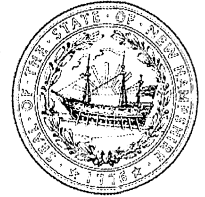




The State of New Hampshire
Department of Environmental Services



Thomas S. Burack, Commissioner

Month DD, YYYY

«OWNER» «CO_OWNER»
«MAIL1» «MAIL2»
«MAIL_CITY» «MAIL_STATE» «MAIL_ZIP»

Subject: Gasoline-related testing of water supply well at:
«ADDRESS», «TOWN», NH

Dear Property Owner,

A review of New Hampshire Department of Environmental Services (NHDES) records indicates a property you own may be served by a well located near an area that is potentially vulnerable to gasoline contamination. **NHDES does not know whether gasoline components, such as methyl tertiary butyl ether (MtBE) have impacted your well.** Laboratory analysis of your drinking water is the only way to find out.

The purpose of this letter is to ensure that you are aware of the potential for contamination and invite you to participate in a NHDES well sampling program. NHDES will collect a sample and provide you with a copy of the results. This work will be performed **at no cost to you.** If concentrations of MtBE are determined to be above the health-based drinking water standard, NHDES may also pay for the costs associated with installing and maintaining a treatment system or provide you with an alternative source of drinking water. NHDES is able to perform this work at no cost due to a MtBE settlement fund collected from a lawsuit pursued against refineries and gasoline manufacturers. More information may be obtained from our website at:

<http://des.nh.gov/organization/divisions/waste/mtbe/index.htm>

NHDES recommends that all well owners have their water tested in order to understand common problems with drinking water quality. Due to settlement fund restrictions, NHDES can only pay for a MtBE-related (VOC) analysis, which also includes other common gasoline and chemical contaminants (\$120 value). However, NHDES can collect any other samples that you would like to have analyzed and deliver them to the laboratory along with the VOC sample. If you elect to have additional analyses added, you will need to pay for those analyses.

If you would like to have your well sampled by NHDES please contact Tina Clark at (603) 271-7174 or send an email to Tina.Clark@des.nh.gov to set up an appointment. If you have any questions about the sampling program please don't hesitate to contact me at (603) 271-8483 or Deborah.Loiselle@des.nh.gov. Thank you for your time.

Sincerely,

Deborah Loiselle
Sampling Program Supervisor / MtBE Remediation Bureau

ENVIRONMENTAL Fact Sheet



29 Hazen Drive, Concord, New Hampshire 03301 • (603) 271-3503 • www.des.nh.gov

WD-DWGB-3-19

2016

MtBE in Drinking Water

What is MtBE?

MtBE is the abbreviation for the compound **methyl tertiary butyl ether**. MtBE is manufactured and thus its presence in water indicates that human-caused contamination exists in the recharge area of the well. MtBE degrades very slowly and is highly-soluble in water. These characteristics cause it to travel farther, spread faster and last longer in groundwater than many other contaminants. As a result, MtBE is the most common contaminant in groundwater that is not naturally-occurring. MtBE has very low taste and odor thresholds. However, it is important to test drinking water to determine whether MtBE is present.

Where is MtBE used?

MtBE was used to increase the octane rating of gasoline beginning in 1979 as lead was being phased out. The percentage of MtBE added to gasoline increased in 1995 as a result of amendments to the federal Clean Air Act which required the reformulation of some gasoline to increase the oxygen content. MtBE is an ether and contains 18% oxygen. New Hampshire ultimately banned the use of MtBE in all gasoline beginning on January 1, 2007. However, the groundwater contamination caused by its use persists today.

What are the health effects?

The U.S. EPA has not set a health-based drinking water standard, known as a maximum contaminant level (MCL), for MtBE, but NHDES has adopted a **health-based** drinking water standard for community public water systems for MtBE of 13 micrograms per liter ($\mu\text{g/L}$) under New Hampshire's Safe Drinking Water Act. Animal studies suggest drinking water with high levels of MtBE may cause stomach irritation, liver and kidney damage, and nervous system effects. An increase in liver and kidney cancer was found in rats and mice breathing high levels of MtBE or orally consuming high concentrations of the chemical. Because of the animal studies on MtBE, NHDES considers it a possible human carcinogen.

