment contamination. These risk assessments indicated that the chemical concentrations do not pose significant health risks to the general population of workers, visitors or residents in the community based on current use of the complex. However, some action is required to eliminate risk under potential future-use and additional fencing may be employed, if required, based on further sampling.

## **Soil Remediation**

Lockheed Martin has conducted extensive soil investigations and is putting in place plans to clean up areas of soil contamination. Soils around and underneath buildings and parking lots, or in areas that are fenced off along the waterfront, had areas of elevated petroleum compounds such as polycyclic aromatic hydrocarbons (PAHs); metals such as arsenic, mercury and lead; and polychlorinated biphenyls (PCBs). The concentrations of these compounds do not pose a health risk to site workers, residents or visitors either because people do not come into contact with chemicals below the pavement and buildings, or because the chemicals are present in low concentrations in areas with very low usage. Current indoor air monitoring indicates that chemicals present in vapor under the buildings are not present in indoor air at concentrations that represent levels of concern, according to current EPA and Maryland Department of the Environment (MDE) guidance. Nevertheless, the vacant land parcels surrounding the industrial facility will require some level of action before or in coordination with future development.

The property consists of eight parcels of land — called tax blocks — that are identified separately by the letters A through I (see Figure 2).

Block A contains the current Lockheed Martin offices and Block C has been sold to others. These Blocks do not have environmental issues. Block B was remediated in 2010 to Maryland Department of the Environment (MDE) residential re-use quality and Block A does not require remediation.

That leaves five Blocks — D, E, F, G and H — requiring evaluation and remediation. Soil Response Action Plans (RAPs) are being developed for these blocks under the Maryland Department of the Environment Voluntary Cleanup Program.

Response actions for Block E also will be developed under the U.S. Environmental Protection Agency (EPA) program covering polychlorinated biphenyls (PCBs) remediation, because they were found at elevated concentrations. They are found in a relatively confined area, mostly between concrete slabs; in the soil under the western area covered by concrete slabs; and, in the grass channels south of the former building location. They are also found around the storm drain inlets and within the storm drains.

Since polychlorinated biphenyls (PCBs) were found in storm drains sediment, Lockheed Martin has developed plans for an interim action to clean out and rehabilitate the storm drain and inlet structures. While not a final action for the storm drains, this action — to be completed in Fall 2011 — will serve to prevent potential future release of polychlorinated biphenyls (PCBs) to Dark Head Cove.

Environmental characterization and monitoring continue at Block I, which contains the active production facilities operated by General Electric Company's Middle River Aircraft Systems subsidiary (MRAS) and Lockheed Martin's Mission Systems and Sensors business (MS2).

Remediation strategies are currently under review within Lockheed Martin. The current schedule calls for preparation of final soil Response Action Plans (RAPs) by early 2013 for submittal to Maryland Department of the Environment (MDE) for its review.

Block B (the parking lot and ball field area located on Eastern Avenue) was the first soil cleanup project. Soil removal areas are shown on Figure 5 and Figure 6 (attached). Soil removal was conducted between October and December 2010. As requested by the community, an on-site community tour and informational exchange was held and a video virtual tour is available on Lockheed Martin's Middle River webpage (<http://www.lockheedmartin.com/aboutus/energy-environment/places/remediation/MiddleRiverMD.html>). A list of Frequently Asked Questions is available on the Lockheed Martin website. Lockheed Martin is requesting closure of Blocks A and B under the Maryland Voluntary Cleanup Program, marking completion of the environmental investigation and cleanup of these areas.

The Block E Response Action Plan (RAP) will be completed with those of the other blocks, but the presence of polychlorinated biphenyls (PCBs) at concentrations that require involvement of the U.S. Environmental Protection Agency (EPA) compels additional planning beyond the Response Action Plan (RAP) and coordination with the sediment cleanup effort. When the work is completed, the cleaned areas will be returned to similar grades and current conditions. Care will be taken to minimize erosion and protect surface waters surrounding the Middle River Complex during the cleanup process.

### **Groundwater Investigations**

Groundwater investigations identified two narrow, shallow groundwater plumes containing elevated concentrations of chlorinated solvents such as trichloroethylene (TCE) coming from the industrial facility in the center of the complex. There also were several small, isolated areas containing petroleum compounds such as benzene in shallow groundwater near former underground storage tanks (USTs) underneath the Middle River industrial buildings. Because groundwater at the site is not used for any purpose, site workers and visitors do not come into contact with these chemicals.

