Interim Measures for Deep Groundwater Contamination at the Intersection of North Patuxent Road and Dovetail Lane, Odenton, Maryland

Fort George G. Meade - Anne Arundel County, Maryland

WELCOME

to the Ft. Meade Groundwater Investigation Public Meeting #2

Please Sign-in at the Sign-in Table
Thank You

November 17, 2009
3-5 PM and 6-8 PM

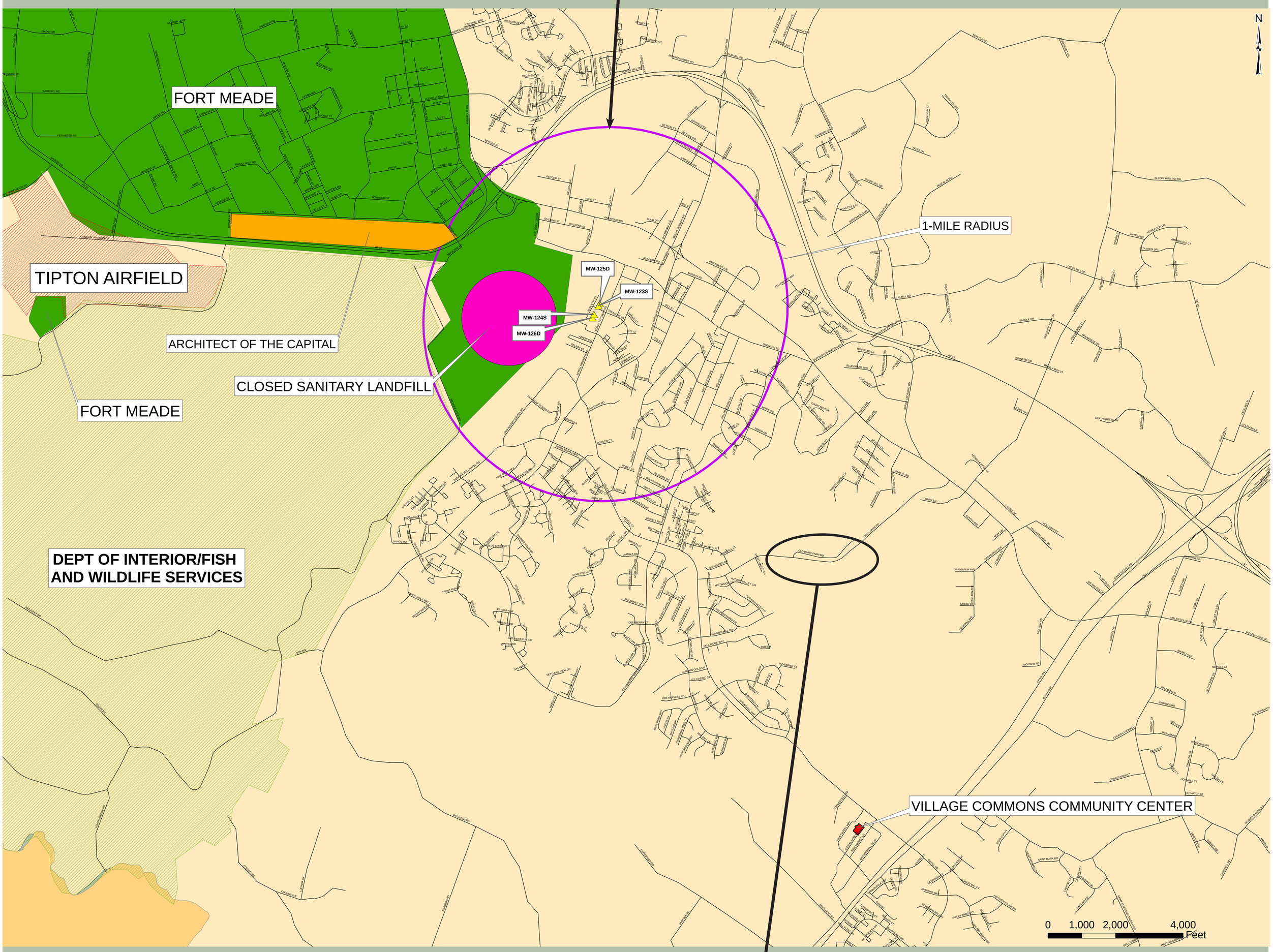
Public Meeting

Interim Measures for Deep Groundwater Contamination at the Intersection of North Patuxent Road and Dovetail Lane, Odenton, Maryland

Fort George G. Meade - Anne Arundel County, Maryland

Project Location

Study Area: U.S. Environmental Protection Agency-established a 1-mile radius around monitoring wells MW-125d/123s and MW-126d/124s, which are located at the intersection of North Patuxent Road and Dovetail Lane in Odenton, Maryland.



Properties on Old Dairy Farm Road in Gambrills Maryland were added to the Interim Measures

- Location approximately 1.5 miles down gradient of MW-125d and MW-126d
- Drinking water from deep aquifer (Lower Patapsco Aquifer)
- Projected path of contaminants found in MW-125d and MW-126d