A health information summary for MtBE can be obtained by calling NHDES at (603) 271-4664. It can also be viewed or downloaded at <http://des.nh.gov/organization/commissioner/pip/factsheets/ard/index.htm> by scrolling down to "ARD-EHP-2 MtBE."

Assistance from NHDES

NHDES' MtBE Remediation Bureau is implementing a comprehensive plan to address MtBE contamination in New Hampshire. The plan allocates funds for: 1) the investigation and remediation of MtBE contaminated sites, 2) testing at-risk private drinking water wells within a determined radius of contamination source sites, 3) providing safe, clean drinking water to impacted citizens, 4) installation and improvement of public water supply infrastructure in areas having significant MtBE contamination and 5) implementation of measures to prevent further MtBE contamination. Please contact the MtBE Remediation Bureau at (603) 271-7174 to learn whether assistance is available to you.

How can MtBE be removed from drinking water?

Unlike many other hydrocarbons, MtBE is difficult to remove from water. There are three treatment methods that are effective in removing MtBE from drinking water: air stripping, adsorption using activated carbon and oxidation. Effective treatment methods are discussed below.

If the concentration of hydrocarbon contaminants is high, two treatment units (typically using different methods) are often installed. The first process is used to remove the “heavy” contaminant load while the second provides a “polishing” step to assure full removal of the contaminant(s) and to address “breakthrough.” Air stripping is often the first method used while activated carbon is often used as the polishing step.

Air Stripping Treatment: Advantages and Disadvantages

Air stripping treatment consists of passing large amounts of air through the contaminated water. The efficiency of the device is improved by breaking up the bulk of the water into many small droplets. The goal is to allow the contaminants to evaporate into the air. When air stripping is used, two problems are possible:

- If there are elevated levels of iron or manganese in the water, rusty precipitate staining of fixtures and clothing is likely. Iron/manganese pretreatment may be necessary.
- Bacterial slime may grow in the air stripper, causing clogging. This will require occasional cleaning or continuous or periodic chlorination.

The advantage of air stripping is that there is no disposal or regeneration of the treatment media necessary.

Activated Carbon Treatment: Advantages and Disadvantages

Activated carbon has enormous surface area within each carbon particle. One pound of activated carbon has a surface area greater than the area of a football field. Activated carbon is a material that attracts many types of organic contaminants to its surface. Once the removal capacity of the carbon is used up, it may be returned to the manufacturer for rejuvenation (for very large users) or can be disposed of appropriately for smaller-scale situations. A disadvantage is that carbon has a low capacity of attracting MtBE compared to other organic compounds and must be replaced more frequently. Some activated carbons are now produced that specifically target MtBE.

If activated carbon is used, the radon and mineral radioactivity concentrations of the water should be taken into account. Activated carbon concentrates radon, potentially creating a low level radioactive waste and possible source of increased radiation within the home. Activated carbon can also foster the growth of bacteria by concentrating other organic chemicals, which can be used as a food source, on its surface. A final concern with activated carbon is the possible release of contaminants after they have been initially adsorbed. This action is known as desorption or dumping. This could occur if other water quality characteristics change.

To address breakthrough and desorption, the overall amount of activated carbon could be divided into two treatment tanks and the two devices installed in a “series” configuration, where water flows through the first unit and then into the second. In such an arrangement, any breakthrough from the first unit can be adsorbed by the unused carbon in the second unit. The advantage of activated carbon treatment in pressure tanks compared to other methods is that the water does not need to be repressurized and is less likely to become contaminated by dust and other airborne contaminants.

