

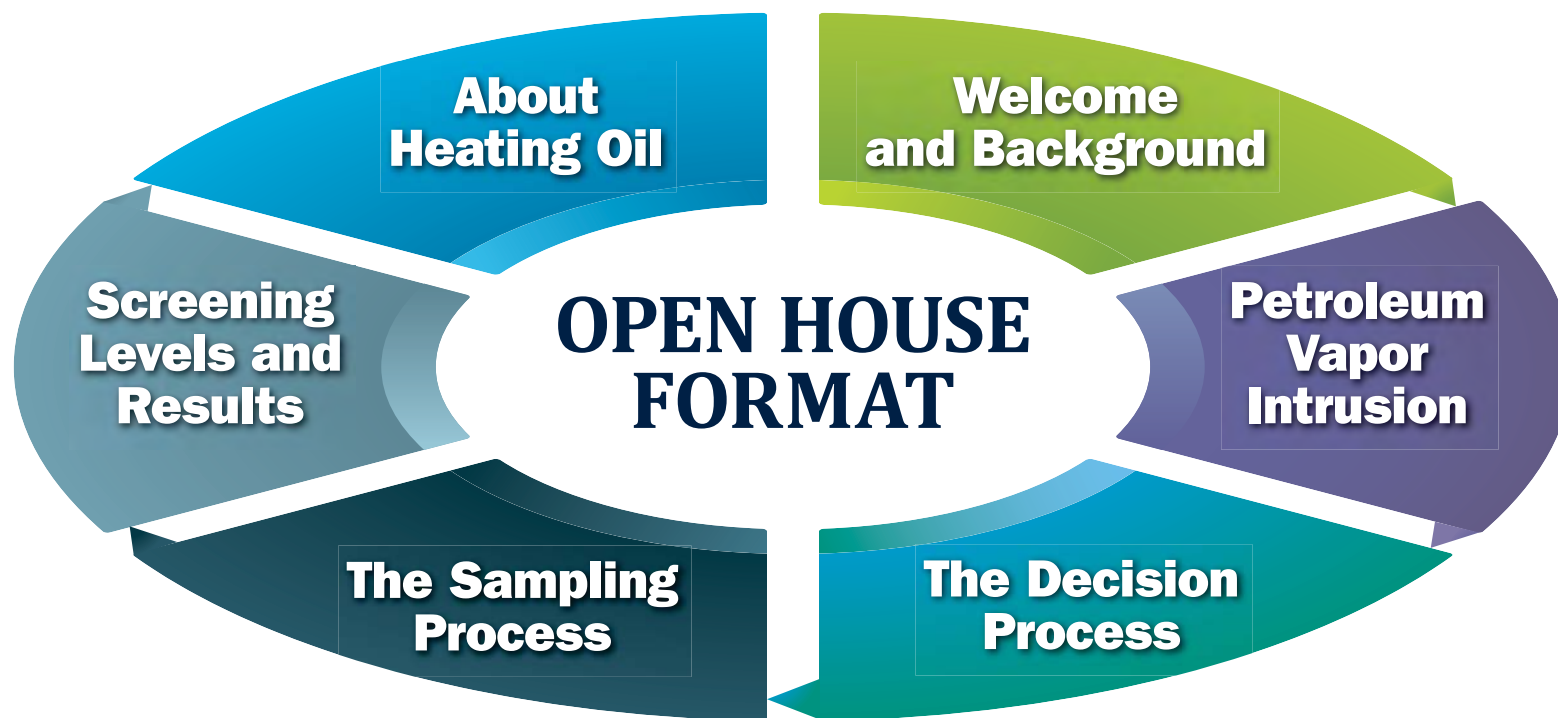


# Welcome

MARINE CORPS AIR STATION BEAUFORT | BEAUFORT, SOUTH CAROLINA

## Laurel Bay Military Housing Soil Vapor Sampling Open House

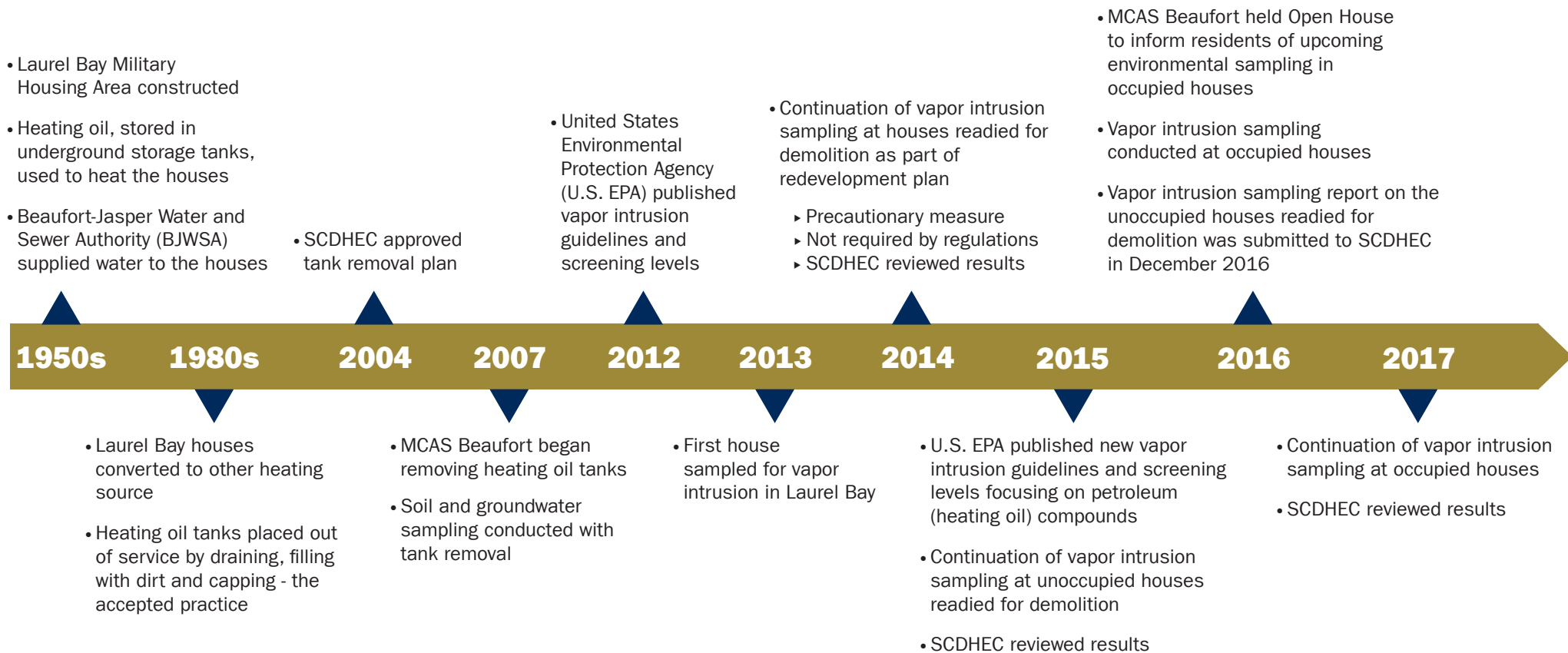
March 28–29, 2017 • 5:00 p.m. – 8:00 p.m.



Learn about the project • Ask questions • Submit comments

# Background

## History of Soil Vapor Sampling at Laurel Bay



**South Carolina Department of Health and Environmental Control (SCDHEC) reviews data from all environmental sampling reports.**



# 5 Elements of an Exposure Pathway

## What is an exposure pathway?

An exposure pathway is the course along which a material in the environment moves from its source and into your body.

### 5 ELEMENTS OF AN EXPOSURE PATHWAY

1. Source – How the material gets in the environment.
2. Media – How a material moves from its source (e.g., soil, water or air).
3. Exposure Point – Where people contact the media.
4. Exposure Route – How the material enters the body (e.g., eating, drinking, breathing).
5. Receptor Population – People who are exposed or potentially exposed.

A pathway of exposure is considered complete when all 5 elements are present. A complete pathway connects the source of the material to people. If one element is missing, the pathway is incomplete and there is no exposure and no health effects.



# Background

## Media and Routes of Exposure

In order for leaks in former heating oil tanks to pose a health risk, a complete pathway for exposure must be present.