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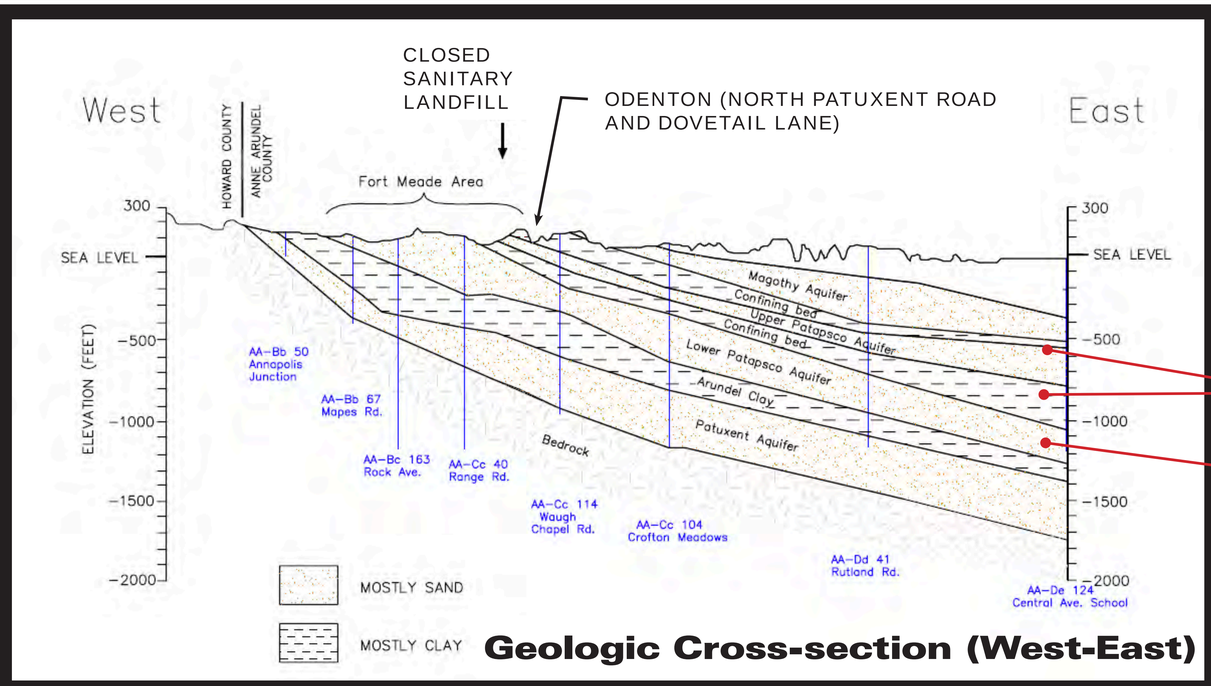
Geology



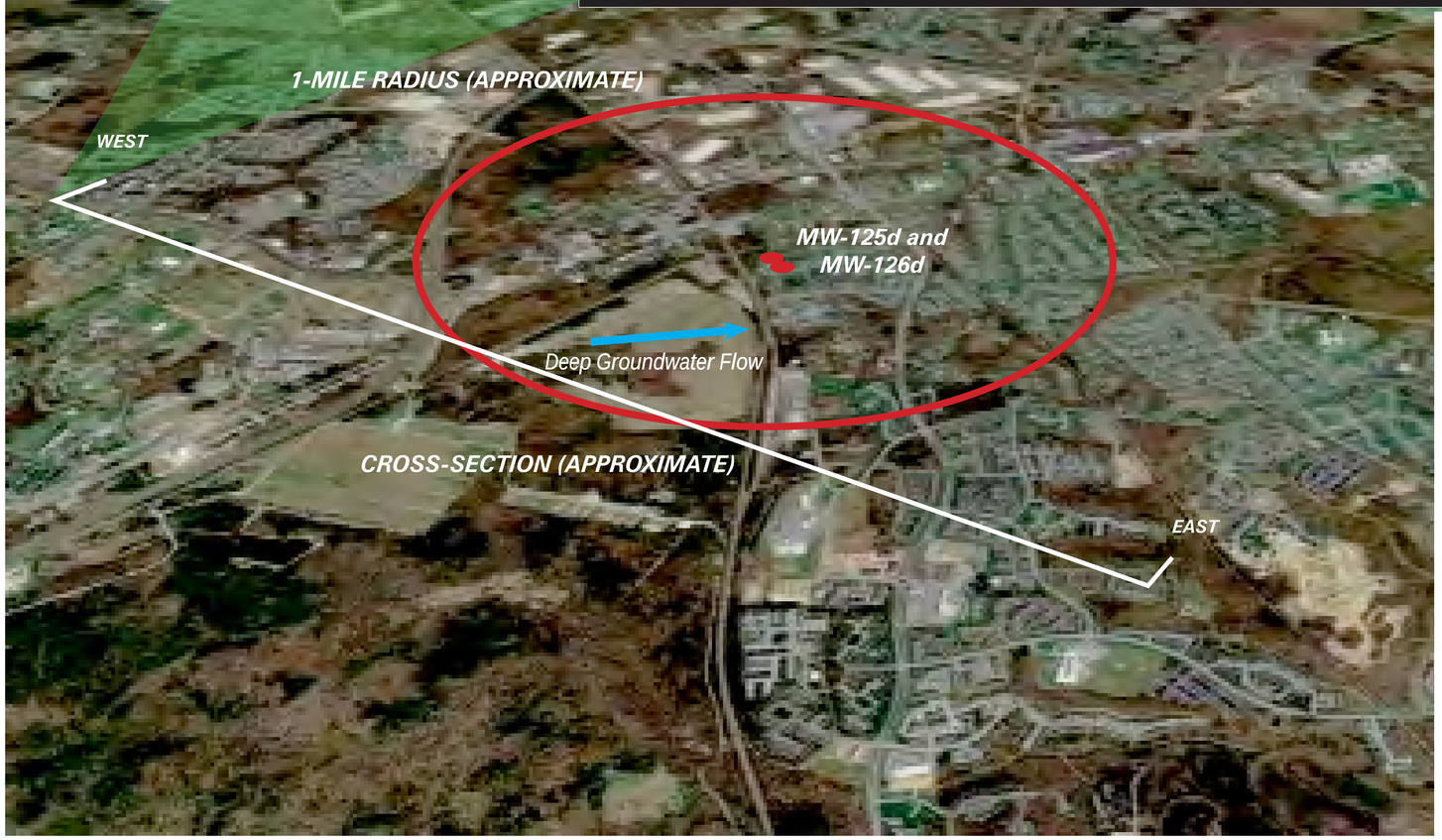
Geologic Cross-section (West-East)

