

## Reducing the Risk of Groundwater Contamination by Improving Petroleum Product Storage

### Do you have an underground storage tank (UST)?

One of the best ways to protect your drinking water is to properly maintain your underground storage tank or remove any underground storage tank that has not been maintained in compliance with Department of Environmental Protection (DEP) regulations. Answer this simple question:

Has your underground storage tank been inspected every year by a certified tank installer or inspector, and has it received a passing report each year?

If the answer to the above question is a "Yes", then continue to monitor and maintain your underground storage tank, report any alarms to the DEP, and continue to have it inspected. Also, talk to your certified underground storage tank installer or inspector to see if you need to perform additional tasks (such as taking daily inventory or obtaining a statistical inventory analysis).

If the answer is a "No", then you run a high risk of contaminating your groundwater and being subject to enforcement action. Contact the DEP for assistance in coming into compliance with your underground storage tank. See the section named *Existing Underground Storage Tanks (USTs)* of the Worksheet portion (*Worksheet #4*) for more information.

### Thinking of installing a new tank?

If you are thinking of installing an *underground* storage tank, then contact a certified tank installer. Most aspects of locating, installing, inspecting, and maintaining an underground storage tank require - by law - the services of a certified tank installer or inspector. Contact the DEP for a list of certified tank installers and inspectors.

**The remainder of this fact sheet will deal with only *aboveground* tanks and their piping.**

#### Topics Covered:

Do You Have a UST?

Storage tank location

Tank Design and Installation

Monitoring

Leaks and Spills

Tank Closure

State of Maine Regulations

Source Water Protection/Wellhead

Contacts and References

## Storage tank location

One of the most important considerations when selecting your petroleum storage tank location is the distance from your drinking water well. Generally, the further away from your drinking water well, the better. However, there are limits on where you can place your petroleum storage tank.

1. After September 30, 2008, aboveground storage tanks storing motor fuel (including diesel) cannot be located:

- ◆ Within 300 feet of a well (except for a well located on the same property and serving only the users of that property);
- ◆ Within 1000 feet of a public water supply;
- ◆ Within the source water protection area of a public drinking water supply mapped by the Drinking Water Program of the Department of Health and Human Services.

And probably before the end of 2009 (New rules are to be written.), aboveground storage tanks storing motor fuel (including diesel) cannot be located:

- ◆ Within a significant sand and gravel aquifer mapped by the Maine Geological Survey of the Department of Conservation.

2. Effective 1 July 2009, for aboveground storage tanks storing heating oil consumed on the premises:

- ◆ If the tank is within the source water protection area of a community drinking water supply, then it must be a double-wall tank or have secondary containment approved by the DEP. Note that community drinking water supplies include more than water districts and municipal water departments. They include mobile home parks, nursing homes, and condominium associations.

If you need to install a new motor fuel tank, such as a gasoline or diesel tank to run tractors or other equipment, then you have to make sure you are not within any of the four areas mentioned in item #1.

Remember, just because you are not a customer of the water district or the water department does not mean you are outside its source water protection area. Many water districts have a well far from their customers.

The first one (within 300' of a well) should be easy enough to determine, if you are willing to do a little walking and have a long measuring tape. The second one (within 1000' of a public water supply) will not be so easy. Note that public water supplies include more than water districts and municipal water departments. They include restaurants, convenience stores, motels, campgrounds, mobile home parks, and other sites. For the third one (source water protection area of a public drinking water supply), you will

probably have to call the local water district or the Maine Drinking Water Program at 287-2070.

For the last category (significant sand and gravel aquifer), Significant Sand and Gravel Aquifer maps are available for inspection in most municipal offices and are available from the

Maine Geological Survey, Department of Conservation, 22 State House Station, Augusta, Maine 04333-0022. (Telephone number 287-2801) Electronic versions are available from the Maine Office of Geographic Information Systems through the State of Maine Internet website. <http://megis.maine.gov/maps/>. Some of the maps available at the State of Maine DEP Google Earth website allow you to superimpose Significant Sand and Gravel Aquifer "layers" onto the maps available for viewing and printing. Visit [http://www.maine.gov/dep/gis/datamaps/index.htm#Google\\_Earth\\_Maps](http://www.maine.gov/dep/gis/datamaps/index.htm#Google_Earth_Maps).