Routes of exposure are breathing (inhalation), eating or drinking (ingestion), or contact with the skin (dermal contact).

### SOIL

Based on the depth of the former heating oil tanks (approximately six feet below ground surface), surface soil was not impacted by heating oil tanks.

Activities such as playing in surface soil or gardening are not a completed exposure pathway and there is no exposure.

### GROUNDWATER

Groundwater is not a source of drinking water.

Beaufort-Jasper Water and Sewer Authority (BJWSA) provides the water for Laurel Bay, MCAS Beaufort, and MCRD Parris Island.

BJWSA follows U.S. EPA and SCDHEC protocol for testing the quality of the water they provide to Laurel Bay.

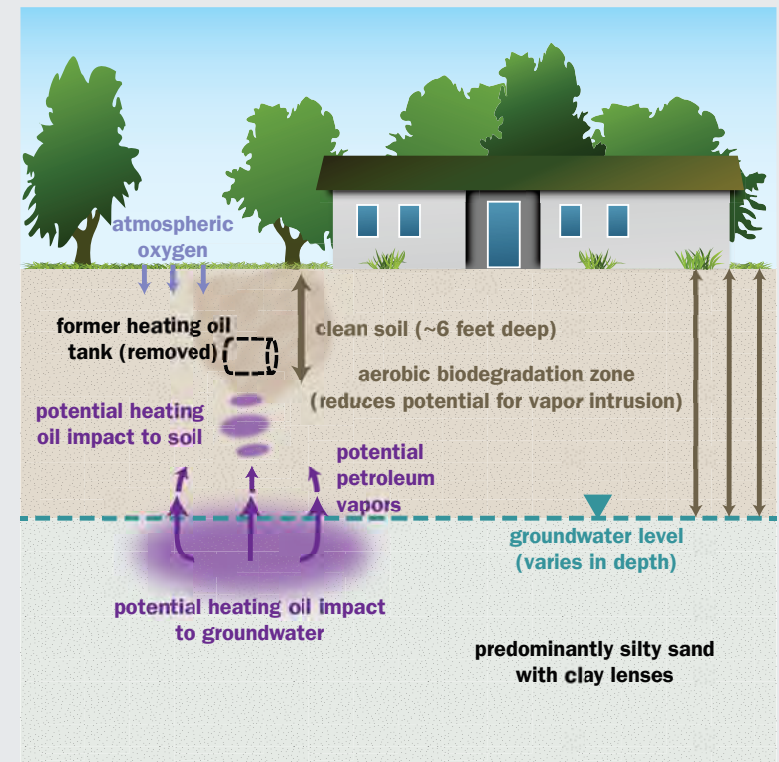
The drinking water is safe.

### VAPOR

Soil vapor samples are being collected to evaluate the potential for petroleum vapor intrusion.

More than 80 properties have been sampled. The results at those sites indicate that petroleum vapor intrusion is not occurring.

26 properties will be sampled in the next phase.



# Petroleum Vapor Intrusion

## What is Petroleum Vapor Intrusion?

### PETROLUUM VAPOR INTRUSION

Petroleum Vapor Intrusion may occur when vapors from heating oil compounds in contaminated groundwater or soil travel upward through soil into overlying buildings.

Heating oil has compounds common to all petroleum products that can become vapors. These compounds are known as volatile organic compounds (VOCs).