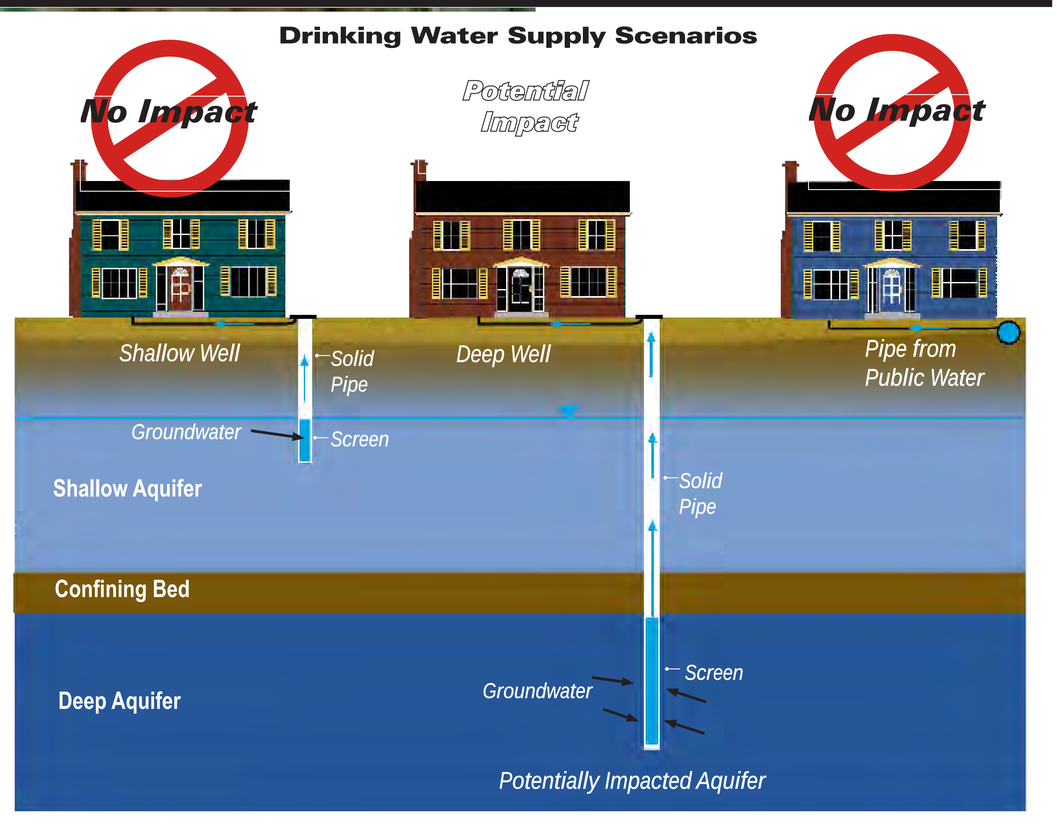
Definitions

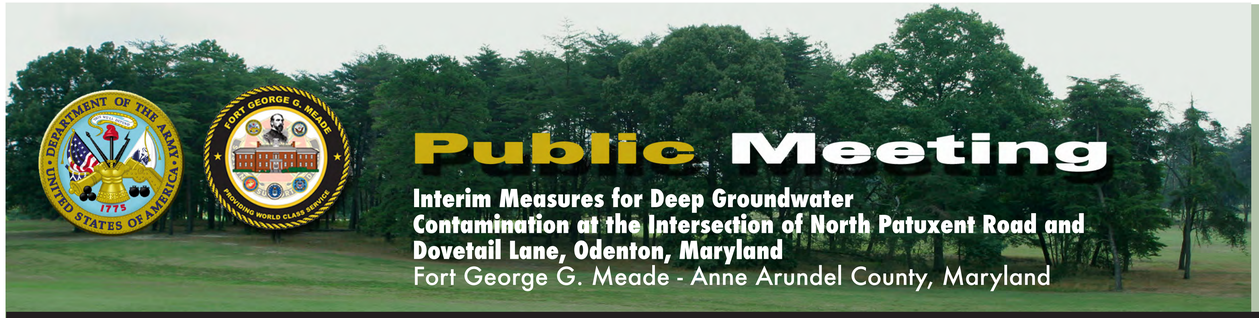
Aquifer: A water-bearing layer (formation) of rock or sediment capable of providing water to wells.

Confining Bed: geological material through which significant quantities of water can not move.

Confined Aquifer: Aquifers that are wedged between confining beds







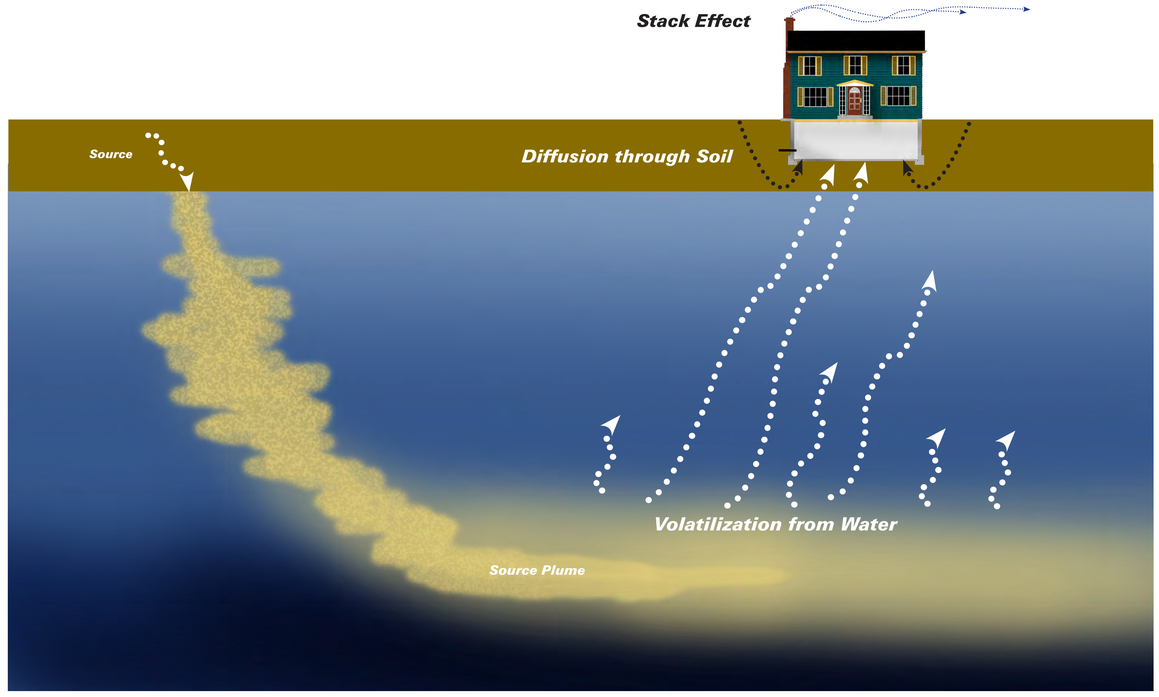
Vapor Intrusion

What Is Vapor Intrusion?