For information on treatment systems, visit the fact sheets webpage at <http://des.nh.gov/organization/commissioner/pip/factsheets/dwgb/index.htm> and scroll down to WD-DWGB-2-5, entitled "Considerations When Purchasing Water Treatment Equipment." A treatment system should not be purchased until sufficient water quality testing has been done to identify all of the following:

1. The short-term variability of the contaminant(s).
2. Whether the contaminant concentrations are rising or falling over the long term.
3. Other contaminants that are in the general area and how many are predicted to affect the well in the future.

Monitoring Program After Installation of a Treatment System

Periodic laboratory testing should be done of both the raw and finished water to determine treatment effectiveness. The frequency of this monitoring would be determined based on variability and duration of the past sampling record and other site specific conditions. Where activated carbon is used, the carbon will lose its removal capacity and will need to be replaced in time. A monitoring program will be needed to predict the expected longevity of each new carbon recharge.

Laboratory Testing

The state Public Health Laboratory, and many commercial laboratories, can test for MtBE and other volatile compounds. The State lab's cost is \$120 for each sample. This test provides information for all of the volatile industrial solvents and hydrocarbons regulated under the Safe Drinking Water Act. MtBE can vary in concentration; thus two or more samples should be taken before judging the average MtBE concentration in a well. Subsequent sampling for just MtBE alone will be performed by the State laboratory for \$60. The State laboratory can be contacted at (603) 271-3445 or 3446. A list of other accredited laboratories that handle private well water testing is available from the Drinking Water and Groundwater Bureau (DWGB).

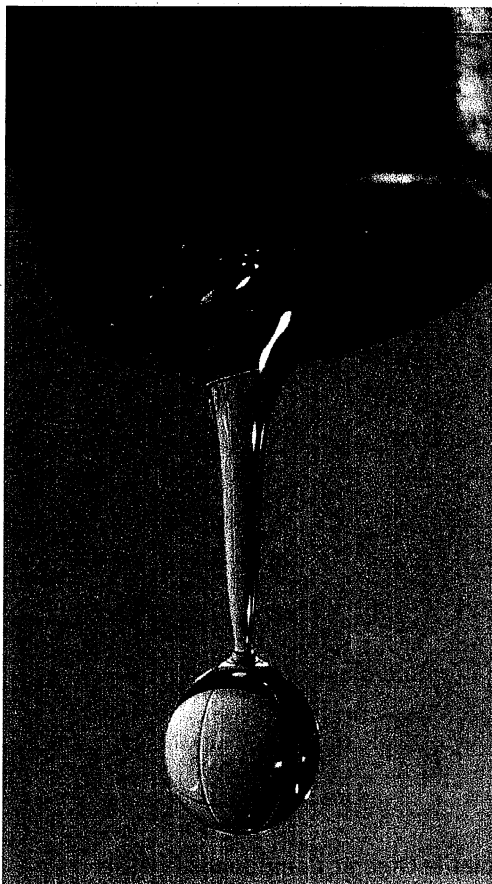
For More Information

For additional information, please contact DWGB at (603) 271-2513 or dwgbinfo@des.nh.gov, or the MtBE Remediation Bureau at (603) 271-7174. You can also visit www.des.nh.gov, click on A-Z List and choose Drinking Water and Groundwater Bureau. All of the bureau's fact sheets are online at <http://des.nh.gov/organization/commissioner/pip/factsheets/dwgb/index.htm>.

Note: This fact sheet is accurate as of March 2016. Statutory or regulatory changes or the availability of additional information after this date may render this information inaccurate or incomplete.

Protect Your Family's Health

Test Your Water Today for All Common Pollutants



Why should I test my well water?

Unhealthy levels of various contaminants are common in private wells in New Hampshire. Some of these contaminants have been linked to cancer and other diseases. Most of these contaminants have no taste, smell or color. You won't know what's in your well water unless you have it tested by a laboratory. State and local laws generally do not require testing of private well water. If you have a private well, the New Hampshire Department of Environmental Services (NHDES) strongly recommends that you have your well water tested – for all of the most common pollutants – to help protect your family's health. If a test shows that your well water has contaminants in it, NHDES can help you consider water treatment choices that work best for the level of contaminants in your water.

