



*A Citizens' Guide to Understanding the Groundwater
Response Action Plan for the Lockheed Martin Middle River Complex*

August 2011

2323 Eastern Boulevard | Middle River, Maryland



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Introduction

What is a Response Action Plan? Why is Lockheed Martin required to file one for its groundwater cleanup at the Lockheed Martin Middle River Complex? What does the Response Action Plan mean to the community?

This Citizens' Guide is designed to help Middle River, Md., residents and other interested parties better understand the proposed groundwater cleanup plan for Lockheed Martin's Middle River Complex.

For the past several years, Lockheed Martin has been actively investigating groundwater, soil and sediment conditions at the Middle River Complex and nearby Martin State Airport.

This guide specifically addresses the groundwater cleanup at the Middle River Complex. Additional guides will be provided as Response Action Plans are completed for other cleanup efforts.

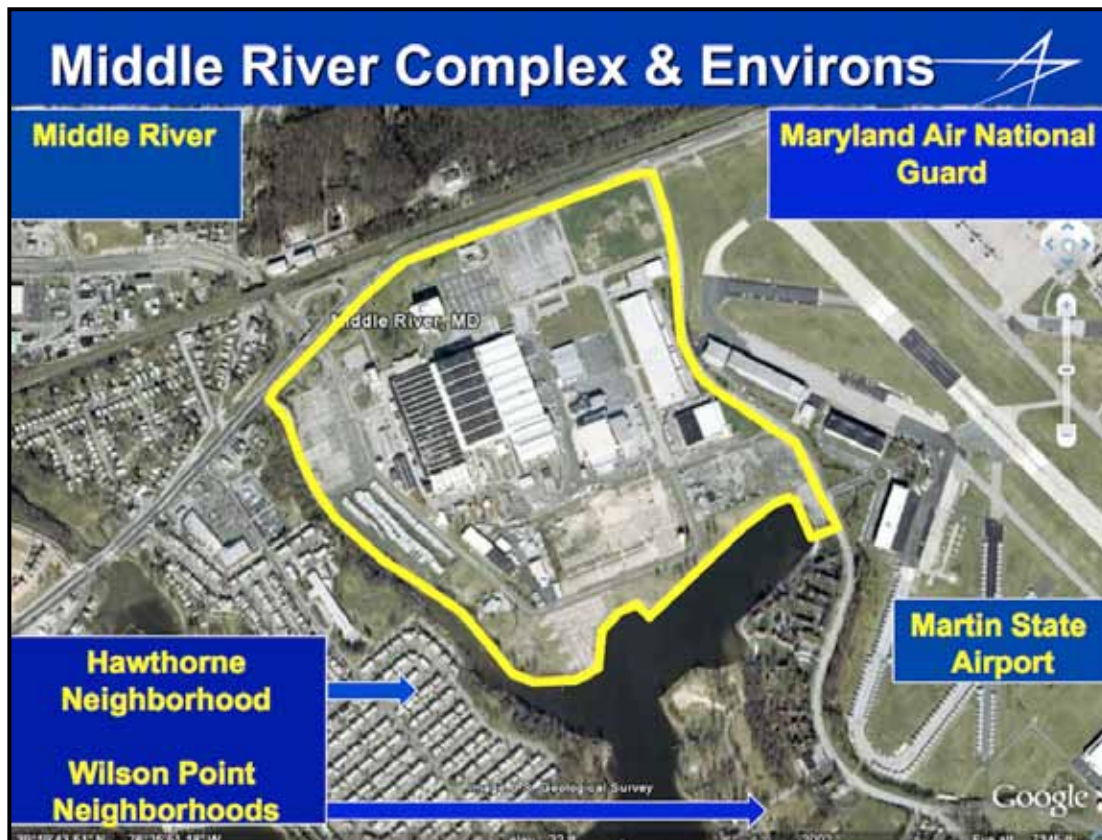
Over the past several years, the Lockheed Martin team has collected more than 800 samples at the Middle River Complex with over 3,300 analytical tests at more than 200

groundwater locations. Chemicals known to have been used during former industrial operations were detected in groundwater at the site.

The chemicals do not pose significant health risks to people because the location of the chemicals makes it unlikely that people would be exposed or because in other locations the amounts and concentrations are insignificant.

As you'll read in this guide, Lockheed Martin, its technical contractors and a specially formed strategic evaluation team have assessed the groundwater contamination, extensively evaluated the cleanup alternatives and developed a proposed plan for safely and effectively cleaning up the contamination.