Vapor intrusion is a way that chemicals in soil or groundwater can get into indoor air. Sometimes, chemicals are spilled on the ground or leak from an underground storage tank. These chemicals can seep into the soil and groundwater. Some chemicals can also travel through soil as vapors or via the groundwater. These vapors may then move up through the soil and groundwater and into nearby buildings, contaminating indoor air. Homes in the same neighborhood and right next to each other can be affected differently by vapor intrusion.

Vapor intrusion is similar to how radon, a naturally occurring radioactive gas, can enter a home through cracks in the foundation. Vapor intrusion should be considered when there is a known source of soil or groundwater contamination nearby and conditions like soil type and depth to groundwater indicate a potential for vapor intrusion exists.

Typical Situation

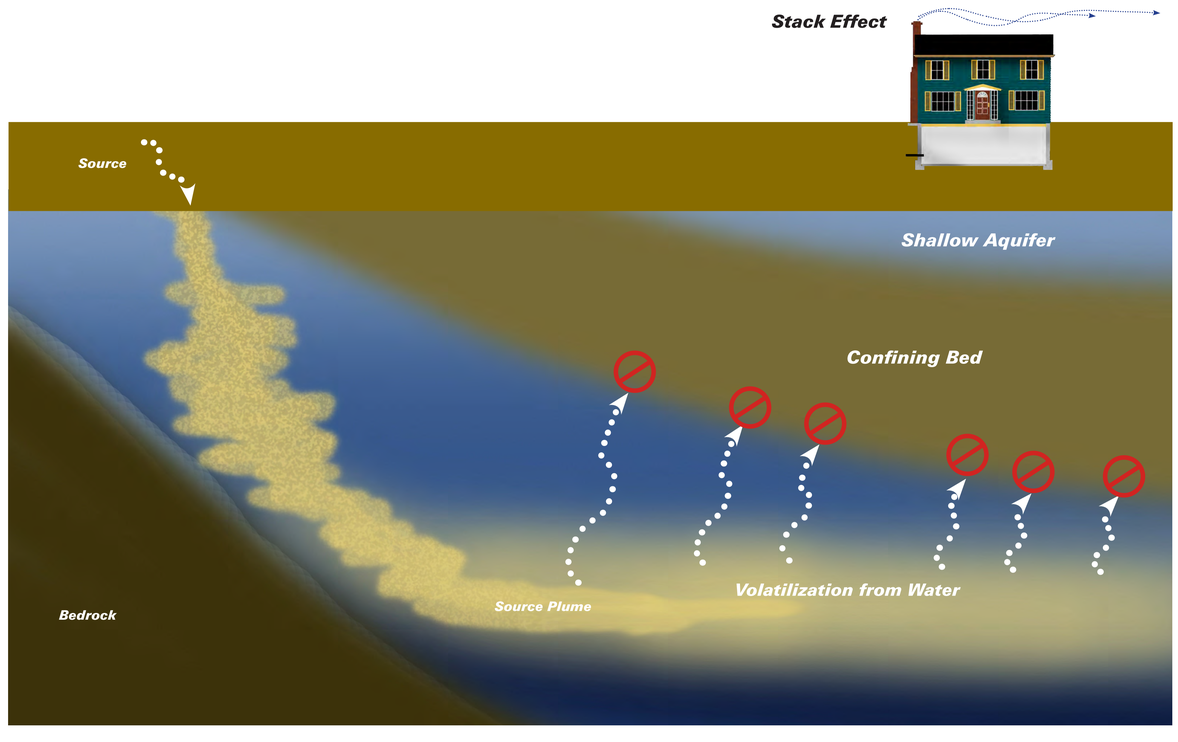


Current Understanding

- Vapor Intrusion into residences/businesses does not appear to occur here. Therefore, there is no apparent risk to residents and workers.

- We anticipate that the confining bed (Mid Patapsco Clay) which is above the contamination (trichloroethene [TCE], tetrachloroethene [PCE], and carbon tetrachloride [CCl_4])will block the vapors from migrating into homes/ businesses.

- TCE, PCE, and CCl_4 (volatile compounds) were detected at concentrations above the federal drinking water standards in the deep aquifer (Lower Patapsco), so the Army is assessing vapor intrusion.