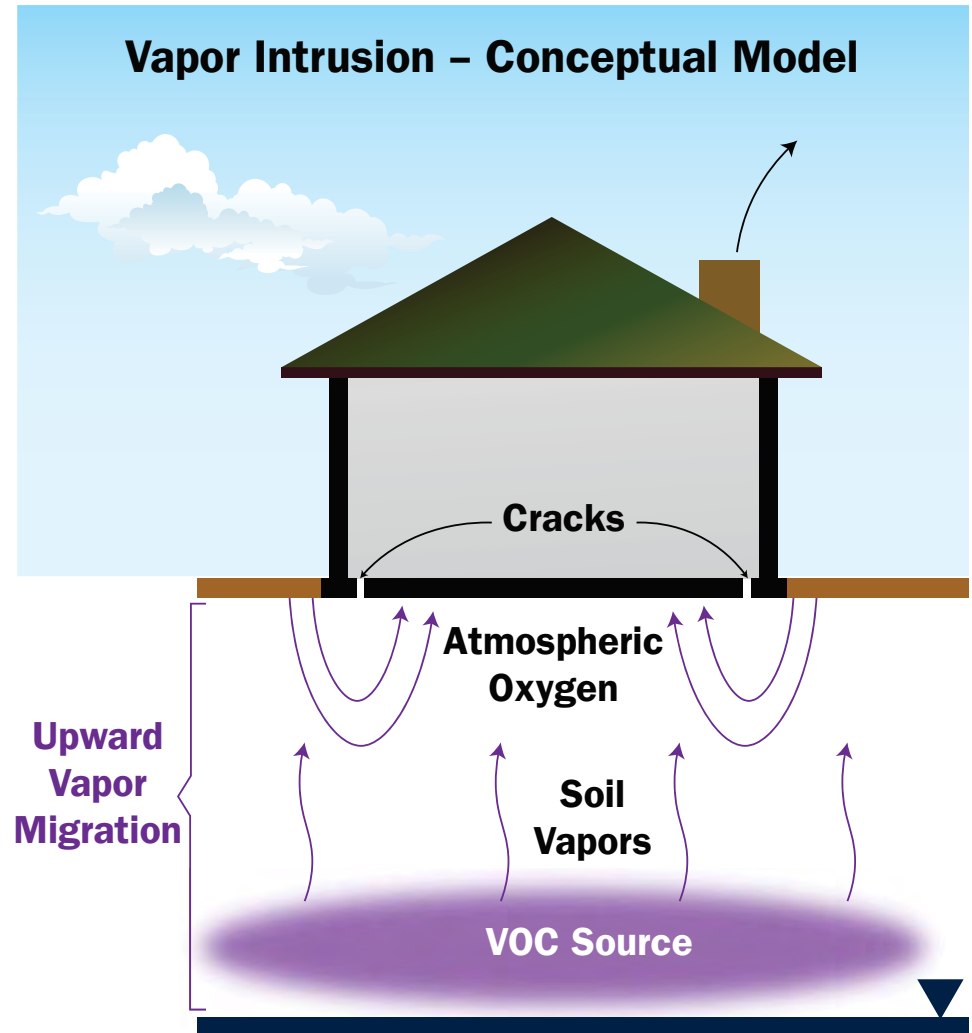
### WHERE ARE VOCs FOUND?

VOCs are found in heating oil as well as in many materials and substances commonly found indoors.

- Cleaning products
- Cigarettes
- Paints
- Adhesives
- Moth Repellents
- Stored Fuels
- Automotive Care Products
- Aerosols
- Solvents



### Vapor Intrusion – Conceptual Model



# Soil Vapor Sampling Plan

## Why were these properties selected for sampling?

### Soil Vapor Sampling Properties

- 238 Ash St.
- 239 Ash St.
- 309 Ash St.
- 381 Ash St.
- 410 Ash St.
- 502 Ash St.
- 57 Banyan Dr.
- 156 Banyan Dr.
- 188 Banyan Dr.
- 82 Birch Dr.
- 378 Birch Dr.
- 633 Dahlia Dr.
- 653 Dahlia Dr.
- 362 Elderberry Dr.
- 405 Elderberry Dr.
- 537 Elderberry Dr.
- 551 Elderberry Dr.
- 145 Gardenia Dr.
- 159 Gardenia Dr.
- 191 Gardenia Dr.
- 1054 Gardenia Dr.
- 345 Iris La.
- 433 Iris La.
- 467 Iris La.
- 917 Laurel Bay Blvd.
- 989 Laurel Bay Blvd.

Results from previous environmental sampling activities that led to this sampling event are as follows:

**Petroleum compounds detected from soil samples were above SCDHEC screening levels.**

*and*

**Petroleum compounds detected in groundwater were above groundwater vapor intrusion screening levels.**

*or*

**Residual heating oil was detected in a monitoring well on the property.**

See Soil Vapor Sampling Process flow chart.

### When will sampling occur?

Sampling is anticipated to begin in April 2017.

In most cases, sampling at each residence will take less than one week.