Lockheed Martin shared a draft of the Groundwater Response Action Plan with the state this spring and will begin the cleanup after it receives — and incorporates — input from the public and the Maryland Department of the Environment, the state agency responsible for oversight of environmental matters.



Background Information

Where is the Middle River Complex?

The Middle River Complex is located at 2323 Eastern Boulevard in Middle River, Md. The 160-acre complex is part of the Chesapeake Industrial Park and includes 12 main buildings, an active industrial area and yard, perimeter parking lots, an athletic field, a concrete-covered vacant lot, a trailer and parts storage lot, and various grassy green spaces along its perimeter.

What has Lockheed Martin's environmental testing involved?

Lockheed Martin has been actively investigating groundwater, soil and sediment conditions at the Middle River Complex and nearby Martin State Airport. Between the two sites, the Lockheed Martin team has collected thousands of samples. The samples were taken from 200 groundwater locations, 400 soil borings and 80 surface water and sediment locations. They were tested for chemicals, including those known to have been used during aircraft manufacturing and related industrial operations.

Where did the contamination come from?

The contamination may have resulted from heritage company operations and disposal practices that were commonplace in the aerospace industry more than half a century ago. Although the actions were legal and considered safe at the time, modern-day research has shown that some of the practices may have led to the contamination.

What is a response action plan?

A response action plan provides details about contamination at a cleanup site. It describes the methods used to evaluate the contamination, the alternatives for cleanup and the recommended ways to clean up the contamination.

Why did Lockheed Martin create the Groundwater Response Action Plan?

Lockheed Martin is participating in the Maryland Department of the Environment's Voluntary Cleanup Program and is required by the state to submit a plan before cleanup is undertaken.

Does the plan cover all cleanup work being done at the site?

No. This plan describes the proposed actions for groundwater cleanup. Separate plans are being developed for soil and sediment cleanup. This plan also does not describe the response to groundwater contamination in the active industrial area of the complex, which is being investigated and assessed separately.

Is Lockheed Martin conducting other environmental investigations?

Yes. Lockheed Martin is actively conducting groundwater, soil and sediment investigations at its Middle River Complex and nearby Martin State Airport.

For more information on each topic, please see the Fact Sheet, available online.

Lockheed Martin is conducting the groundwater cleanup to address the impacts of past practices and to remove contamination from higher-concentration areas in an accelerated time frame.

Assessing Groundwater Concerns

How has the groundwater monitoring been conducted?

More than 200 groundwater monitoring wells were installed and are sampled at the site and in the surrounding area. Various tests were conducted to determine the extent of the contamination and the flow and characteristics of the groundwater.

What chemicals have been found in the groundwater?

The results of extensive evaluations show that groundwater contains trichloroethene (TCE), benzene, 1,4-dioxane and metals above state standards at different locations across the site. The concentrations of 1,4-dioxane and metals are very small and localized, thus they do not pose significant risks. Monitoring of these compounds will continue.

What is trichloroethene (TCE)?

Trichloroethene (TCE) is a volatile organic compound. Volatile organics quickly evaporate when exposed to air. It is a nonflammable, colorless liquid that is used in industry as a solvent to remove grease from metal parts. It also is an ingredient found in adhesives, paint removers and spot removers.

What can you tell me about the trichloroethene (TCE) found at the site?

Trichloroethene, also called trichloroethylene, (TCE) is the most predominant contaminant found at the site. It is found primarily in two areas: in the western and eastern portions of the site. It also is found in lower concentrations in other areas, including the active industrial area. The TCE is present in groundwater at depths ranging from 5 feet to 35 feet below ground.

What is benzene?

Benzene is a volatile organic compound. Volatile organics quickly evaporate when exposed to air. It is a colorless, flammable liquid derived from petroleum that evaporates quickly and dissolves slightly in water. Benzene is found in fuels and is used to manufacture a wide variety of chemical products.



Where is benzene found at the site?

Benzene has been detected in several areas in the west and east portions of the site. These areas are localized and distinct from the trichloroethene plumes.

What other contaminants are found at the site?

The other contaminants include 1,4-dioxane (a clear liquid that dissolves in water and is used in solvents as a preservative) and metals such as beryllium, nickel and cobalt. While these and other metals have been associated with aircraft manufacturing, Lockheed Martin's investigation showed that the primary metals detected in groundwater may be dissolved from metals that occur naturally in soil and that these metals do not pose a risk to people; therefore, no active remediation of metals is proposed.

Do I need to be worried about the groundwater contamination?