To assure a new petroleum storage tank will be placed in a legal location an environmental consulting firm should be contacted and hired.

Once you have figured out where your tank can legally be placed, you should remember that every site has unique conditions that can affect groundwater movement. How quickly the petroleum product reaches groundwater will also depend on local soils. The more porous the soil, the faster the rate of downward movement to groundwater will be. Even though diesel fuel and fuel oil are denser than gasoline and move more slowly through the soil, they will eventually reach groundwater.

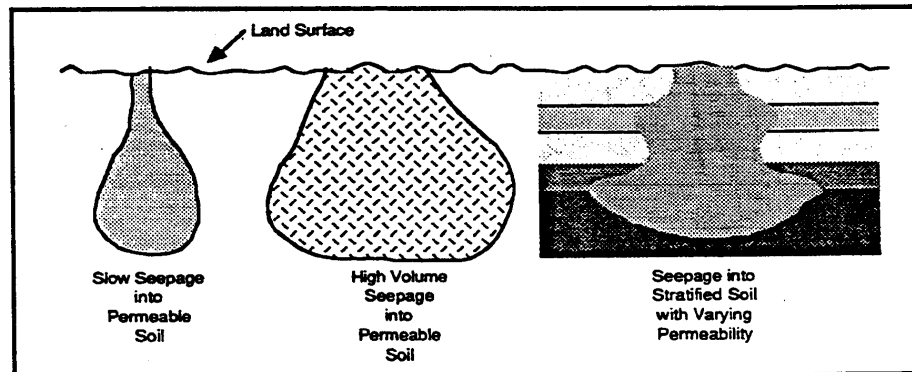


Figure 1: Petroleum product seepage into soils. Source: Underground Tank Corrective Action Technologies, EPA/625/6-87-015, January 1987.

Your petroleum storage tank should be :

- Located at least 300 feet away from your well;
- Not located up-gradient of your well;

If possible, locate the tank outside of a significant groundwater aquifer, more than 300 feet from a well, and more than 1000 feet of a public drinking water supply, so that it is not in a sensitive geologic area.

If a new tank is installed in a significant groundwater aquifer, within 300 feet of a well or within 1000 feet of a public drinking water supply, the installation is designated as being in a sensitive geologic area, and the cleanup standards are more stringent. Locating a petroleum storage tank in a sensitive geologic areas is not recommended. Figure 1 illustrates petroleum product seepage into soils.

## Tank Design and Installation

The State Fire Marshal's Office may require a permit for your facility. A permit is required for storage of a flammable or combustible liquid in any aboveground storage tank greater than 60 gallons capacity (other than supply tanks for heating systems regulated by the Oil & Solid Fuel Board).

One of the first steps in the design of your aboveground tank installation should be to contact the State Fire Marshal's Office to discuss the design and operational requirements for your facility. They can be reached at (207) 626-3890.

- ◆ Installing your own tank can be a very complicated process, and it would be best to hire a company whose business it is to install oil tanks.
- ◆ Underground piping must be installed by a certified tank installer.

Chapter 691, *Rules for Underground Oil Storage Facilities* specifies installation standards for underground piping associated with aboveground motor fuel storage tanks. It also specifies installation standards for underground piping associated with aboveground heating oil supply tanks when the tank capacity is over 660 gallons or when tanks have an aggregate capacity of over 1320 gallons. Underground piping must be installed by a certified tank installer. Persons interested in more detailed information should contact DEP, Bureau of Remediation and Waste Management, and ask for a copy of Chapter 691, *Rules for Underground Oil Storage Facilities*. <http://www.maine.gov/dep/rwm/ust/index.htm>

The underground fuel supply piping between a heating oil supply tank - regardless of the size of the tank - and the heating appliance (furnace or boiler) is required to have secondary containment (sleeving).