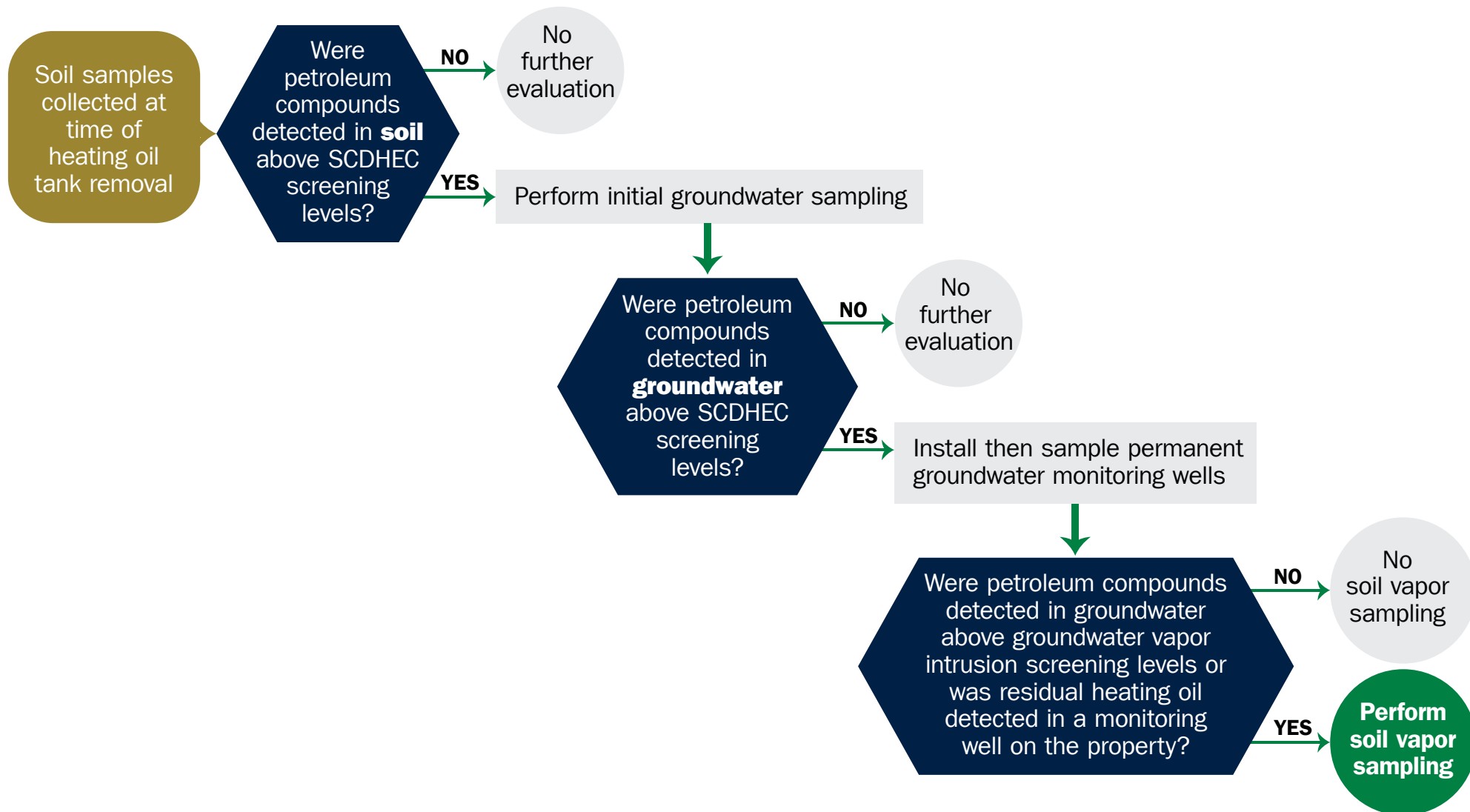
Sampling will be conducted between 0800 and 1700, Monday through Friday.





# Petroleum Vapor Intrusion Decision Process

## How are properties selected for sampling?



# Soil Vapor Sampling Process

## What will happen first?

Collect soil vapor samples from the source area (former heating oil tank location) and near-slab location (adjacent to the structure).

Were petroleum compounds detected above U.S. EPA Vapor Intrusion Screening Levels in the near-slab sample?