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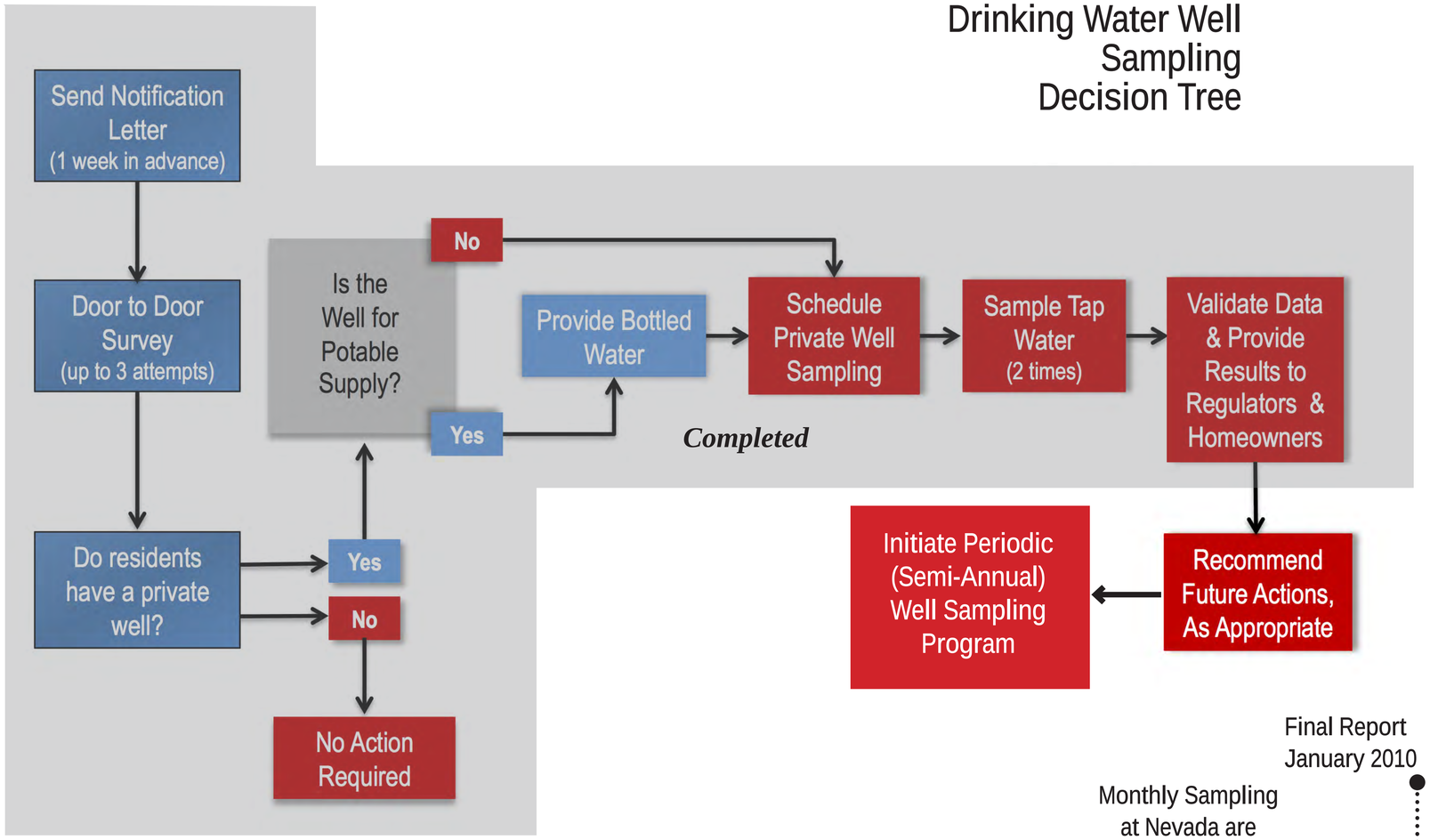
What is Being done to Protect the Community?

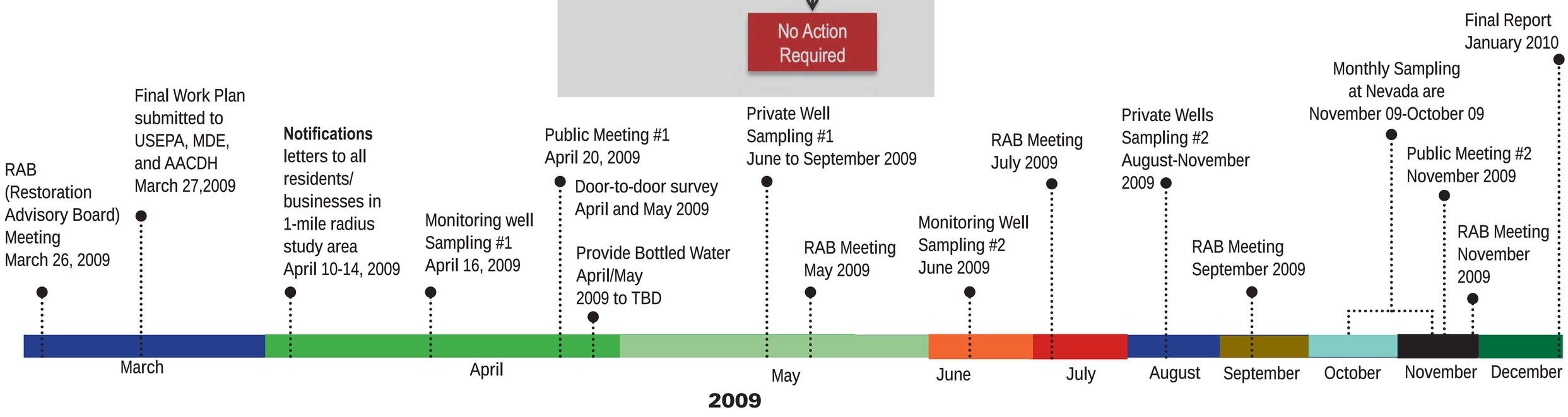
What is being done to protect the community?

Activities:

- Sample monitoring wells (two times)
- Conduct door-to-door survey to identify locations of private wells in study area
- Sample private water supply wells (two times)
- Provide bottled drinking water to residents/businesses with private wells
- Public Outreach (letters, meetings, etc.)
- Working in cooperation with U.S. Environmental Protection Agency (USEPA), Maryland Department of the Environment (MDE), and Anne Arundel County Department of Health (AACDH)