The shallow groundwater at the Middle River Complex discharges to adjacent Dark Head Cove or Cow Pen Creek. The two plumes also discharge to these surface waters but slow discharge rates result in only small amounts of contaminant discharge, which rapidly dissipates. This is confirmed by direct sampling. The associated contaminants are not contaminants of concern for ecological or human health exposure.

Groundwater investigations have confirmed that the contamination does not move across the creek and cove to the adjacent Hawthorne or Wilson Point communities. This was reconfirmed in sampling performed during 2010. Figure 3 (attached) shows the outline of these shallow groundwater plumes, locations of monitoring wells onsite and across the waterways, and the location of proposed treatment, described below.

Lockheed Martin continues to install additional groundwater monitoring wells to refine knowledge of the nature and extent of the contamination. Annual groundwater monitoring programs continue. Lockheed Martin submitted its Draft Groundwater Response Action Plan to Maryland Department of the Environment (MDE) in April 2011.

The proposed groundwater remedy will be protective of surface water quality and will incorporate land-use controls to restrict groundwater use and to protect against vapor intrusion into indoor air of present and future buildings. The Response Action Plan proposes treatment of contamination by in-situ bioremediation, using food grade lactate and oil as nutrients to enhance growth of bacteria naturally occurring in soils capable of degrading the contaminants in the subsurface. The community will be involved and informed about these efforts in future meetings. A public information session on the proposed remedy will be held Sept. 22, 2011, prior to finalizing the plan, to get community feedback and input. A Citizens Guide describing this Response Action Plan is available.

### **Surface Water and Sediment Sampling**

The water and sediment of Dark Head Cove and Cow Pen Creek has been sampled extensively. Where concentrations of site-related chemicals in surface water were at detectable levels, that water met the State's criteria for open bodies of water such as rivers and creeks as well as drinking water standards, even though this is not drinking water. Sediments in Cow Pen Creek and along the bulkhead and airport discharge points in Dark Head Cove show elevated concentrations of polycyclic aromatic hydrocarbons (PAHs), polychlorinated biphenyls (PCBs), and metals such as cadmium and chromium (see Figure 4). The detected concentrations indicate some action may be necessary to reduce potential risks associated with long-term direct contact and potential impacts to organisms residing in the sediment. The potential health risks to people swimming and wading in Dark Head Cove and Cow Pen Creek are within the Environmental Protection Agency's (EPA's) acceptable risk range and just above Maryland's target, tempered further by the fact that the most impacted sediments are submerged at all times.

The Maryland Department of the Environment (MDE) and the Maryland Department of Natural Resources (MDNR) have issued various fish advisories for the Chesapeake Bay and the Baltimore region, including the Middle River area, which indicate the amount of fish that can be safely eaten. These advisories have been in effect for several years and are related to the polychlorinated biphenyls (PCBs) found in fish tissue from fish collected throughout the Middle River and surrounding areas. For more information, see:  
<http://www.mde.state.md.us/programs/PressRoom/Pages/041311.aspx>

The sediments in Cow Pen Creek and along the bulkhead of Dark Head Cove may require cleanup to protect the natural resources in this Chesapeake Bay tributary.

Since the creek and cove waters are owned by the State of Maryland and are considered waters of the United States, Maryland Department of the Environment (MDE) will make the cleanup decisions in consultation with other agencies, including the U.S. Environmental Protection Agency (EPA), the Maryland Department of Natural Resources (MDNR), the U.S. Army Corps of Engineers, the Critical Areas Commission, and the Chesapeake Bay Foundation. Since polychlorinated biphenyls (PCBs) are present in the sediment, and in the upland Tax Block E area, the Environmental Protection Agency (EPA) must approve cleanup plans for these areas.

In November 2008, additional sediment sampling was conducted to more accurately define the concentration trends of chemicals that may require action. The final report on the sampling is complete and available on the website and in the public library. Following discussions with Maryland Department of the Environment (MDE), Lockheed Martin performed additional sampling in Summer 2010 to better define the nature and extent of contamination and to begin developing plans on how best to address the sediment contamination. The results of the 2008 and 2010 sampling were consistent with earlier characterizations, with impacted material found in some areas up to 2.5 feet below the mud line. The study provided more definitive evidence that the impact diminishes rapidly with depth.

### **Mission Systems and Sensors (MS2) and Middle River Aircraft Systems (MRAS) Facilities**

Lockheed Martin continues to perform ongoing testing outside and inside Middle River Aircraft Systems (MRAS) Buildings A, B and C to evaluate the extent of the contamination in soil, groundwater, and sub-slab vapor to assess if there is a potential for health risks.