How do pollutants get into well water?

Well water comes from rain and snow that soaks into the ground. As water seeps through the soil and rock, it can pick up pollutants and other materials that are present on or in the ground.

Some contaminants that are commonly found in well water at unsafe levels come from the rocks and soil that the water flows through. The most common in New Hampshire are bacteria, radon, arsenic, manganese, uranium and radium. For example, the U.S. Geological Survey estimates that one in five private wells in New Hampshire has more arsenic than is allowed in public water systems.

Other contaminants get into well water from human activities. Gasoline storage and spills, industrial/commercial activities, improper waste disposal and road salting can introduce toxic substances to the ground. Even typical residential activities, such as using fertilizers or pesticides too close to a well, spilling fuel and improperly disposing of household chemicals can contaminate well water.

What should I test my well water for?

The following tests identify common contaminants found in well water in New Hampshire. Many private wells have been tested according to the requirements of mortgage companies or at the recommendation of well drillers, water treatment vendors, etc., but often those tests do not include all of the common contaminants that can harm your health, especially if they were done years ago. The list recommended in this flier provides a cost-effective, reasonable overview of a well's water quality. Contact an accredited laboratory for availability and pricing. *It is not necessary to do all of these tests at one time.*

◆ Standard Analysis

This covers the most common contaminants (see the list on the next page). Some of these contaminants pose health-related concerns, while others only affect aesthetics (taste and odor).

◆ Radiological Analysis

The rocks in New Hampshire contain naturally occurring radioactive elements that dissolve easily in well water. The recommended radiological analysis will test for uranium, analytical gross alpha and radon.

Testing for radon in air may have been required by your mortgage company; however, radon and other radioactive elements are also common in well water in New Hampshire. NHDES estimates that approximately 55 percent of private wells in New Hampshire exceed NHDES' advisory level for radon.

◆ Volatile Organic Compounds (VOCs)

The most common VOCs come from compounds found in gasoline, such as MtBE and benzene, and from industrial solvents. MtBE can be found in well water even in remote areas.

◆ Additional Tests

Circumstances specific to your well or property may require additional testing not described here. For instance, NHDES does not recommend routine testing for pesticides, herbicides or other synthetic organic compounds (SOCs), mainly because of the high cost. However, such testing might be a good idea if your water has elevated nitrite or nitrate concentrations and an agricultural source is suspected, or significant amounts of pesticide have been applied near your well.

These less-routine tests may not be performed at all laboratories.

What will testing tell me?

The laboratory report you receive will show the level at which any of the tested substances were found in your water sample. The mere presence of a contaminant in your well water does not necessarily mean that there is a problem. However, when levels exceed state or federal health standards or recommended action levels, there may be a problem and you should take steps to fix it. There are a number of appropriate treatment methods that can remove contaminants from water. NHDES' Be Well Informed web tool (see <http://xml2.des.state.nh.us/DWITool/>) allows a user to enter water quality results from a lab report into the application, evaluates the contaminants and recommends appropriate treatment options when necessary. You can print a report from Be Well Informed that summarizes recommended treatment options along with potential impacts to your health and/or home. NHDES also has fact sheets on its website covering all common water quality problems and their solutions. Before making any final treatment decisions, be sure to consult with a qualified treatment professional.

When should I test my well water?

NHDES recommends that prospective homebuyers test the water in a home with a private well before purchase.

Water quality in wells is generally stable, and if a change is going to occur, it occurs slowly. Thus the time between water quality tests, once you've purchased the home, can generally be several years if a well is properly constructed and located in a safe area. Bacteria and nitrate are exceptions; you should test for them every year.

The following conditions would call for more frequent testing:

- Heavily developed areas with land uses that handle hazardous chemicals.
- Recent well construction activities or repairs. NHDES recommends testing for bacteria after any well repair or pump or plumbing modification, but only after substantial flushing of the pipes.
- Elevated contaminant concentrations found in earlier testing.
- Noticeable variations in quality such as a change in taste, smell, or appearance after a heavy rain or an unexplained change in a previously trouble-free well, such as a strange taste or cloudy appearance.