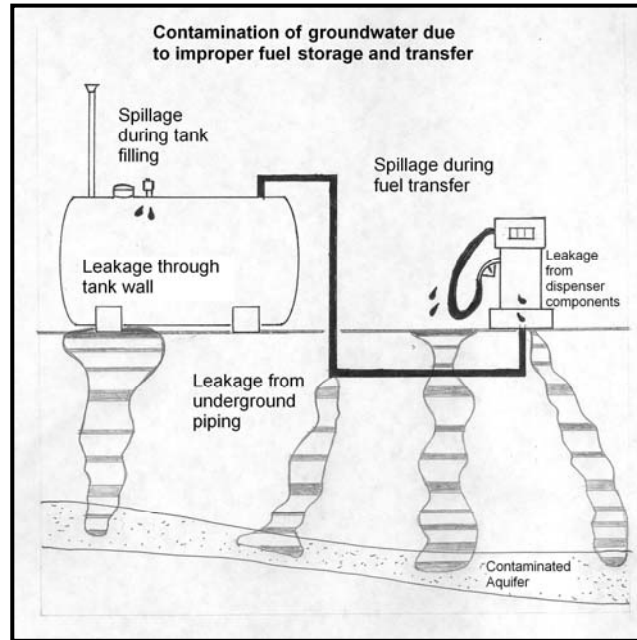
Maine law requires that all new or replacement underground piping have secondary containment with continuous electrical monitoring of the interstitial space (except for motor fuel suction piping systems installed in accordance with state regulations).

All tanks, except for heating oil tanks less than 1100 gallon capacity, must also include spill and overfill protection. Spill protection typically consists of a spill box or spill bucket for collecting spills when the tank is filled. Overfill protection is achieved using a prevention or warning device such as an automatic shutoff or alarm. Spill and overfill protections are important; they can prevent a number of small releases over a long period of time from polluting the groundwater. Keep in mind that a gallon of gasoline can contaminate one million gallons of groundwater.

Try not to exceed the 1320 gallon storage capacity threshold. Once the oil storage capacity of your site exceeds 1320 gallons, your site becomes subject to the federal EPA Spill, Prevention, Control, and Countermeasure Plan (SPCC Plan) requirements. These requirements are necessary to prevent oil spills and prepare facility owners for spills that might occur at sites storing larger quantities of oil. Note that all containers of 55 gallons and over count toward the threshold of 1320 gallons. For more information on SPCC plans, contact the DEP at 287-2651 or visit the website at <http://www.state.me.us/dep/rwm/spcc/index.htm>

## Monitoring

National Fire Protection Association (NFPA) Standard 30A *Code for Motor Fuel Dispensing Facilities and Repair Garages* requires accurate daily inventory records be maintained and reconciled for all liquid fuel storage tanks for indication of possible leakage from tanks or piping. It is important to keep good inventory data because it can be your first sign of a leak or discharge of product. Select the tank location carefully to ensure ease of installation and reliability of chosen leak detection methods. The figure below shows how groundwater can be contaminated by aboveground tanks.



Since cleanup of gasoline leaks is always costly and often not totally effective, it is important to constantly monitor all tanks containing petroleum products. If you already have a petroleum storage tank on your farm, be especially aware of the age of your tank as well as the need to establish a leak-detection program.

## Leaks and Spills

**38 MRSA Section 543** of the regulations regarding oil spill prevention and pollution control prohibits discharge of oil into or upon any coastal water, estuaries, tidal flats, beaches and lands adjoining the seacoast of the state, or into or upon any lake, pond, river, stream, sewer, surface water drainage, groundwater or other waters of the State or any public or private water supply or onto lands adjacent to, on, or over such waters of the state.

- ◆ **If you discover a petroleum discharge,** state law requires that you - in order to receive protection from any fines and penalties - notify the Commissioner of the Department of Environmental Protection within 2 hours of discovering the discharge. The phone number to call is 1-800-482-0777.

Any person who causes, or is responsible for a leak is not subject to any fines or penalties for the discharge if that person promptly reports and removes the discharge in accordance with the rules.

**Take whatever actions are necessary to remedy the problem** according to recommendations you receive when you report the spill or leak.