No. Extensive testing has shown that the groundwater contamination does not pose a risk of human exposure — either because the amounts are insignificant or because the location of the chemicals makes it unlikely that people would be exposed. Computer modeling and direct sampling also indicate that the groundwater contaminants are not harmful to adjacent surface water and sediments. At locations within the plant where volatile organic compounds could enter buildings, Lockheed Martin has an ongoing soil vapor monitoring and recovery program. Where concentrations of chemicals are identified beneath the buildings, two vapor recovery systems are currently operating to prevent vapors from entering the buildings.

Monitoring of air within the buildings has indicated that where TCE is found, it is below the MDE screening level.

Have vapors been detected at the treatment and monitoring systems?

Lockheed Martin monitors vapors going from beneath the building into the treatment system, and it has found volatile organic compounds in those vapors. The concentrations of volatile organic compounds has dropped significantly since the systems first were started.

If there is no risk, why is Lockheed Martin conducting the cleanup?

Lockheed Martin is conducting the groundwater cleanup to address the impacts of past practices and to remove contamination from higher concentration areas in an accelerated time frame. This will reduce potential future human and environmental exposure directly to contaminated groundwater and contaminated vapors that may accumulate in structures that may be built in the future. The site is safe under current site use, but this cleanup will ensure that it will be safe if, in the future, property owners decide to use the land differently. Lockheed Martin performs this work because it is the right thing to do.

Evaluating Possible Cleanup Methods

How many cleanup alternatives did Lockheed Martin evaluate?

The Lockheed Martin team evaluated about 24 possible cleanup options. Through an intensive evaluation process it trimmed the list to 14 options, and then narrowed that list to the three best alternatives based on the project's groundwater cleanup objectives and carefully compared these three.

In situ bioremediation is an effective, well-proven, safe technique that enhances natural processes that are already occurring in the ground.

What are Lockheed Martin's groundwater cleanup objectives?

Lockheed Martin's groundwater cleanup objectives are to:

- Prevent exposure to groundwater impacted with chemicals above the State of Maryland standards
- Prevent site groundwater from causing unacceptable risk in surface water, sediments, off-site groundwater and indoor vapors
- Conduct active remediation to reduce trichloroethene plume.

What criteria were used to evaluate the possible cleanup methods?

The Lockheed Martin team considered several factors when evaluating the possible cleanup alternatives. It evaluated each alternative for its protection of human health and the environment. The team also considered each alternative's short-term and long-term effectiveness; how well it would address the toxicity, mobility and volume of the contamination; how efficiently it could be implemented and sustained; and its cost relative to effectiveness.



Did you follow a specific process to evaluate the alternatives?

Yes. Lockheed Martin used a peer review evaluation method that called on a team of specialists from other corporations as well as from inside Lockheed Martin. To help with the evaluation, the project team — working closely with the strategic evaluation team — developed a comprehensive Conceptual Site Model that outlined the sources of contamination, the paths the contamination might follow, and the potential for people or the environment to be impacted. The evaluation also considered site history, regulatory requirements and exposure risks related to possible land uses in the future.

Over the course of one year, the team evaluated each of the 14 alternative cleanup programs against the project objectives and criteria for success.

This evaluation reduced the list to three final alternatives, which were then evaluated in detail.

The team chose the method that provided the most-effective cleanup while also causing the least environmental impact.

Was the process effective?

The process was extremely effective. The strategic evaluation team introduced innovative processes to evaluate each alternative and prioritize decision making criterion. This peer review provided a “fresh eyes” approach that helped the technical team identify challenges and find solutions that might not have been considered otherwise.

What were the three alternatives for consideration on the final list?

The final three response action alternatives for consideration were:

Alternative 1: groundwater and vapor extraction in high concentration areas, and institutional controls.

Alternative 2: in situ bioremediation in high concentration areas, with groundwater and vapor extraction via wells and institutional controls.

In situ bioremediation is a process that injects a mixture of water and nutrients into the ground to encourage naturally occurring bacteria to break down the contamination.

Alternative 3: in situ bioremediation in high concentration areas, and institutional controls. (We recommend this as the best option.)

What are institutional controls?

Institutional controls are administrative and legal actions that help minimize the potential for human exposure to contamination and ensure that the remedy continues to protect people. For example, controls may prohibit the use of groundwater as drinking water, may require new buildings to install soil vapor recovery and treatment, or may require monitoring and special procedures (such as wearing protective clothing) when conducting work that could expose workers to contamination.

What is in situ bioremediation?

In situ (which means “in place” or “in its original location”) bioremediation is a process that injects a mixture of water and nutrients into the ground to encourage naturally occurring bacteria to break down the contamination, creating a safe end-product. Nutrients proposed for this project are food grade vegetable oil and lactate, a non-toxic food additive that is produced from sugars of corn or beets.