When taking any sample, NHDES recommends that it be taken after a heavy rainstorm. These events tend to highlight conditions of improper well construction or poor soil filtration.

Learn More

For information about private well testing, treatment or accredited laboratories in New Hampshire, visit the NHDES website: www.des.nh.gov

Go to the A to Z List and select "Private Well Testing"

NHDES recommends having the following tests done every 3 to 5 years, except for bacteria and nitrate, which are recommended annually.

Standard Analysis

Arsenic	Lead
Bacteria	Manganese
Chloride	Nitrate/Nitrite
Copper	pH
Fluoride	Sodium
Hardness	Uranium*
Iron	

Radiological Analysis

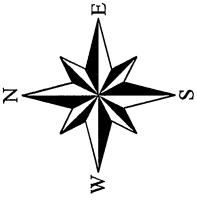
Analytical Gross Alpha
Radon
Uranium*

Volatile Organic Compounds (VOCs)

*Please note: Uranium is part of both the standard and radiological analysis for the State of NH Lab.



MtBE Remediation Bureau Drinking Water Quality Program 603-271-7174



POTENTIAL SITES

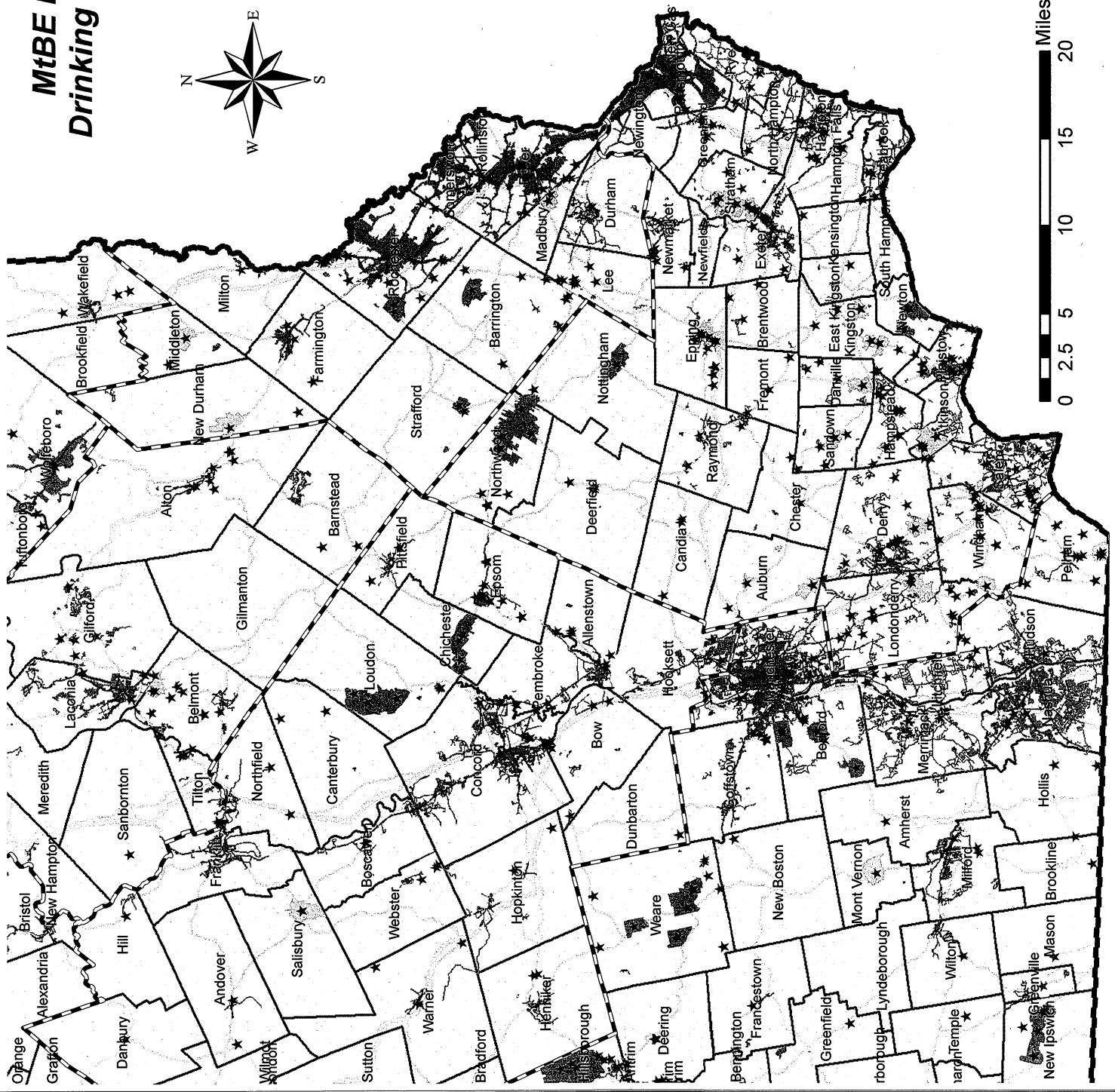
- ★ High Priority Site
- ★ Priority Site
- ★ Auto Salvage Yard
- ★ PWS Detects