Drinking Water Well Sampling Decision Tree





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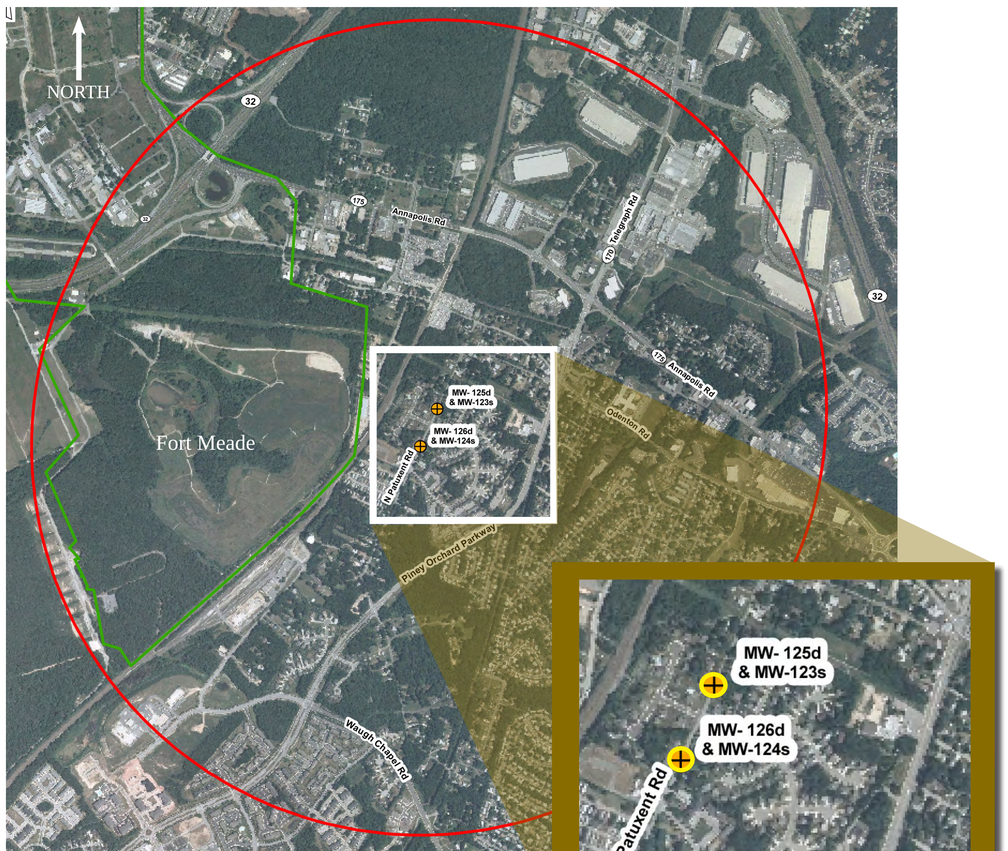
Monitoring Well Results

Monitoring Well Results Summary

- Deep monitoring wells MW-125d and MW-126d continue to have volatile organic compound (VOC) detections
  - **CCl_4**, PCE, and TCE exceeded maximum contaminant level (MCL) in MW-126d
  - **Only CCl_4** exceeded MCL in MW-125d
- Shallow monitoring wells MW-123s and MW-124s continue to be non-detect for VOCs



Deep and shallow monitoring well Locations

2004, 2005, 2008, and 2009 Monitoring Well Results							
Well No.	Contaminant	2004 Results (µg/L)	2005 Results (µg/L)	2008 Results (µg/L)	April 2009 Results (µg/L)	June 2009 Results (µg/L)	Federal MCL (µg/L)
123s (shallow)	CCl_4	ND	N/A	N/A	ND	ND	5
	PCE	ND	N/A	N/A	ND	ND	5
	TCE	ND	N/A	N/A	ND	ND	5
	cis-DCE	ND	N/A	N/A	ND	ND	70
	Chloroform	ND	N/A	N/A	ND	ND	80
124s (shallow)	CCl_4	ND	N/A	N/A	ND	ND	5
	PCE	ND	N/A	N/A	ND	ND	5
	TCE	ND	N/A	N/A	ND	ND	5
	cis-DCE	ND	N/A	N/A	ND	ND	70
	Chloroform	ND	N/A	N/A	ND	ND	80
125d (deep)	CCl_4	21.3	20	25	20.3	17.0	5
	PCE	2.8	1.2	5	.66J	ND	5
	TCE	0.5	0.28	1J	ND	ND	5
	cis-DCE	ND	ND	ND	ND	ND	70
	Chloroform	<0.85J	0.8	1J	ND	1.0	80
126d (deep)	CCl_4	4.1	3	51	21.8	65.8	5
	PCE	12.4	6.5	51	11.5	31.4	5
	TCE	3.5	2.4	16	4.9	13.1	5
	cis-DCE	2.3	2.3	3J	0.69J	2.3	70
	Chloroform	<0.43J	0.29	2J	ND	1.6	80

exceeds MCL

Definitions:

MCL: Maximum contaminant level for tap water as defined by the U.S. Environmental Protection Agency.
VOC = Volatile organic compound
NT = Not Tested
ND = Not Detected
CCl_4 = Carbon Tetrachloride
DCE = cis-1,2-Dichloroethene
PCE = Tetrachloroethene
TCE = Trichloroethene
J = estimated concentration below the method detection limit

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Well Survey Results

Summary of Results

- 1,679 Survey answered
- 65 confirmed primary source
- 22 unconfirmed primary source
- 20 confirmed secondary source
- 17 confirmed no well on property

Definitions:

- **Primary Source:**
  Well is used as sole source of drinking water for property

- **Secondary Source:**
  Well is present on property but public water is used as drinking water source. Well water may be used for other purposes, such as watering gardens.

- **Confirmed:**
  A response to survey was received from property owner/tenant.

- **Unconfirmed:**
  No response to survey to date, but Anne Arundel County data indicates a well is present on the property.

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Drinking Water Well Sampling Results and Future Actions

Status Summary

- Drinking Water Well Survey Initiated June 5, 2009
- Completion of Round #1 - September 2009
  - 53 Private wells sampled
- Round #2 – August to November 2009
  - 50 Private wells sampled
- Reasons Why All 64 Confirmed Drinking Water Wells were Not Sampled
  - Owner/tenant unresponsive to survey
  - Owner/tenant unresponsive to attempts to schedule
  - Owners declined sampling

Results

- No MCL exceedances downgradient of MWs 125/126
- Only one detection above MCL within study area
  - Nevada Ave
    - July: 4.7 ppb (duplicate 4.8 ppb)
    - September: 5.7 ppb (duplicate 5.0 ppb)
    - November: 5.0 ppb (duplicate 4.8 ppb)
  - Resident supplied bottled water (beginning July 2009)
  - Cross gradient from MWs 125/126
  - Approximately 0.75 miles from MWs 125/126