Investigations of soil and groundwater continued through 2009, 2010 and 2011 and will continue through the remainder of 2011 and thereafter. Investigations have the objective of refining the understanding of the nature and extent of contamination in soil and groundwater under and around the buildings in Tax Block I. As the results are reported, they will be available on the Lockheed Martin website (<http://www.lockheedmartin.com/aboutus/energy-environment/places/remediation/MiddleRiverMD.html>) and at the public library.

Soil gas sampling results indicated the presence of volatile organic compounds in several locations under and outside of the buildings, including the east side of Building C and south side of Building B. Additional studies are under way for further evaluation of these areas.

Lockheed Martin has conducted environmental investigations since 2006 to assess the quality of indoor air within the operating facilities. Testing was conducted in Buildings A, B and C in ground-level and basement areas. Vapor samples from beneath the slabs of Buildings A, B and C were also collected. In early 2008, as a precaution, Lockheed Martin installed sub-slab vapor mitigation systems in the two areas of Buildings A and C where sub-slab vapor concentrations exceed established screening concentrations, which are developed to be highly protective. The systems have significantly reduced volatile organic compound (VOC) concentrations in vapors under the buildings and have helped maintain concentrations in indoor air below conservative screening levels developed from Environmental Protection Agency (EPA) and Maryland Department of the Environment (MDE) criteria. Based on the results of the ongoing investigations, the system under Building A was expanded in 2010. The mitigation systems may be modified to increase the capture of sub-slab vapors where necessary and shut down when data indicate they are no longer necessary.

The results of one round of indoor air quality sampling in the MS2 vertical launch system (VLS) facility in December 2006 indicated no need for additional sampling there.

### **Participating in Maryland Department of the Environment's (MDE's) Voluntary Cleanup Program**

Lockheed Martin is conducting its remediation efforts at the Middle River Complex through Maryland Department of the Environment's (MDE's) Voluntary Cleanup Program (VCP). The Corporation has no current plans to develop the industrial parcel in the center of the Middle River Complex. The cleanup of these land parcels will not affect the operations or interfere in any way with the work underway at Mission Systems and Sensors (MS2) or Middle River Aircraft Systems (MRAS).

## **Martin State Airport Environmental Work Status**

Concurrent with the cleanup of the Middle River Complex, Lockheed Martin has been conducting environmental investigations on the Martin State Airport property under the regulatory authority of Maryland's Controlled Hazardous Substance Enforcement Division (formerly the State Superfund Program). Extensive testing of soil, groundwater, surface water and sediment has been conducted since 1989, and human health and ecological risk assessments have been performed.

As part of its work, Lockheed Martin also has been conducting offsite creek sampling on both sides of the airport in Frog Mortar Creek and Stansbury Creek. We have detected low levels of solvents in the surface water and sediments of Frog Mortar Creek adjacent to the Dump Road Area, and continued sampling is planned. Lockheed Martin will continue to keep the public informed and updated on its work.

Lockheed Martin efforts in 2011 are aimed at designing a groundwater capture system to prevent continued migration of the Dump Road Area contaminant plume into Frog Mortar Creek. Lockheed Martin also continues efforts to delineate the groundwater and soil contamination around the Dump Road Area and to investigate areas of former active Lockheed Martin activities in the areas of Strawberry Point and the airport's terminal and hangars.

### **Dump Road Area**

A Feasibility Study has been completed to evaluate technologies for cleanup of groundwater in the Dump Road Area, with the primary goal of preventing off-site movement of contaminated groundwater. As part of the study, a detailed 3-D model of groundwater flow at the Dump Road Area was developed to assist in the cleanup analysis. The proposed Interim Remedial Action (IRA) will contain the groundwater through a series of extraction wells and a water treatment facility. This Interim Remedial Action (IRA) has been presented to Maryland Aviation Administration (MAA), Maryland Air National Guard (MDANG) and Maryland Department of the Environment (MDE) and was submitted for formal Maryland Department of the Environment (MDE) review in April 2011. The Interim Remedial Action (IRA) design process has begun and is expected to be completed in 2013, with construction completed the following year.

The proposed Interim Remedial Action (IRA) will provide containment designed to prevent off-site movement of contaminated groundwater and provide for sufficient treatment capacity for future expansion to include treatment of source areas of contamination in the Dump Road Area. The community will be involved and informed about these efforts in future meetings, and a public information session on the proposed interim remedy will be held prior to finalizing the plan to get the community's feedback and input. A Citizens Guide will be available for the area of the proposed interim remedy (See Figure 7).