NO

No further evaluation

YES

Perform sub-slab soil vapor sampling

Were petroleum compounds detected above U.S. EPA Vapor Intrusion Screening Levels in the sub-slab sample?

NO

No further evaluation

YES

Perform indoor air sampling

Were petroleum compounds detected above U.S. EPA Regional Screening Levels in the indoor air sample and the detections are not attributable to an indoor source?

NO

No further evaluation

YES

Long Term Solutions

*Prior to any sampling in your house, all residents will be notified of upcoming sampling activities.*





# Soil Vapor Sampling Process

## What will happen next?

Underground utilities and proposed soil vapor sample collection points will be marked.

Soil vapor sample collection points will be installed and sampled.

**In most cases, sampling at your residence will take less than one week.**

**Most of the sampling will be done outside houses at the former heating oil tank locations.**

If sample results from near-slab soil vapor sample collection points are above screening levels, the sampling procedure may require samples to be taken in or under houses.

Should that be necessary, you will be informed in advance and have the procedure explained to you in detail.

**Residents will not be responsible for any repairs associated with the sampling.**

Sampling activities are weather dependent.



Installation of a Source Area or Near-Slab Soil Vapor Well



Sampling of a Source Area or Near-Slab Soil Vapor Well



Installation of a Sub-Slab Soil Vapor Pin



Sub-Slab Soil Vapor Pin



Indoor Air Sampling



# Screening Levels and Results

## SOIL VAPOR SCREENING CRITERIA

***All soil vapor results will be compared to levels established by the United States Environmental Protection Agency (U.S. EPA) following U.S. EPA's Petroleum Vapor Intrusion guidance.***

Soil vapor results that fall below U.S. EPA vapor intrusion screening levels (VISLs) will require no further evaluation.

Exceeding a screening level generally suggests that further evaluation of the vapor intrusion pathway is appropriate.

It does not confirm the presence of petroleum vapor intrusion or that a health hazard exists.

## HOW WILL WE KEEP YOU INFORMED

Soil vapor results will be available 1 to 2 months after sampling, and we will send the results directly to residents by mail.

## WHAT ARE THE PREVIOUS SAMPLING RESULTS AT MY HOUSE?

We encourage all residents to review the information at:

<http://www.beaufort.marines.mil/Resources/Laurel-Bay-Health-Study/>

Email questions to:  
[LaurelBayHealthStudy@usmc.mil](mailto:LaurelBayHealthStudy@usmc.mil).

***We are committed to sharing information with you throughout this process.***



# About Heating Oil

## CHEMICALS SAMPLED

***Only certain chemicals are a concern for vapor intrusion. Because heating oil is the source for potential petroleum vapor intrusion, compounds related to petroleum are the focus of sampling.***

Volatile organic compounds (VOCs) are a group of compounds that can become vapors through evaporation.

The same VOCs in heating oil are commonly found in some:

- Cleaning products
- Cigarettes
- Paints
- Adhesives
- Moth Repellents
- Stored Fuels
- Automotive Care Products
- Aerosols
- Solvents



## HEALTH EFFECTS

Possible symptoms associated with petroleum vapor intrusion of heating oil components include:

- Headache
- Dizziness
- Drowsiness
- Respiratory and eye irritation
- Nausea
- Increased heart rate

***At this time, the soil vapor results indicate that petroleum vapor intrusion is not occurring.***

Specific health concerns should be communicated to your health care provider.

## ADDITIONAL TESTING

If soil vapor sampling demonstrates the potential for petroleum vapor intrusion, additional sampling will be performed. This may include collecting air samples from inside the house.







- Legend**
- No Further Action Based on Soil
  - No Further Action Based on Groundwater
  - Groundwater Testing Ongoing
  - Petroleum Vapor Intrusion Assessments Completed or Planned
  - Petroleum Vapor Intrusion Assessments Ongoing
  - No Further Action Based on Groundwater Testing and Petroleum Vapor Intrusion Assessments

- Area Under Residential Redevelopment
- Property Boundary

# LAUREL BAY MILITARY HOUSING AREA MCAS BEAUFORT BEAUFORT, SC

NOTE: Status of residences is preliminary. Identified and subject to change with review of records. These statuses may not reflect the records maintained by SCDMHC because of their review and approval process.