Selecting the Best Alternative

Which alternative was chosen for implementation, and why?

The Lockheed Martin team selected Alternative 3. The alternative will consist of in situ (meaning performed in place) bioremediation of contaminated groundwater in high concentration areas and institutional controls. In situ bioremediation injects a mixture of water, food grade vegetable oil and lactate (a non-toxic food additive that is produced from sugars of corn or beets) into the ground to stimulate naturally occurring bacteria that consume — and break down — the contamination.

This alternative will reduce the plume of trichloroethene at the site by using in situ bioremediation in the three areas with the highest concentrations and greatest accumulations of TCE. The highest concentrations are found south of the active industrial facilities — one area to the west, and two areas to the east.

Institutional controls such as deed restrictions and limits on groundwater use will reduce potential risks in the future. The groundwater will be cleaned to standards that support “restricted residential use,” meaning the site will be safe but the groundwater should not be used for drinking water. The groundwater currently is not used for drinking water, since municipal water is available. In addition, until groundwater contamination is reduced, new structures in the area above the plume must be built with the provisions to minimize or eliminate potentially excessive indoor air vapor concentrations.

What were the disadvantages of Alternatives 1 and 2?

Alternatives 1 and 2 would have been more disruptive to the environment and community. They required more infrastructure (by building a treatment facility and creating

A carbon footprint is an estimate of how much greenhouse gas (carbon dioxide) is produced to support any activity.

What is sustainability?

Sustainability is operating in a thoughtful and strategic manner that conserves energy and natural resources, improves efficiency, and protects the well-being of people and the environment today and for many years to come. Lockheed Martin actively pursues the principles of sustainability to improve the world both locally and globally.

a network of underground piping) and would have used a lot more energy to pump the water from the ground. They also would have required long-term operation and maintenance. Additionally, Alternative 1 would have taken longer to achieve the cleanup, and would have been more costly.

All of the alternatives would be effective in removing contamination. Alternative 3, however, is a more environmentally friendly and sustainable solution that requires no significant infrastructure construction, minimizes the use of energy and has no long-term operation and maintenance costs. In other words it is a more sustainable option with a smaller carbon footprint.

What is the cleanup strategy associated with Alternative 3?

The team’s cleanup strategy includes:

- Eliminating risks to human health by improving the groundwater quality and, thus, reducing the risk of vapor intrusion in buildings on site;
- Establishing workable institutional controls such as deed restrictions to ensure people’s health and safety, if land usage changes in the future;
- Meeting state standards for “restricted residential” criteria by implementing institutional controls such as deed restrictions to ensure the groundwater is not used for drinking water;
- Removing significant contaminant plume (target 70%) in the three areas that contain most of the contamination; and
- Including sustainability as a decision consideration.

Will the groundwater be fully cleaned?

The cleanup will remove at least 70 percent of the contaminant plume. The rest will go away eventually as natural processes continue to clean the remaining contamination. The Maryland State Department of the Environment has noted that a “restricted residential” level — which the state calls Tier 1B — is an appropriate goal because the groundwater probably would not meet drinking water standards for a long time. This is because the groundwater lies within tight clay soils that slow down groundwater movement and make distribution of the injected solution more difficult. The tight soils are also the principal reason that, regardless of quality, the groundwater at the Middle River Complex is not readily available as a source of drinking water.

“Tight” soils can be easily demonstrated by pouring water over sand in a colander and over clay in a second colander. Water readily pours through the sand, which is more “porous” or having many open spaces, and moves very slowly through the “tight” clay soils which has limited open space between soil particles.

Did the team conduct any activities to predict what would work best?

The team conducted additional groundwater modeling to assess the effectiveness of in situ bioremediation used alone at the site and to determine whether groundwater extraction, or removal, would complement the cleanup efforts. The model included injections with and without groundwater removal in a small portion of the southeast area of the site.

The pilot tracer injection program injects a harmless tracer solution to confirm pathways below ground where injected materials might flow. Results will be used to modify injection plans during in situ bioremediation.

Groundwater modeling uses all the data collected from the site to represent the site and predict the results of the various alternatives. It has been checked against historic groundwater behavior under field-measured average and pump test conditions. Model assumptions used in the injection simulations will be checked by a pilot tracer injection program to be performed in the summer of 2011. If necessary, model assumptions will be adjusted and the changes will be incorporated in the preliminary design to be initiated after Maryland Department of the Environment and public concurrence.

Groundwater does not move quickly at the Middle River site because the soils are mostly clay. As a result, the model predicted that it would be better to treat the material in place than to attempt to pump it out, which would take a very long time.