Groundwater containment and treatment will mitigate the low-level human and environmental risks from contamination in the Dump Road Area. Lockheed Martin is evaluating the effectiveness of supplementing groundwater treatment by in situ remedies to reduce the potential for human and environmental exposure to the contaminants remaining in the soil of the Dump Road Area. Remedies may include stabilization, covering or other treatment of soils which would reduce the risk of exposure without significant disruption to airport operations and without negative impact to the Chesapeake Bay Critical Area bordering Frog Mortar Creek. Lockheed Martin and Maryland Aviation Administration (MAA) are coordinating to lessen or remove any risk of exposure to workers during airport maintenance work in the area.

Lockheed Martin is continuing efforts to delineate the upgradient extent of groundwater contamination near the Main Runway of the airport. Delineation in this area is complex due to restrictions on the access and operation of equipment near the active taxiways and runway. Lockheed Martin coordinated with Maryland Aviation Administration (MAA) to access this area for installation of soil borings and monitoring wells in June 2011. Lockheed Martin also collected soil samples in the Compass Rose area, just south of the Dump Road Area and close to Frog Mortar Creek. The soil sampling is to further investigate areas of anomalous soil conductivity indicated by a geophysical survey conducted in 2010. The anomalies are likely due to more clay-rich soil used as fill material in a former embayment of Frog Mortar Creek that was filled as part of the airport expansion in this area. Lockheed Martin and Maryland Aviation Administration will work together in the near future to determine what environmental conditions need to be addressed as a consequence of the planned repairs to Taxiway Tango.

### **Frog Mortar Creek and Stansbury Creek**

In Frog Mortar Creek, Lockheed Martin completed three phases of sampling work and submitted a combined report to Maryland Department of the Environment (MDE) in April 2009. Copies are available at the Essex Library or on the Lockheed Martin website (<http://www.lockheedmartin.com/aboutus/energy-environment/places/remediation/MartinStateAirportMD.html>). Results of this earlier sampling indicated that some discharge of volatile organic compounds (VOCs) is occurring to surface water in Frog Mortar Creek in a small area adjacent to the airport, but concentrations were below ambient water quality criteria (AWQC).

More recent surface water sampling adjacent to the shoreline of Frog Mortar Creek in the Dump Road Area has detected concentrations of trichloroethylene (TCE) and vinyl chloride (volatile organic compounds, or VOCs) above their ambient water quality criteria (AWQC). These results were submitted to Maryland Department of the Environment (MDE), and Lockheed Martin prepared an expanded surface water sampling program. The program began in June 2011, with repeated sampling every 3 months or more often for at least one year. The program is aimed at delineating the extent of volatile organic compounds (VOCs) in the surface water. Based on prior sample results, it's anticipated that volatile organic compounds (VOCs) will be detected close to or above ambient water quality criteria (AWQC) only by the airport shoreline in the path of the Dump Road Area plume. The groundwater Interim Remedial Action (IRA) is designed to prevent discharge of volatile organic compounds (VOCs) to Frog Mortar Creek. If conditions should worsen, additional protective measures may be needed to restrict human contact with surface water in the area close to the Martin State Airport shoreline.



Lockheed Martin collected sediment samples in Stansbury Creek in October 2009 to identify and characterize the nature and extent of possible contamination resulting from current and past airport activities. Elevated concentrations of polycyclic aromatic hydrocarbons (PAHs) were found next to one outfall that drains paved surfaces associated with airport operations. However, concentrations were consistent with regional findings and risks to human health and the environment appear to be negligible. No further action is recommended for Stansbury Creek sediments.

In October 2010, the Maryland Department of the Environment (MDE) notified Lockheed Martin that based on the agency's review of the Corporation's investigative reports, Maryland Department of the Environment (MDE) had no remediation requirements at that time for Frog Mortar Creek or Stansbury Creek.

### **Strawberry Point Status**

Investigation of Strawberry Point began during the fall of 2007 with a Phase I assessment to find available information about the site. Subsequent investigations looked for areas where materials may have been buried. Two phases of soil and groundwater sampling were conducted in the wooded area of Strawberry Point, but there was no evidence of any waste disposal.