Table 1 - Sample Detections*

Street	Addresses with Detections		DCE (MCL - 70 µg/L)		DCA (MCL - 5 µg/L)		TCE (MCL - 5 µg/L)		PCE (MCL - 5 µg/L)		CCl_4 (MCL - 5 µg/L)		Methylene Chloride (MCL - 5,900 µg/L)	
	Round 1	Round 2	# of Detections	Range (µg/L)	# of Detections	Range (µg/L)	# of Detections	Range (µg/L)	# of Detections	Range (µg/L)	# of Detections	Range (µg/L)	# of Detections	Range (µg/L)
Baltol Ln	0	1							1	0.72J				
Berger St	0	1	–	–	1	0.51 J	–	–	–	–	–	–	–	–
Galloway Rd	1	0	–	–	–	–	1	3.2	1	1.3	–	–	–	–
Murray Rd	2	1	–	–	–	–	–	–	2	0.94J - 2.6	3	0.88J - 1.2	–	–
Nevada Ave	6	7	6	1.1 - 1.7	–	–	3	0.46J - 0.87J	8	0.60J - 5.7	–	–	1	0.60J
Robey Ln	4	3	5	0.22J - 0.44J	–	–	–	–	–	–	–	–	–	–
Tolbert Dr	0	1	1	0.18J	–	–	–	–	–	–	–	–	–	–

J = Estimated Value
MCL = Maximum Contaminant Level for tap water as defined by the US Environmental Protection Agency
µg/L = one microgram per liter which is equivalent to one part per billion
*Only properties with detections related to the Interim Measures for Monitoring Wells 125d and 126d study are included in the table.
** Bold indicates value above MCL. Only one sample was above the MCL and resident is receiving bottled water.

DCE = Dichloroethene
DCA = Dichloroethane
TCE = Trichloroethene
PCE = Tetrachloroethene
CCl_4 = Carbon Tetrachloride

Definitions:

ppb: parts per billion also reported as microgram per liter (µg/L)

Duplicate: Two identical samples collected at the same time from the same source, but placed in separate sample containers. The purpose of collecting a duplicate is to assess laboratory performance by comparing what should be identical results.

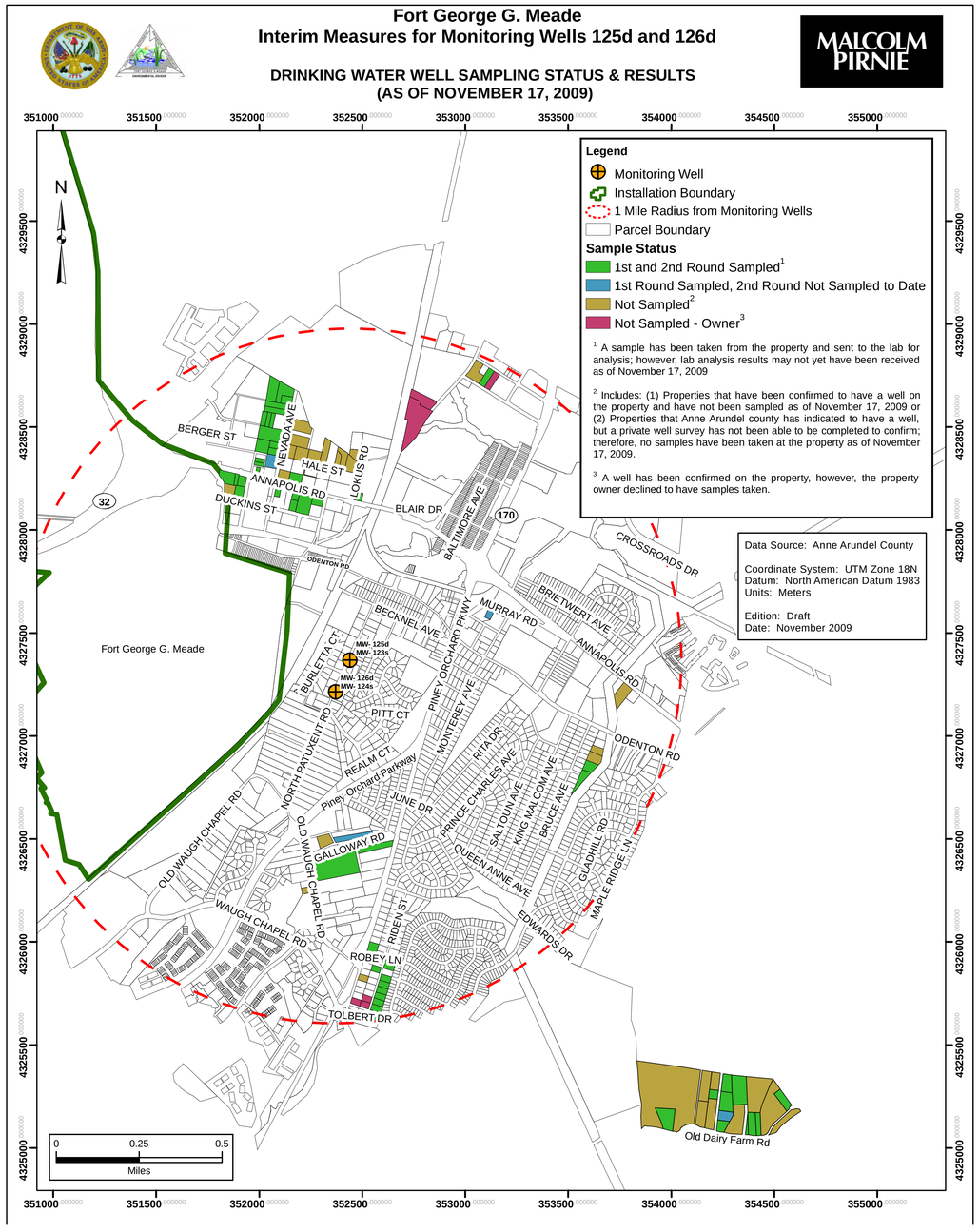
Future Actions

•Study Area

- Continue to supply bottled water to residents in projected downgradient pathway of contaminants detected at MW-125d and MW-126d
- Evaluate groundwater quality and provide recommendation for additional actions (if needed)
- Evaluate potential for vapor intrusion
- Submit Interim Measures Report (January 2010)

•Nevada Avenue Area

- Monthly drinking water monitoring of properties with confirmed TCE and PCE detections
- Continue to supply bottled water
- Propose future actions
- Conduct groundwater investigation to evaluate local groundwater conditions and assessment of source



FAQ
Frequently Asked Questions

FAQ Frequently Asked Questions

Am I being exposed to contaminants in my drinking water?