CURRENT SAMPLING

- Under Development
- In Progress
- Complete
- Water Distribution (limited receptors)

- State Boundary
- County Boundary
- Town Boundary





- Divided Highway
- State Route






**MtBE Remediation Bureau
Private Well Sampling**
603-271-7174

-  Sampling District
-  Political_Boundary




Sites of Interest

-  Underground Storage Tanks
-  Remediation Site
-  Gasoline Related Site
-  Auto Salvage Yard

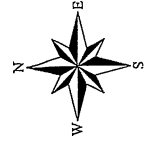
Public Water Supplies

-  Community System
-  Non-Transient System
-  Transient System
- Water Distribution

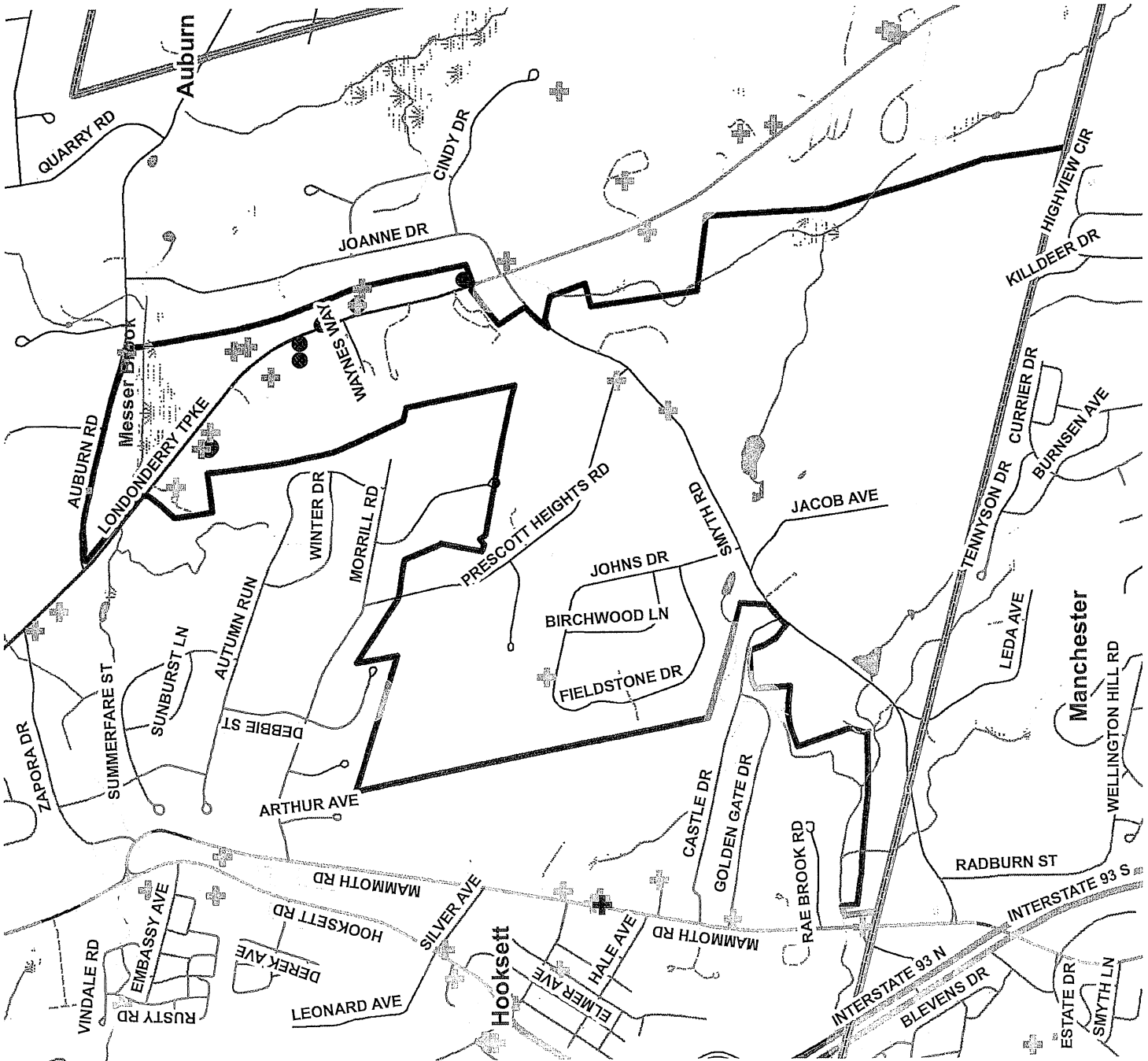
Hydrography

-  Stream/River
-  Swamp/Marsh
-  Open Water

The proposed sampling district was conservatively developed to encompass an area potentially vulnerable to MtBE contamination. No inferences should be drawn on the presence or absence of contamination from this map. Testing of well water is the only way to determine drinking water quality.



1 in = 1,500 feet





HOOVERVILLE (22-1)

1. CERTIFY THIS FORM

Under penalties of perjury, I declare that I have examined the information contained in this form and to the best of my belief it is true, correct and complete.

Preparer's First Name Christine	Preparer's Last Name Soucie	Date Aug 8, 2016
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Preparer's Signature

Audited Unaudited Compilation Report Attached

2. SAVE AND EMAIL THIS FORM