A Phase II environmental investigation was conducted in the Greater Strawberry Point (GSP) area of Martin State Airport in 2010 to determine the nature and extent of any environmental contamination in soil and groundwater in areas of former Lockheed Martin operations. The field investigations were conducted in April and May 2010 and the report is available at the Essex Library or on the Lockheed Martin website (<http://www.lockheedmartin.com/aboutus/energy-environment/places/remediation/MartinStateAirportMD.html>). Soil and groundwater investigations in the southern area of Greater Strawberry Point (GSP) from the airport fuel storage area north to the airport maintenance facility, did not encounter contaminant levels that present a risk to human health or the environment. Follow-up soil and groundwater investigations to be undertaken in the area of Greater Strawberry Point (GSP), extending northward from the Martin State Airport maintenance facility, began in summer 2011. The data collected is currently being analyzed. This area is largely woodland but was the former site of multiple facilities that are now demolished. Soil and groundwater sampling in this area in 2010 encountered low levels of contamination.

A Phase II investigation of the airport Main Terminal area, surrounding Hangars 1 through 6, began in May 2011. Geophysical and soil vapor surveys, and soil and groundwater sampling were conducted in areas of former Lockheed Martin operations near these hangars, which were part of the original Glenn L. Martin Airport. The Phase II report for the Main Terminal work is scheduled to be complete by early 2012.

## **Public Outreach**

Lockheed Martin is committed to ensuring that its employees, interested citizens, media, local, state and federal officials are kept informed of the progress of this work. Lockheed Martin will be conducting informational opportunities with stakeholders, and providing poster and public availability sessions throughout the course of this work. The public also will be kept informed through newsletters, personal update letters and websites.

Lockheed Martin has a strong tradition of involving community members and neighbors and encouraging them to provide their input and insight into the remedial investigations and proposed cleanup alternatives. As a part of this community outreach effort in the Middle River area, Lockheed Martin has conducted regular briefings and updates with civic association leaders, held community meetings and been active with community events.

## **Further Information**

Final environmental reports and other public information covering Lockheed Martin's studies at the Middle River Complex and Martin State Airport sites may be found at the Essex Public Library at 1110 Eastern Boulevard, Essex, Maryland, 21221. For more information, call 410-887-0295. Up-to-date information also is available on the Lockheed Martin website (<http://www.lockheedmartin.com/aboutus/energy-environment/places/remediation/index.html>). Click the link, then look for separate Middle River and Martin State Airport links on the left.

## **Contact Information**

Interested members of the public, or the media, are invited to contact Lockheed Martin at any time with questions or requests for additional information.

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**<http://www.lockheedmartinjobs.com/index.aspx>**

## Glossary and Acronym List

**Arsenic** — an odorless and tasteless semi-metal that enters bodies of water naturally from the earth and from industrial processes.

**Background radiation** - radiation that comes from natural sources and is always present in the environment. This includes solar and cosmic radiation as well as radioactive elements in the ground, building materials, and the human body.

**Benzene** — a colorless, flammable, liquid aromatic hydrocarbon derived from petroleum and used in or to manufacture a wide variety of chemical products.

**Cadmium** —an element found naturally in soil and rocks. Cadmium is also found in some foods, and in man-made consumer products such as batteries, plastics, pigments, paints and metal coatings. Cadmium does not break down in the environment and generally does not dissolve in water. In the ground, it typically clings to soil and sediment.

**Chlorinated solvents** — are chemicals which include methylene chloride, perchloroethylene, trichloroethylene, 1,1,1-trichloroethane, 1,1,2-trichloroethane, and carbon tetrachloride.

**EPA** — U.S. Environmental Protection Agency

**MAA** — Maryland Aviation Administration

**Maryland State Superfund Program** — is a state-funded program for cleaning up contamination in compliance with Federal and State laws

**MDE** — Maryland Department of the Environment

**MDNR** — Maryland Department of Natural Resources

**Mercury** — a metal that is used in manmade products such as batteries and thermometers.

**Middle River Complex** — the site of a Lockheed Martin Maritime Systems and Sensors (MS2) facility and General Electric's Middle River Aircraft System (MRAS); also known locally as Plant 1

**Mitigation** — process that lessens the severity of an environmental risk or condition

**MRAS** — Middle River Aircraft Systems, a subsidiary of General Electric Company, which leases space mainly inside Buildings A, B and C at the Middle River Complex to manufacture aircraft parts.

**MS2** — Mission Systems and Sensors (MS2) business unit of the Lockheed Martin Corporation, which leases space mainly inside the Vertical Launching System building at the Middle River Complex.

**Old Navy Depot** — also known as the “Bengies” site; known locally as Plant 2; formerly owned by the Federal government and under the management of the General Services Administration; now owned privately.

**PAHs** — polycyclic aromatic hydrocarbons -- a group of chemicals that are formed during the incomplete burning of coal, oil, gas, wood, garbage, or other organic substances, such as tobacco and charbroiled meat. There are more than 100 different PAHs. Also, commonly found in asphalt paving and roofing materials and urban environments.