The Details on In Situ Bioremediation

What is in situ bioremediation?

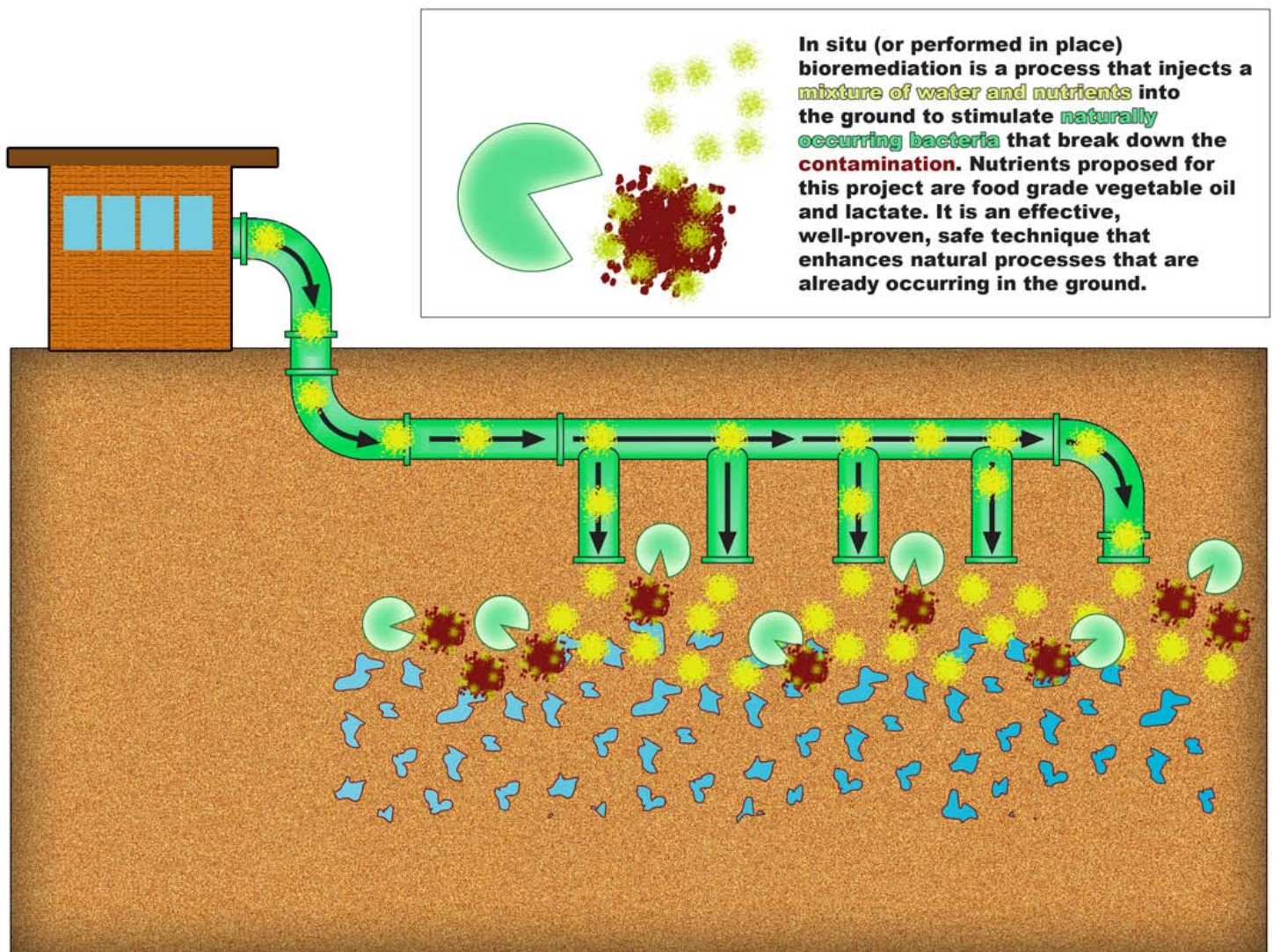
In situ (or performed in place) bioremediation is a process that injects a mixture of water and nutrients into the ground to stimulate naturally occurring bacteria that break down the contamination. Nutrients proposed for this project are food grade vegetable oil and lactate. It is an effective, well-proven, safe technique that enhances natural processes that are already occurring in the ground.

Are there benefits to using in situ bioremediation?

There are numerous benefits to using in situ bioremediation. A typical pump and treat cleanup program requires the construction of buildings to house

the treatment facility and other related infrastructure such as large networks of underground piping. In situ bioremediation significantly reduces infrastructure requirements. Additionally, since the treatment will take place below the ground surface, there is less potential for human exposure to the contaminants since they are not being extracted, treated and discharged.