If you are drinking water from the public water supply, you are not being exposed to TCE, PCE, or CCl_4 in your drinking water. According to AACDH officials, all potable water within the Anne Arundel County public water supply is obtained from locations outside the area southeast of Fort Meade. However, if you are in the 1-mile radius and you have a drinking water well, your well water should be tested as soon as possible to determine if any of these chemicals are present in your water at concentrations above their MCLs. The Army will sample your well(s) and provide bottled water (through a bottled water service) at no cost to you to ensure that you have safe drinking water. The Army, in cooperation with the USEPA, MDE, and the AACDH, will be conducting a door-to-door survey of homes and businesses within the study area to locate private wells. During the door-to-door survey, please tell the survey takers if you have a well on your property and whether it is used or unused. The Army will contact you shortly after the survey to discuss whether any additional actions are necessary to ensure the safe use of your well.

Groundwater Use Survey

Why did the Army conducting a door-to-door survey?

As part of the ongoing investigation and in accordance with USEPA's Order issued under the authority of the Resource Conservation and Recovery Act, the Army is conducting a door-to-door survey of properties located within the 1-mile radius of MW-125d and MW-126d. The goal of this survey is to determine the locations of any water supply wells within in the 1-mile radius and whether these wells are being used for potable (drinking), agricultural or other purposes.

What should I do if I have a well and I haven't answered the survey yet?

If you have a well, whether used or unused, please relay this information to Malcolm Pirnie at (410) 230-9962 or complete a survey tonight.

What will happen after I notify Malcolm Pirnie that I have a well?

Malcolm Pirnie will contact you to schedule a date and time to collect a water sample from your well. They will also discuss other actions, such as providing bottled water to your home.

What have the results of the survey shown to date?

The results have confirmed that 64 properties within the study area have private drinking water wells. Additional properties that have wells for secondary (non-potable) water supply were also identified. Please refer to the poster on Drinking Water Well Survey Results for additional details.

Chemicals of Concern – TCE, PCE, and CCl_4

What are TCE, PCE, and CCl_4?

If According to the Agency for Toxic Substances and Disease Registry (ATSDR), TCE, PCE, and CCl_4 are manufactured, colorless, dense liquids that do not burn easily. They are volatile and have a sweet odor. Historically, they were used to produce other chemicals, as industrial solvents to clean and degrease metals and dry-clean fabrics, and as an ingredient in paint removers, spot removers, and pesticides. TCE, PCE, and CCl_4 are chlorinated, volatile organic compounds that dissolve in water to a small extent and are readily released from water to air.

What if TCE, PCE, or CCl_4 were detected in my well?

Results were sent to all property owners/tenants whose private wells were sampled. Review your results to see if TCE, PCE, and CCl_4 were detected above or below MCLs. If the compounds were detected below MCLs, no action is required at this time. However, if there were MCL exceedances continue to use bottled drinking water and coordinate additional efforts, if any, with the Army.

What is being done to protect property owners/tenants with MCL exceedances in their drinking water?

The Army will continue to supply bottled water to properties with MCL exceedances. Monthly monitoring and additional source investigation has also been initiated (refer to the future actions poster).

How do I learn more about TCE, PCE, and CCl_4?

Fact sheets for TCE, PCE, and CCl_4 are available from the ATSDR at: **http://www.atsdr.cdc.gov/toxfaq.html.** If you have any additional health questions contact the AACDH at (410) 222-7398.

Definitions:

TCE = Trichloroethene
PCE = Tetrachloroethene
CCl4 = Carbon Tetrachloride
AACDH = Anne Arundel County Department of Health
MCL: Maximum contaminant level for tap water as defined by the U.S. Environmental Protection Agency.
USEPA = U.S. Environmental Protection Agency
MDE = Maryland Department of Environment
ATSDR = Agency for Toxic Substances and Disease Control

Additional Information

Additional information describing the project is available on the Fort Meade Environmental Management System Web site at: http://www.fortmeade-ems.org (use the link for Installation Restoration). More environmental information can also be found at http://ftmeade.army.mil. These Web sites will be updated as the project progresses.
Also refer to:

- **USEPA website on** Fort Meade: http://www.epa.gov/reg3hwmd/super/sites/MD9210020567/index.htm
- **MDE website: http://www.mde.state.md.us/ and http://www.mde.maryland.gov/assets/document/LRP%20Vapor%20Intrusion%20Guidance(5).pdf**
- **AACDH website:** www.aahealth.org
- **ASTDR website for factsheets:** http://www.atsdr.cdc.gov/az/a.html

Restoration Advisory Board

The Restoration Advisory Board (RAB) enables the community and representatives of government agencies to meet and exchange information about Fort Meade's environmental program. It also provides an opportunity for the community to review progress and participate in dialogue with the decision-makers.

RAB members will be expected to:

- Provide advice on environmental restoration issues to Army installations and regulatory agencies;
- Attend regular meetings, publicly announced and open to the public, at convenient times and locations;
- Review, evaluate and comment on environmental restoration documents;
- Identify project requirements;
- Recommend priorities among sites or projects

The Fort Meade Environmental Division is soliciting for community members to serve as active members of the Fort Meade Restoration Advisory Board. If you are interested in participating on the RAB, please call Paul Fluck, Environmental Cleanup and Restoration Manager, at (301) 677-9365 or send email to paul.v.fluck@us.army.mil, or complete the Community Interest Form.

The Fort Meade RAB meets once every two months.
Next RAB meeting is Thursday November 19, 2009.