Please save and e-mail the completed PDF form to your Municipal Bureau Advisor.

3. PRINT, SIGN, AND UPLOAD THIS FORM

This completed PDF form must be PRINTED, SIGNED, SCANNED, and UPLOADED onto the Municipal Tax Rate Setting Portal (MTRSP) at <http://proptax.org/nh/>. If you have any questions, please contact your Municipal Bureau Advisor.

GOVERNING BODY CERTIFICATION

Under penalties of perjury, I declare that I have examined the information contained in this form and to the best of my belief it is true, correct and complete.

James A. Levesque Dist 3 Councilor
Governing Body Member's Signature and Title

[Signature] Councilor-at-large
Governing Body Member's Signature and Title

[Signature] Councilor-at-large
Governing Body Member's Signature and Title

[Signature]
Governing Body Member's Signature and Title

[Signature] Dist 5 Councilor
Governing Body Member's Signature and Title

Governing Body Member's Signature and Title

James A. Sullivan chair
Governing Body Member's Signature and Title

Governing Body Member's Signature and Title

Robert Quiraine Dist 2 councilor
Governing Body Member's Signature and Title

Governing Body Member's Signature and Title

Marc Minville District #4
Governing Body Member's Signature and Title

Governing Body Member's Signature and Title

John Hote District #6
Governing Body Member's Signature and Title

Governing Body Member's Signature and Title