This technique is environmentally friendly. It uses fewer materials and natural resources than a pump-and-treat system. With the proposed system, it is expected that the active remediation will continue for about five years, as compared to 15 years with a pump-and-treat system, to accomplish the same goals. This program will be most-effective while also being environmentally friendly.



Depiction of In Situ Bioremediation

Does Lockheed Martin have experience using in situ bioremediation?

Yes. Lockheed Martin has used in situ bioremediation successfully on other projects. For example, at a remediation site in Charleston, S.C., Lockheed Martin over the past four years has reduced contamination of trichloroethene (TCE) and other solvents by 70 percent in several areas with injections of nutrients such as sodium lactate solution (sodium lactate is a non-toxic, food grade product). At a remediation site in Irvine, Texas, Lockheed Martin used in situ bioremediation between 2003 and 2006 and reduced volatile organic compound (VOC) concentrations by 61 percent, including a 99 percent reduction in trichloroethene (TCE).

How will in situ bioremediation be conducted at Middle River?

The water and nutrient mixture will be injected into 148 injection wells in the three designated areas in up to three events over a five-year period. Each of the three areas will have a small building where the solution will be mixed with water prior to the injection.

The injections will take place slowly, at less than 0.5 gallons per minute per well, and the solution will spread throughout the contamination areas over time, as groundwater slowly moves through the soil. Injections will be made into half of the wells at any one time, and the injections will span 30 days per event.

How were the injection points selected?

The injection points were selected based on where the highest concentrations of contamination could be effectively treated, using information gathered from extensive groundwater monitoring and groundwater modeling.

How will you know if the procedure is effective?

The Lockheed Martin team is installing 16 monitoring wells in addition to the 148 injection wells. Sampling will be conducted prior to and after each injection to determine the procedure's effect on the contamination. Monitoring

The groundwater contamination does not pose significant health risks to people because the higher-concentration areas are not located where people are likely to be exposed and the other areas have amounts and concentrations that are insignificant.

will continue after the injection events to track and confirm continuing biodegradation. More injection wells, more injection events and bacterial cultures can be added to further enhance the process if needed.

Are there risks associated with the injections?

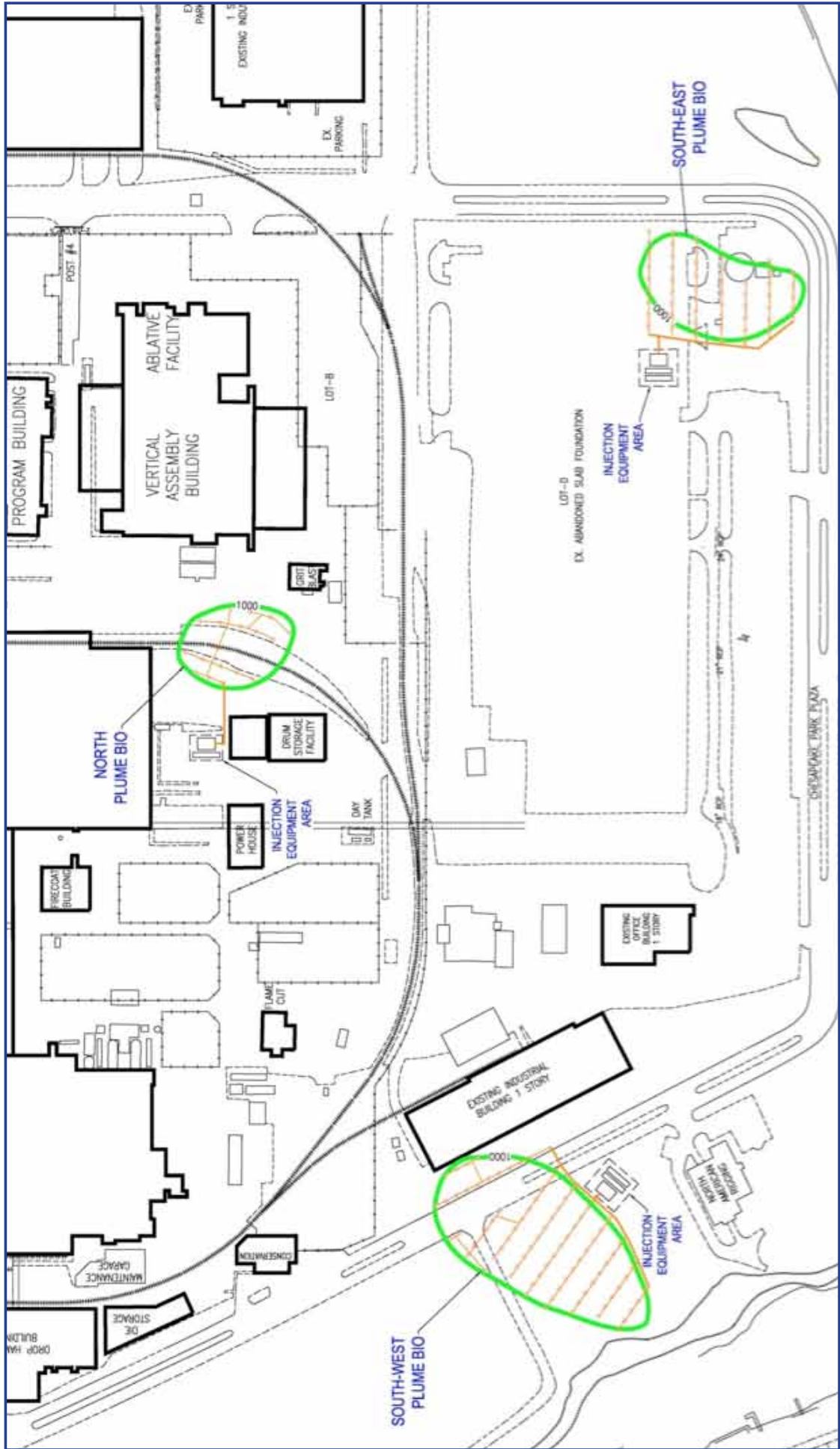
The technical team will implement a plan designed to identify and avoid or block subsurface pathways (such as utility trenches or cracks in sewer pipes) that may direct emulsion to the surface or into the waterways.