The Department of Environmental Protection administers the Groundwater Oil Clean-up Fund which can reimburse tank owners for a substantial percentage of costs incurred in cleaning up an oil spill or leak. The tank owner may be assessed a deductible based on compliance with the rules at the time of discovery. For more information about available financial assistance, call DEP at (207) 287-2651.

### Tanks and Piping No Longer in Use

**Tanks and piping no longer in use can cause problems** for owners and operators many years later. They will continue to corrode and, if they still contain gas or oil, will likely contaminate groundwater. Locate any unused tanks on your property. Also, try to find out whether the tanks still hold product or have holes. Don't stop with the tanks you know about. Ask around and see if there might be underground tanks left on your property that you do not know about.

State law requires that only certified tank installers remove underground tanks that have contained a Class I liquid (gasoline, aviation fuel). In addition, a site assessment is required when an underground motor fuel tank is removed. Before removing any underground tank you must notify in writing, at least 30 days in advance, the Commissioner of DEP and the fire department in whose jurisdiction the tank is located. This notification is required to ensure that precautions are taken to prevent an explosion or other problems.

If you have leftover tanks or piping on your property, then contact the DEP for advice on properly emptying them and/or removing them.

### Source Water Protection/Wellhead Protection Area

Almost half of Maine's population depends on groundwater for its drinking water supply from either private or public wells. We are lucky to have some of the best water supplies in the world, and it is our job to keep them safe. Being aware of potential problems on your property that might pollute drinking water sources is important. You may not even know that there is a potential threat. Taking the time to read and fill

There are some laws that pertain to areas within a source water protection zone that don't apply to other landowners. Be sure to check with your local water district and municipality for local ordinances or if you are unsure if you live in a source water protection area.

It is the landowner's responsibility to know local and state laws pertaining to their land, although it is hard to navigate sites and wade through the legal jargon of written laws.

out the applicable Farm-A-Syst sections is a great first step. From there you will sit down with a district employee or someone trained in Farm-A-Syst to discuss some possible solutions such as best management practices (BMP) that can be applied. BMPs are a method, measure, or practice that, when correctly installed or performed, will prevent, reduce, or minimize water pollution. In this case, the focus is on drinking water supplies and the areas that provide them with water.

If you are living or operating in a source water protection area

(the surface and subsurface areas surrounding a drinking water supply for a public water system where activities can contaminate the supply) or wellhead protection area (an area used to protect groundwater, a form of source water) you should pay extra special attention. We have tried to find pertinent information pertaining to this section. You can find links to these laws along with helpful information in the following Contact & Reference section as well as in appendices A: Law and Regulations & B: Resources.

The following, authored by Maine Drinking Water Program, is excerpted from the document "Best Management Practices for Groundwater Protection". This manual is intended for the use of local officials, public water suppliers and landowners in Maine. It is intended to encourage educated decisions, informed practice, and directed planning in regard to groundwater protection, particularly in the vicinity of public drinking water supply wells. <http://www.maine.gov/dhhs/eng/water/forms/Sections/BMPv2%200A.htm>

## **A. Chemical Storage**

BMPs for chemical storage

1. Underground storage tanks are prohibited by State law in Wellhead Protection Areas.
2. Store all chemicals under cover, and on impervious working surfaces, without floor drains. Design storage space so that failures, emergencies, extreme storm events or routine site clearing will not cause material or wash water to run on bare ground.
9. In addition to the standards set by the Oil and Solid Fuel Board, new home heating oil tanks should be a UL-80 listed tank with a bottom outlet, the tank ends should be welded to the body using a lap joint and not a crimp connection. Also, any outdoor home heating fuel oil tank should be sited either under the roof eave or away from falling snow or ice, should have protective filter cover, and be painted white to avoid condensation within the tank.

Effective 1 July 2009, for aboveground storage tanks storing heating oil consumed on the premises, the tank must be double-walled or have secondary containment approved by the DEP if the tank is within the source water protection area of a community drinking water well.

