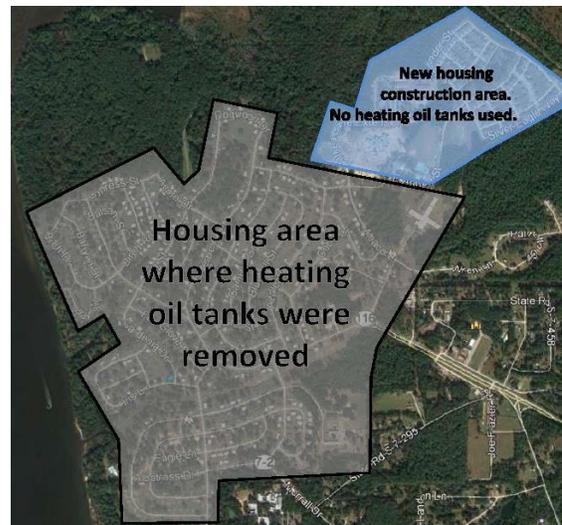


### **Why is the Laurel Bay Public Health Review being conducted?**

In February 2015, the Marine Corps learned that former residents of Laurel Bay expressed concern that their children's cancer may be linked to the Laurel Bay military housing community. Shortly thereafter, Marine Corps and Navy medical representatives met with the involved families who initiated the social media posts. The Marine Corps is unaware of any association between environmental conditions at Laurel Bay and the illnesses reported by the families. However, to provide the Marine Corps and these families with more information, in June 2015, at the Marine Corps' request, the Navy and Marine Corps Public Health Center (NMCPHC) initiated a Public Health Review (PHR) to determine if completed exposure pathways to contaminants exist at Laurel Bay, MCAS Beaufort and MCRD Parris Island. In addition, they are conducting an epidemiologic investigation to identify and validate all pediatric cancers in military children that lived or were conceived in the Beaufort area to determine if the observed cancers rates exceed what would be expected in this population.

### **Why isn't my home being tested? Why isn't environmental testing being performed in Freedom Sound?**

Sampling underground storage tanks in Freedom Sound is not being done because heating oil tanks were not used in that community. Freedom Sound was constructed after heating oil was no longer in use.



In the Capehart houses, soil sampling was done for each tank removal. Based on when the tank was removed and when you moved in, you may not have seen the tank removal or sampling efforts. The soil samples were tested for petroleum compounds (such as benzene and naphthalene) in accordance with U.S. Environmental Protection Agency (EPA) and South Carolina Department of Health and Environmental Control (SCDHEC) guidance. The results were reviewed by SCDHEC to determine the necessity of further action such as additional groundwater sampling. Groundwater sampling was done if indicated by soil sample results and may range from a one-time sampling to longer term sampling. The groundwater sampling procedure draws a water sample from groundwater monitoring wells that have been installed. Often times, you may not be aware it is ongoing. Further investigation of the impacts to soil, groundwater, and soil vapors for the leaking tanks is still in progress

### **Why hasn't my tap water been tested? Is my drinking water safe? Can the impacted soil, groundwater or soil vapor affect my water lines?**

The Beaufort-Jasper Water and Sewer Authority (BJWSA) provides the water for Laurel Bay, MCAS Beaufort, and MCRD Parris Island. The source of water provided by BJWSA is the Savannah River. Ground water at Laurel Bay is not a drinking water source. BJWSA follows U.S. EPA and SCDHEC protocol for testing the quality of the water they provide to Laurel Bay. Water quality reports, available on the BJWSA website at <http://www.bjwsa.org/>, indicate water quality meets all EPA standards.

Due to the depth of the buried tanks, water lines in the Laurel Bay community do not come into contact with soil or groundwater that may have been contaminated by heating oil tank leaks.

Resources such as The Plastic Pipe Institute and Water Research Foundation report that permeation of polyvinylchloride (PVC) pipes is extremely rare, even when pipes are in direct contact with a contamination source. The potential for penetration by soil vapors is very unlikely.

### **How can I have access to all relevant studies, results, and notices for the Laurel Bay Public Health Review?**

We encourage you and all other residents to review the most current information about the study at: <http://www.beaufort.marines.mil/Resources/Laurel-Bay-Health-Study/>.

### **How do I obtain information about the environmental testing conducted at my current or former residence in Laurel Bay?**

A map has been compiled with the most current information regarding testing and results for each house that previously used heating oil in Laurel Bay. This map is posted to the website: <http://www.beaufort.marines.mil/Resources/Laurel-Bay-Health-Study/>. Previous residents should also note that the addresses for the houses were changed in 2014. A conversion from old to new addresses is also available on the website. Please email [LaurelBayHealthyStudy@usmc.mil](mailto:LaurelBayHealthyStudy@usmc.mil) if you have questions about the testing results.

