## Introduction

In both urban and residential areas, impacts to water quality may originate from fuel storage tanks, septic systems, and daily run-off from impervious surfaces. The contamination threat program was developed by HWW to address a few of these high priority threats to the water quality. These threats are summarized as follows:

**Aboveground and underground fuel storage tanks** - Fuel oil from a leaking storage tank may find its way into the groundwater supply or surface supply via run-off. Leaks from underground storage tanks are difficult to detect and may pose a contamination threat to the water supply. Homeowners need to be educated with respect to fuel consumption (e.g., if an unusual amount of fuel is being used, the homeowner should have the tank inspected rather than refilling the tank with fuel). Secondary containment and leak detection systems are preferred for fuel storage tanks, but installing these safety measures is costly. Therefore, educating homeowners can often be a cost effective means of contamination prevention.

**Septic systems -** On-site wastewater disposal systems are used in residential areas where the public is not connected to the local sewerage collection system. In a properly operating septic system, the wastewater is biologically treated in both the septic tank and in the underlying soil. The soil assists in filtering and removing bacteria, pathogens, and most pollutants from the waste stream. If a system is not installed properly or is not functioning as intended, wastewater can virtually pass through the system untreated, thereby increasing the contamination threat to the groundwater. In addition, a system not operating properly may be discharging untreated leachate above the ground allowing for surface run-off to transport the bacteria and pathogens into the receiving water source. Septic system failures are often the result of inadequate design, inappropriate installation (e.g., improper siting, inadequate adsorption area and soil permeability, etc.), neglectful operation (e.g., hydraulic overloading), or exhausted lifetime. Septic systems not operating properly, for whatever reason, pose a threat to the surface supply source.

**Run-off -** The runoff from impervious surfaces, namely Route 202 and Route 66, has the potential to transport suspended sediment, hydrocarbons (e.g., oil and gasoline), heavy metals, road salt, and thermal loading to the receiving surface water sources. The force of rushing water over impervious surfaces causes severe erosion of the stream banks and beds as well as damages any vegetative cover in the area. By limiting the amount of impervious surface area, the run-off infiltrates the soil environment, thereby removing the contaminants through a natural process. In addition, the vegetative undergrowth reduces the erosion potential by slowing the run-off from rain events.

## Contamination Threat Program Goals

The contamination threat program goals for the HWW watersheds focus on the following:

1. Conduct surveys on the watershed property to identify potential sources of contamination, including types of heating systems, fuel oil specifications, and septic system specifications (refer to Appendix A for HWW Survey forms).
2. Remove underground storage tanks, or at the very least, have a continuous leak detection system for monitoring purposes.
3. Control runoff from Route 202 and Route 66 to divert roadway stormwater contaminants from infiltrating the watershed area.

## Program Description

The contamination threat program is summarized below:

• UST removal

• Minimize stormwater runoff threats

• Conduct surveys to identify potential sources of contamination

**UST near the Manhan dam** - The May 1991 WRPP recommended removal of the UST located near the Manhan dam. The 275-gallon tar coated, steel tank was installed during construction of the dam in 1953and was used to store gasoline that operated an emergency generator in the gatehouse. The underground storage tank was removed in 1997 and an alternate power source (propane) is currently used for standby power at the gatehouse, eliminating the leak potential.

**Run-off threat from Route 202**  - Route 202 serves as a main artery from Holyoke to Westfield, Southampton, Northampton and the Massachusetts Turnpike. The density of traffic along this route is quite heavy. The transportation along Route 202 increases the threat of runoff from the paved road and uncontrolled releases from accidents. The run-off has the potential to transport various fuel contaminants into the watershed area since Route 202 crosses the northern portion of the Ashley Reservoir.