## **Contacts and References**

### **Who to call about...**

#### **Petroleum Product Spills**

Maine Department of Environmental Protection

1-800-482-0777

#### **Aboveground Storage Tank Installation**

State Fire Marshall

State House Station #52

Augusta, ME 04333

207-626-3870

#### **Registration of Underground Piping Associated with Aboveground Motor Fuel Storage Tanks:**

Maine DEP

State House Station #17

Augusta, ME 04333

207-287-2651

## **Regulations for Registration, Installation, Operation, and Closure of Underground Piping Associated with Aboveground Motor Fuel Storage Tanks:**

Maine DEP

State House Station #17

Augusta, ME 04333

207-287-2651

## **Petroleum Product Storage, Testing, Suppliers, and Installers**

Lists are available at the Maine DEP for:

Distributors, Certified Underground Storage Tank Installers/Removers, Site Assessment Consultants for UST Removals in Maine

## **Available Booklets**

"Is Your Tank In Shape?"

Contact Maine DEP, the Maine Oil Dealers Association (207-729-5298), or the Maine Oil and Solid Fuel Board (207-624-8608) for copies.

"Plain Talk on Heating Oil Tanks"

"Plain Talk on Motor Fuel Tanks"

Contact Maine DEP

## **Financial assistance**

FAME, Underground Oil Storage Facility or Tank Replacement Program:

Financial Authority of Maine

(207) 623-3263 or 1-800-228-3734

5 Community Drive.

P.O. Box 949

Augusta, ME 04332-0949

## **Health effects of gasoline-contaminated groundwater**

State Toxicologist

Department of Human Services

Bureau of Health

State House Station #11

Augusta, ME 04333-0011

207-287-3591

## **Websites:**

This link will take you to the Natural Resources Conservation Service (NRCS) Conservation Practice Standards. Here you can find technical guides that are the primary scientific references for NRCS. They contain technical information about the conservation of soil, water, air, and related plant and animal resources.

<http://efotg.nrcs.usda.gov/treemenuFS.aspx>

Aboveground Home Heating Oil Storage Tank Replacement Program

<http://www.maine.gov/dep/rwm/abovegroundtanks/replacement.htm>

Bureau of Remediation & Waste Management Home Page

<http://www.maine.gov/dep/rwm/index.htm>

Bureau of Remediation & Waste Management: Is your tank in shape?

<http://www.maine.gov/dep/rwm/publications/isyourta.htm>

Bureau of Remediation & Waste Management Underground Oil Storage Tanks

<http://www.maine.gov/dep/rwm/ust/index.htm>

Bureau of Remediation & Waste Management Aboveground Oil Storage Tanks  
<http://www.maine.gov/dep/rwm/abovegroundtanks/index.htm>

Department of Environmental Protection Google Earth website  
[http://www.maine.gov/dep/gis/datamaps/index.htm#Google\\_Earth\\_Maps](http://www.maine.gov/dep/gis/datamaps/index.htm#Google_Earth_Maps)

Maine Office of Geographic Information Systems website  
<http://megis.maine.gov/maps/>

Finance Authority of Maine  
<http://www.famemaine.com/contactUs.asp>

Best Management Practices for Groundwater Protection  
<http://www.maine.gov/dhhs/eng/water/forms/Sections/BMPv2%200A.htm>

A list of the Major EPA Laws and Programs That Could Affect Agricultural Producers. June, 2007.  
<http://www.epa.gov/agriculture/agmatrix.pdf>

Spill, Prevention, Control, and Countermeasure (SPCC ) Plans  
<http://www.state.me.us/dep/rwm/spcc/index.htm>

State laws concerning underground storage tanks.  
Title 38: WATERS AND NAVIGATION  
Chapter 3: PROTECTION AND IMPROVEMENT OF WATERS  
Subchapter 2-B: UNDERGROUND OIL STORAGE FACILITIES AND GROUND WATER PROTECTION  
<http://janus.state.me.us/legis/statutes/38/title38sec561.html>

**See “Appendix A: Laws and Regulations” and “Appendix B: Resources” for additional links.**

### **Acknowledgments**

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Original Fact Sheet #4 Adapted by Marianne DuBois. Maine Department of Environmental Protection 1995.