### **How do you know there are no heating oil tanks left in Laurel Bay?**

Heating oil tanks were identified through review of records and locating techniques that included ground penetrating radar (GPR), metal detectors, and probes. All known underground heating oil storage tanks (USTs) have been removed as of September 2015. The removal was done in accordance with the Tank Removal Work Plan developed in coordination with SCDHEC. Only Capehart houses used heating oil. No heating oil tanks were used in the Freedom Sound neighborhood of Laurel Bay.

### **Why did the map posted at the town hall meetings in January 2017 indicate heating oil tanks still remain at Laurel Bay?**

The map and other informational posters used at the meeting were previously developed for use at a public information meeting held April 2016 on the environmental testing in Laurel Bay. At the time of the April 2016 meeting, records for 34 homes indicated the heating oil tanks were still in place beneath building additions. Over the summer of 2016, ground penetrating radar (GPR) surveys did not reveal the presence of heating oil tanks at the suspected locations. We recognize the information caused confusion. We will take extra measures to avoid such confusion in the future.

### **Why were letters mailed in the spring of 2016 stating a heating oil tank is beneath my house?**

Letters were mailed to residents of 34 homes where housing records indicated the heating oil tanks were still in place beneath building additions. The intent of the letters was to inform the residents that environmental sampling at their homes would be conducted during the summer of 2016. As part of the process of environmental sampling, ground penetrating radar (GPR) surveys did not reveal the presence of heating oil tanks at the suspected locations. Follow up letters were mailed to the residents to inform them of the results of the environmental testing.

### **What were the results of the petroleum vapor intrusion testing done on 34 homes in 2016? Why were only these 34 homes tested?**

Housing records indicated these 34 houses had a heating oil tank under a portion of the house that was added on after initial construction (such as a porch, storage shed, garage, or sun

room) and could not be removed without damaging the house foundation. Given there was a suspected tank under a portion of the house, these houses were considered to have the highest potential for vapor intrusion. However, during the vapor intrusion sampling, ground penetrating radar (GPR) surveys confirmed there were no tanks present at the houses. Vapor intrusion sampling has been completed at each house and none have indicated the potential for vapor intrusion.

To date, a total of 73 houses have been sampled for vapor intrusion, including the 34 mentioned above. Each of the 73 houses results was below the EPA established screening levels indicating no potential for vapor intrusion. Vapor intrusion sampling is an iterative process that may require more than one sample per house. Such was the case at two of the 34 houses sampled in 2016. The second and final set of test results at those two houses were also below EPA established screening levels.

**Were heating oil tanks used at the schools in Laurel Bay? What environmental testing has been completed at the schools?**

Heating oil tanks have been removed from Galer Elementary School and Bolden Elementary School. Soil samples were taken during excavation of the tanks. SCDHEC reviewed the test results and recommended no further action. No soil vapor sampling is needed for sites that had no or very low detections of heating oil in soil or groundwater at levels that are recognized by SCDHEC and the U.S. EPA as unlikely to pose a health concern.

**Is my child at risk of exposure from contamination from the former heating oil tanks when playing outside?**

Heating oil tanks were buried approximately six feet below the surface. Soil management procedures during tank removal were to place excavated soil on a plastic sheet to keep it isolated. After the tank was removed and soil sample taken, the excavated soil from the tank site was placed back into the excavated hole, then covered with clean fill dirt.

**Why did South Carolina Department of Health and Environmental Control (SCDHEC) provide a report for cancer cases in the 29906 zip code instead of just Laurel Bay? Does the Laurel Bay Public Health Review include all former and current residents?**

On 13 January 2017, MCAS Beaufort received a report of data from SCDHEC informing us of cancer rates in the 29906 zip code, which includes all of Laurel Bay Housing. The data shows neither an increased rate of cancer nor cancer fatalities in the zip code around Laurel Bay. SCDHEC routinely provides similar reports to anyone who requests them, including researchers, individual citizens with cancer concerns, and entities such as the Marine Corps, upon request.

The Navy and Marine Corps Public Health Center Public Health Review will look more specifically at current and former children living in Laurel Bay. The scope of the epidemiological study, which follows the Centers for Disease Control and Prevention (CDC) guidelines, includes children, and those conceived, of active duty Marine Corps and Navy members assigned to work at MCAS Beaufort and MCRD Parris Island from 2002 to 2016.

**Is rainwater runoff affected by the former heating oil tanks? Can I be exposed to groundwater impacted by the heating oil tanks?**

No, rainwater runoff is not affected by the former heating oil tanks because the ground surface is not impacted by heating oil tanks given their depth in the ground (approximately 6 feet below ground surface). Groundwater is also too deep to be encountered.

**Should I be concerned about rumors of horse deaths at the former stables or livestock deaths in farm fields where the Freedom Sound neighborhood was constructed?**

The horse stables were formerly located approximately one half mile away from the Freedom Sound neighborhood. The stables were for residents of Laurel Bay with personal horses and we know of no high mortality rate for the horses ever being associated with the stables. The riding club was closed in the last 5 years due to declining numbers of individuals using it.

The Freedom Sound neighborhood was constructed on an old growth timber stand. According to state and local officials, no known increase in deaths of livestock has occurred in Beaufort County.

