

Well Water Protection

Introduction

The Canadian Quality Milk (CQM) program requires all water that is used for milking equipment sanitation to meet potability standards for bacteria. Under the CQM, water used for cleaning milk contact surfaces must be sampled annually and tested for bacteria.

Groundwater

Groundwater is the primary source of water on many dairy farms in Nova Scotia. It exists almost everywhere underground in fissures, porous sands, gravel and rock cracks. An aquifer is an underground water-bearing formation which can yield a significant amount of usable water. Wells are usually drilled into an aquifer to yield useful quantities of water to supply farm, family and community needs.

For the most part, groundwater is a safe and reliable source of water. However, there have been cases where a well's use has been discontinued due to contamination. Any activity that adds an undesirable substance to groundwater is considered to be contamination.

Some examples of potential on-farm sources of contamination are the storing and application of manure, fertilizers and pesticides. Dumps, silage seepage, milkhouse wastewater and fuel storages are other potential sources of contamination (Figure 1).

Groundwater can be affected by leaching and downward movement of these contaminants. Once a contaminant enters the groundwater source, it can be spread far beyond the original source.

Protecting groundwater from contaminants is the least expensive way of ensuring a good quality water supply. It is the most cost effective way of maintaining bacteria-free milkhouse water. Any investment in groundwater protection is worthwhile in the long run.

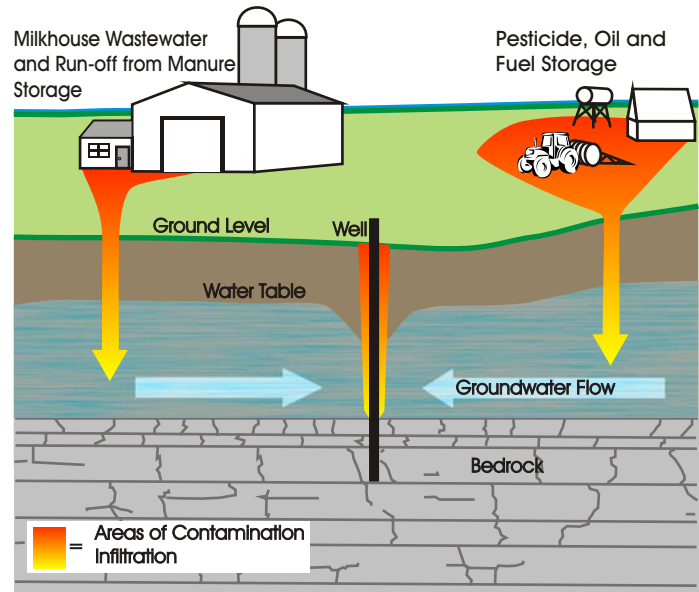


Figure 1: Potential Sources of On-farm Contamination

Drilled Wells

The use of provincial well construction regulations can significantly reduce the risk of well contamination, increase the longevity of a potable groundwater supply and avoid the costs associated with drilling and developing a new well. In fact, water from a properly constructed and drilled well typically does not contain pathogenic bacteria.

Proper construction includes some of the following features:

- well casing sealed into bedrock formations;
- the use of a pitless adaptor;
- casing that is at least 15 cm (6 inches) above ground level;
- a vermin-proof, vented, sealed, and tight-fitting cap; and
- secure connections.

Pitless well construction

In the past, a well pit (Figure 2) was the most common way to gain access to well pipe connections below the frost line. But well pits are generally unsanitary, allowing drainage into the well from surface and sub-surface water sources that may be contaminated.



Figure 2: Drilled well cap located in a well pit - to be avoided

Pitless well construction greatly reduces the possibility for contaminated water to enter the well. A **pitless adaptor** (Figure 3) is also less expensive to install than a well pit. It is attached to the well casing to provide a sanitary and frost-proof seal between the casing and the water line running to the barn or house. Water from the well is diverted horizontally at the adaptor to prevent it from freezing. This device permits convenient access to the well and well components without having to dig around the well.

Repairs and maintenance to a drilled well can result in bacterial contamination. Disinfection should be performed following any such work since bacteria can persist for long periods in a drilled well. A factsheet entitled "Disinfection of Water Wells by Chlorination" is available from the Nova Scotia Department of Environment and Labour (NSDEL).

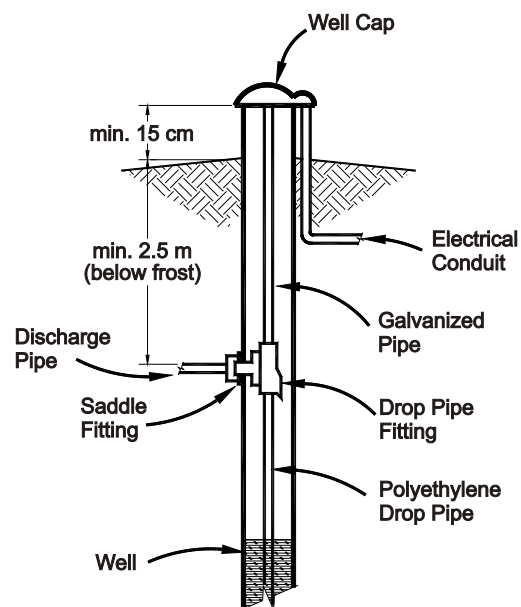


Figure 3: Pitless adaptor for drilled well construction

Well Construction regulations

All well construction regulations found in the *Nova Scotia Environment Act* must be followed when constructing a new drilled well. You can read the Act on the internet at: www.gov.ns.ca/just/regulations/regs/envwellec.htm or by contacting the Environmental Monitoring and Compliance (EMC) Division of the NSDEL. A list of the EMC's District Offices can be found online at: www.gov.ns.ca/enla/offices/emcoffices.asp. Or contact them by region as follows:

Sydney	-	563-2100
Kentville	-	678-6086
Truro	-	893-5880
Bedford	-	424-7773

For more information, contact:

Dairy Farmers of Nova Scotia
(902) 897-4141

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