Three steps are planned to identify issues that must be avoided to prevent release of the mixture to the surface or waterways before the injection program is undertaken.

The first is a utility investigation in the three areas in which the injections are proposed. This investigation is being conducted in 2011 and will include review of engineering records, field inspection and, as necessary, flow testing and internal inspection.

The second, also planned for 2011, is a field pilot program to inject tracers at each of the three areas planned for injection. Results of this tracer program will be used in the detailed design of the injection systems.

The third is full scale tracer testing. After the complete injection systems are constructed, a full-scale tracer injection program, identical to the planned nutrient injections except that a tracer solution will be injected, will be performed. Results of that full scale tracer injection will be used to refine, as necessary, the nutrient injection program.



The tracer, a fluorescent dye, is harmless to human health and the environment. Lockheed Martin will notify the community before the pilot tracer test and the full scale tracer test.

Did you learn anything from the groundwater tests and modeling that you will apply to the injection procedures?

During a pilot test performed in October 2008 in the northern high concentration area of the eastern TCE plume, some of the injected solution was accidentally released into Dark Head Cove.

This incident provided guidance on limits of injection pressures in that area and all areas because the hydrogeology (or underground water conditions) is similar in the three injection areas. Investigation into the cause of the release also indicated that abandoned utilities in the injection area — which were connected to a storm drain that discharged to Dark Head Cove — contributed to the release.

Because of the lessons learned during this pilot, we will limit the pressure driving each injection; we will conduct detailed utility investigations in each area; we will conduct the pilot tracer injections; and we will do full scale injections with dye tracer before injecting nutrients into the groundwater. These investigations are designed to refine design parameters and evaluate the effectiveness of the process before injections of nutrients occur.

Again, we will notify the community before tracer tests or injections so residents are aware of when the events will take place and the progress of each test.

What remains to be done before the injections will begin?

First, the community will have an opportunity to comment on Lockheed Martin's proposed plans. Then, the Maryland Department of the Environment must approve the Groundwater Response Action Plan; their comments also will be shared with the public.

Once the public and state's comments have been considered, and where practical plans will be modified, and final approvals are granted, the work will include:

- Making adjustments, if necessary, to well locations and technical considerations based on knowledge obtained in the 2011 investigations;
- Installing injection wells and monitoring wells;
- Conducting dye tracer testing;
- Conducting the first set of injections;
- Monitoring of performance during injection and at one- three- and six-month intervals;
- Making additional sets of injections and monitoring performance; and
- Making determinations on whether adjustments are necessary.

What is the proposed cleanup schedule?

The schedule will be dependent, in part, on Lockheed Martin's receipt of Maryland Department of the Environment (MDE) approval. Lockheed Martin shared the Groundwater Response Action Plan draft with the state on April 29, 2011. Lockheed Martin is accepting public comments and will consider comments from the community as well as from MDE in its final Groundwater Response Action Plan. Lockheed Martin expects to receive state approval in Winter 2011-12. Lockheed Martin expects design to be completed by the Winter of 2012-13 and construction completed by mid 2013.