**PCBs** – polychlorinated biphenyls -- a group of synthetic organic chemicals. There are no known natural sources of PCBs in the environment. PCBs are either oily liquids or solids and are colorless to light yellow. They were commonly used in electrical transformers.

**Phase I assessment** — A report is generated with information about a site, but environmental samples are not collected.

**Phase II environmental investigation** — Environmental samples are collected and tested for contaminants.

**Sediment** – refers to sand, silts, and clays washed from the land into water, usually after rain or snowmelt. Sediment is found under water in storm drains, ponds, lakes, creeks, streams, rivers, and oceans.

**Surface soils** – refers to the topsoil found usually within the first six inches to one foot beneath the land surface. It is assumed that people can come into contact with surface soils when doing normal activities around the home or work place, such as shallow digging for fencing, gardening, landscaping, and mowing the lawns.

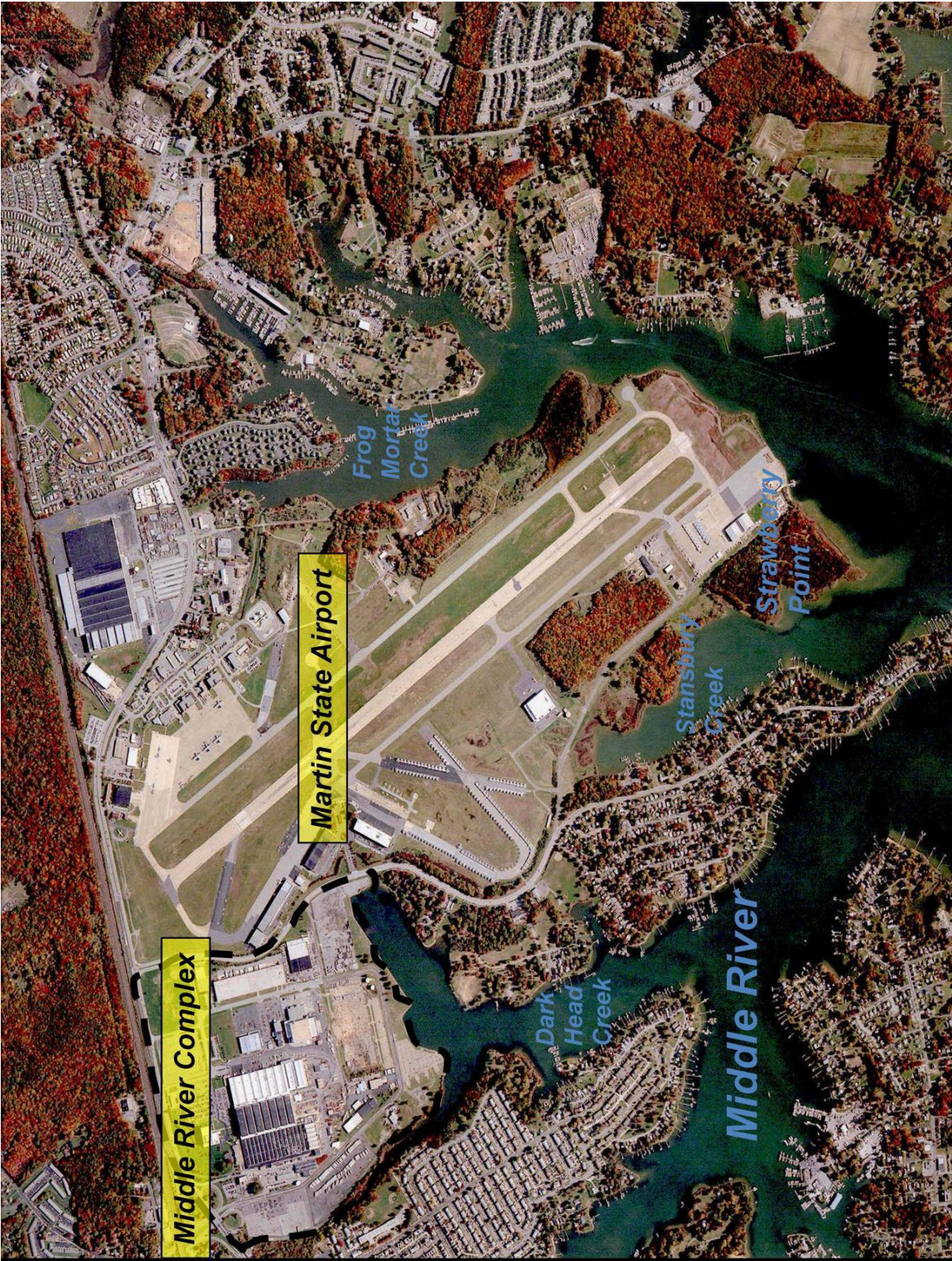
**Surface Water** – all water bodies naturally open to the atmosphere (rivers, creeks, storm drains, lakes, reservoirs, ponds, streams, impoundments, seas, estuaries, etc.)