**Is my home safe to stay in while the Laurel Bay Health Study is ongoing? How do I know my children are not exposed to a cancer risk right now?**

In order for contamination of soil or ground water from leaks in heating oil tanks to pose a health risk, a complete pathway for exposure must be present. Exposure paths are through ingestion, direct contact, or from vapors. The first consideration is always drinking water as it presents to most direct path for ingestion. Ground water does not present an exposure pathway because it is not a source of drinking water. The Beaufort-Jasper Water and Sewer Authority (BJWSA) provides the water for Laurel Bay, MCAS Beaufort, and MCRD Parris Island. The source of water provided by BJWSA is the Savannah River. BJWSA follows U.S. EPA and SCDHEC protocol for testing the quality of the water they provide to Laurel Bay. Water quality reports, available on the BJWSA website at <http://www.bjwsa.org/>, indicate water quality meets all EPA standards.

Exposure through direct contact with contaminated soil does not present an exposure path. Based on the depth of the heating oil tank (approximately 6 feet below ground surface), surface soil was not impacted by heating oil tanks. As a result, activities such as playing and gardening do not expose someone to contaminated soil. Soil management procedures during tank removal were to place excavated soil on a plastic sheet to keep it isolated. After the tank was removed and soil sample taken, the excavated soil from the tank site was placed back into the excavated hole, then covered with clean fill dirt. Children at play and gardening do not present an exposure.

An additional consideration is the possibility of exposure from vapors inside the house associated with leaks from the former tanks. Testing of soil vapors has been conducted on 34 homes that were considered to be most at risk because the tanks were formerly located beneath house additions such as porches, add on rooms, sheds, etc. None of the results from those houses indicated a potential for vapors migrate into the house. Additional sampling for vapors is ongoing. The screening process we have followed has been developed and implemented with the assistance of SCDHEC using U.S. EPA guidance. Soil vapor sampling is scheduled this year for residents with impacted groundwater that is close to the houses. Residents will be notified in writing prior to sampling taking place. No soil vapor sampling is needed for residences that had no or very low detections of compounds in soil or groundwater at levels that are recognized by SCDHEC and the U.S. EPA as unlikely to pose a health concern.

The U.S. EPA has developed very conservative risk screening levels for vapor intrusion based on a 26 year period of residential exposure. We assure you that timely and appropriate actions will be taken if sampling results indicate a concern to the health and safety of any of our family

members. We encourage you and all other residents to review the most current information about the study at: <http://www.beaufort.marines.mil/Resources/Laurel-Bay-Health-Study/>.

### **Who do I contact for medical information? What if I am concerned my child has cancer?**

Your primary health care provider is your best source of information concerning your medical questions. The Navy Marine Corps Public Health Center has developed and distributed guidance to Navy Medicine health care providers worldwide to assist in addressing health concerns of Navy and Marine Corps families that currently live or previously lived in Laurel Bay Military Housing. In addition, Navy Medicine health care providers have access to both Adult and Pediatric Navy Medicine Cancer Specialists for further consultation.

### **Is the metal pipe sticking up beside my house connected to the heating oil tank?**



No, pipes like the one pictured are not connected to a heating oil tank. Many residents have asked about pipes that look like the one pictured here. These pipes are decommissioned and were used to meter natural gas. Natural gas was once used at Laurel Bay, but has been replaced by other heating sources.

### **Why were homes demolished in Laurel Bay?**

Homes demolished over the past two years are in an area of the Laurel Bay community that is under redevelopment as part of a previously planned housing modernization project.

### **Are homes in Pine Grove included in the sampling? Did Pine Grove homes have underground storage tanks?**

Underground storage tanks were not used in Pine Grove. No sampling is planned for that area.

### **Are home heating oil tanks regulated? What does the Marine Corps Order 5090.2A say about home heating oil tanks?**

Residential heating oil tanks are not regulated in the State of South Carolina - meaning there are no state laws governing their installation, management, and removal. Also, there are no state or federal regulations requiring the periodic inspection of these residential tanks. Per Section 18105.26.H of the Marine Corps Order (MCO) P5090.2A Environmental Compliance and Protection Manual, any tank storing heating oil for consumptive use on the premises is excluded from Federal UST regulations. All former heating oil tanks at Laurel Bay are unregulated.

Because there are no regulations governing removal procedures, MCAS Beaufort coordinated with South Carolina Department of Health and Environmental Control (SCDHEC) to

develop removal procedures that emulated procedural requirements for regulated tanks. All tank removals and follow-on actions are conducted in coordination with SCDHEC.

When home heating was converted to other fuel sources in the 1980s, heating oil tanks were drained, filled with dirt, capped and left in place, as was the normal practice for unregulated tanks. In 2007, MCAS Beaufort began a voluntary program to remove the out of service home heating oil tanks. Since that time, MCAS Beaufort has removed more than 1,250 tanks. Through review of historical documents and location efforts using ground penetrating radar, metal detectors, and probes, MCAS Beaufort has identified and removed all known tanks at Laurel Bay.