Projected Schedule

The project schedule for the groundwater cleanup at the Middle River Complex is:

Design Support Work	Summer 2011
MDE approval	Winter 2011-12
Design completed	Winter 2012-13
Construction completed	Mid 2013
System Startup	2014

How can the public stay informed and involved?

A public informational meeting on this project is planned for September 2011. Invitations are being mailed to the Lockheed Martin mailing list and provided to the nearby civic associations as well as the local newspapers. We present to these civic associations when invited. Reports are routinely made available both in the Essex public library and on the Lockheed Martin website.

Glossary — Groundwater Response Action Plan

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

Beryllium — Beryllium is an element found naturally in soil and rocks. It is used in the aerospace industry generally to strengthen metal and make it less subject to corrosion.

Bioremediation — Injections of nutrients to encourage the growth of naturally occurring bacteria and other microscopic-sized living things in the water under the ground. Bioremediation may also include injections of additional bacteria to augment those naturally present.

Cadmium — Cadmium is an element found naturally in soil and rocks. It is also found in some foods, and in manmade 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 — chemicals that include methylene chloride, perchloroethylene, trichloroethylene, 1,1,1-trichloroethane, 1,1,2-trichloroethane, and carbon tetrachloride, commonly used in industry for such applications as degreasing.

EPA — U.S. Environmental Protection Agency

Ethene or Ethylene — C₂H₄ is the simplest alkene form and is a colorless gas with a slightly sweet smell; it is the result of complete biodegradation of chlorinated organic compounds such as TCE.

Hydrogeology — the study of underground water conditions.

in situ — In place; commonly used to describe water treatment/cleanup that is done in place, rather than treating water after pumping water out of the ground.

Institutional controls — administrative tools to limit exposure to contaminants, such as deed restrictions to prevent use of groundwater as drinking water.

MDE — Maryland Department of the Environment

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

MRAS — Middle River Aircraft Systems, a subsidiary of GE Corporation, 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 Launch Systems building at the Middle River Complex to assemble launch electronic systems.

Nickel — Nickel occurs naturally in the environment at low levels. It is a silvery-white metal that can be easily thinned or shaped. It is used in the manufacturing of stainless steel and other metal compounds because it can withstand heat and stress.

Peer Review Team — a team of specialists from other corporations and organizations used to help evaluate and develop a comprehensive and effective plan to address groundwater contamination.

Pilot Tracer — tests to determine unknown connections that might pose a risk to the proposed groundwater in situ treatment remedy.

Plume — a body of contaminated groundwater of vapor originating from a specific source and influenced by factors such as local groundwater movement and the character of the aquifer.

RAP — Response Action Plan, which describes proposed cleanup plans.

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.

Strategic Evaluation Team — a peer review team established by Lockheed Martin to extensively evaluate the cleanup alternatives and develop a proposed plan for safely and effectively cleaning up the contamination.

Subsurface Pathways – Formations beneath the ground surface that may create preferential opportunities for groundwater flow, possibly creating routes where injected solution might escape from interaction with groundwater, reducing the effectiveness of in situ bioremediation. Examples include utility trenches or cracks in sewer pipes and the effort will be made to identify these pathways and avoid them during injection.

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

TCE or trichloroethene, also called trichloroethylene – is used to clean metals and in specialty adhesives. A commonly used degreaser in industrial operations, TCE is a volatile organic compound (VOC).

Vapor Extraction – a process that vacuums vapors from the ground and treats them at the surface to help address the contamination.

Vapor Intrusion — The term “vapor intrusion” describes a process in which certain types of chemicals — volatile organic compounds (VOCs) — that are present in soil or groundwater move through the soil and enter the air of an overlying building. Vapor intrusion can occur in any type of building through a crack or opening in a basement, crawl space or slab.

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

VOCs – Volatile Organic Compounds, a type of chemical (organic compound) that will vaporize when exposed to room temperatures.

For More Information

Questions may be addressed to the following individuals at Lockheed Martin:

- Gary Cambre — 1.800.449.4486
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- Jennifer Allen — 330.734.9911
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All documents are available at the Essex Library, 410-887-0295, or on Lockheed Martin's Web site at:
<http://www.lockheedmartin.com/aboutus/energy-environment/places/remediation/>

(Look for separate Middle River and Martin State Airport links on the left.)

***A public comment period will be held
from September 1-30, 2011.***

***To make comments, please send by
Sept. 30 to:***

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