**TCE** – trichloroethylene is a volatile organic compound (VOC) used to clean metals and in specialty adhesives. It was a commonly used degreaser in industrial operations.

**USTs** – underground storage tanks

**VCP** – Voluntary Cleanup Program. Operated by Maryland Department of the Environment. Participation by companies is voluntary and is used to clean up brownfield sites.

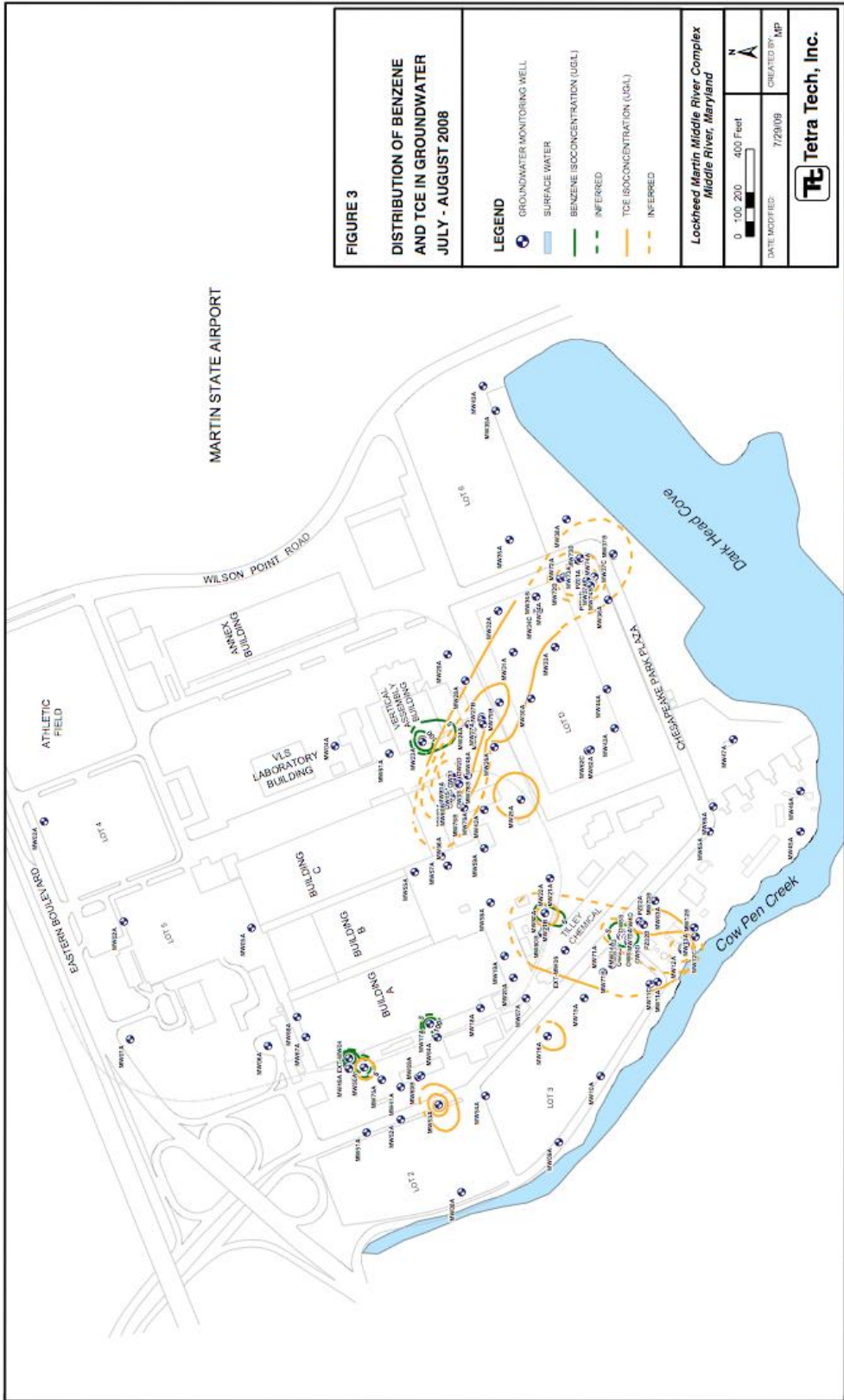