In an effort to minimize the potential of road drainage pollutants from entering and contaminating the McLean Reservoir, HWW replaced damaged berm and installed additional berm to divert surface runoff from the reservoir. With the added berm in place, surface runoff from Route 202 is diverted into catch basins that discharge out of the drainage area of the reservoir. In addition, HWW improved the Route 202 entranceways to the McLean Reservoir to divert runoff from entering the McLean watershed. HWW plans to similarly reconstruct the entranceways to the Ashley and Whiting Street Reservoirs.

Along Route 202, the City of Holyoke uses a decreased concentration of salt during the winter season. The current ratio of sand:salt mix is 4:1 or 5:1, which are both within the MADPW recommended range for water supply protection areas. The HWW is responsible for maintaining the access road to the WTP. The HWW uses sand only along the access road, except under extremely icy conditions, at which time the HWW utilizes the City’s sand/salt mixture.

**Survey information** - Initial surveys were distributed to residents on HWW watershed property in January 1997. These surveys enable HWW personnel to identify potential sources of contamination. Follow-up surveys, which address the issue of secondary containment for aboveground storage tanks and information about proper septic system management, are distributed to residents annually.

Under the septic system section of the survey, the homeowner is asked for information pertaining to the date of last septic system service. This information enables HWW personnel to determine which residents are deficient in their necessary septic system maintenance program. If the time period from the date of last service to the survey date is beyond the recommended pumping time frame of 3 years (314 CMR), HWW will inform the resident of their need to properly care for their on-site wastewater disposal system. Many of the problems associated with improper use of septic systems may be attributed to lack of user knowledge on operation and maintenance. In the follow-up survey, HWW personnel will include information on the “dos and don’ts” of system maintenance.[[1]](#footnote-1) For example, some of the septic system information will include the following:

👍 **Do**

1. Pump system regularly to remove accumulated solids and grease
2. Use water saving fixtures to avoid overloading the system
3. Use low phosphate detergents to minimize nutrient loading
4. Repair and/or upgrade improperly functioning systems
5. Conduct routine inspections of septic system

👎 **Don’t**

1. Flush grease, oils, and hazardous chemicals down the drain
2. Use septic tank additives (some products contain hazardous ingredients)
3. Use a garbage disposal (loads the system with suspended solids, nutrients, and BOD while imposing a large hydraulic load)
4. Substitute organic solvent cleaners for sludge pumping (cleaners may exterminate microbes, thereby, increasing the discharge of pollutants)

This information will assist the homeowner in proper septic system maintenance.

## Best Management Practices/Implementation Schedule

The following best management practices are incorporated in HWW’s contamination threat program:

**Aboveground and underground fuel storage tanks**

1. HWW follow-up surveys - Educate the homeowner about the contamination potential from leaking aboveground and underground fuel storage tanks.

**Septic systems**

1. Follow-up surveys – HWW conducts surveys to indirectly monitor the homeowner septic system maintenance as well as remind the homeowner of the need for on-site wastewater disposal system care.
2. Educate – HWW educates the homeowner via the surveys and provides guidance concerning the proper care of a septic system to the homeowner.

**Run-off**

1. Salt use reduction – The City maintains a decreased concentration of salt during the winter season around Route 202.
2. Vegetative cover – HWW maintains the vegetative cover within the “run-off” sensitive areas to function as a barrier in source water protection for all the watersheds.

The implementation schedule for the contamination threat program is summarized as follows:

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| **Action Item** | **Implementation Schedule** |
| Surveys | Ongoing– HWW conducts annual surveys with educational material on proper septic system maintenance |
| Run-off redirection | Reconstruction of Ashley and Whiting Street Reservoir entranceways is in planning stages |
| Salt use reduction | HWW has contacted the Westhampton and Huntington Highway Departments, who are responsible for salting Route 66 through the Tighe-Carmody Reservoir watershed, to request that this stretch of roadway be designated as a low salt zone |
| Vegetative cover | On-going |

1. Morris, Jackie. Source Protection - A Guidance Manual for Small Surface Water Supplies in New England. New England Interstate Water Pollution Control Commission (NEIWPCC). March 1996. [↑](#footnote-ref-1)