**Figure 2 Middle River Complex**



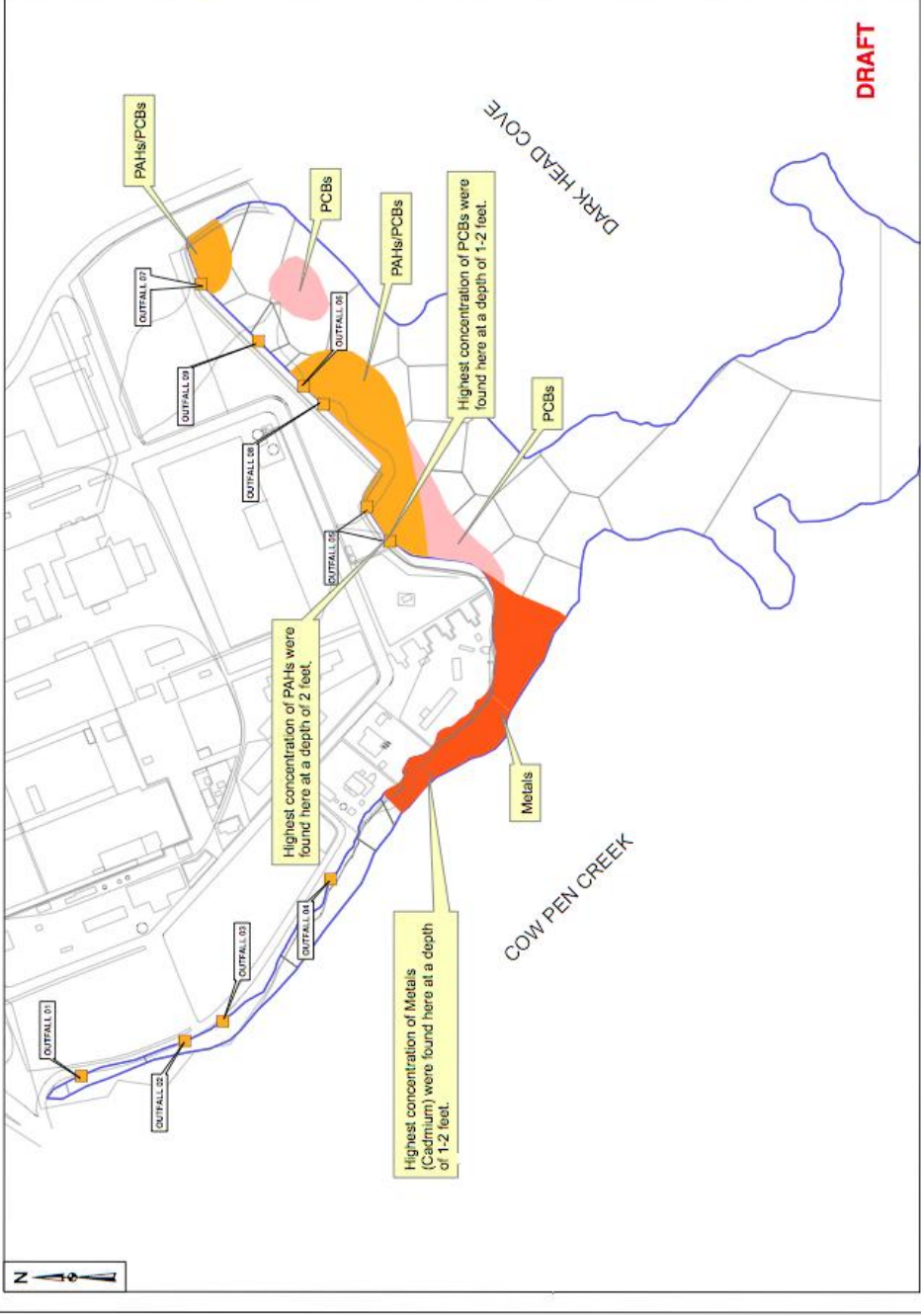




**Figure 4**  
Sediment Locations Where the Highest Concentration of a Specific Chemical May Require Cleanup  
Lockheed Martin Middle River Complex  
Middle River, Maryland



Drawn By: MJP 7/30/09  
Checked By:  
Approved By:  
Contract Number: 112/001633



**DRAFT**

Map Document: K:\Gis\project\mids\_river\PCB\_Sediment\_Concentrations\_Nov2009\_7\_30\_09.mxd 7/30/2009



Figure 5



Figure 6

