



Fact Sheet

Water from dugouts and other surface water supplies is used by many rural families for their domestic and drinking water. This water should never be used without some form of treatment. In addition to treating the water, there are some steps people can take to protect their surface water supply.

The use of dugouts for collecting rain and snow water has become a major source of water supply in rural areas.

Floating Intake

The most suitable water in a dugout or pond is located near the surface because this water has been exposed to air and has a higher oxygen level. A floating intake, properly constructed and located, is important in assuring that this water is drawn into your water system.

To obtain the best quality water during the summer, the intake must be located near the surface of the dugout. For winter operation, the float should be lowered to below the expected freezing level.

Intake pipes may occasionally become clogged with algae or slime. If this occurs, backwash the pipes by reversing the flow of water or pull the float to shore and clean the pipes manually.

The Saskatchewan Watershed Authority (Authority) can provide more information on float assembly construction and installation.

Bacteria

Dugout water used for human consumption must be free of harmful bacteria. *If you are unsure that the water is safe, have it tested.* The Authority's Technologists and Ecologists, Water Quality Services can provide more information on testing your water supply. The Authority does offer a water testing and consultative service to residents utilizing a private water source. For further information, please see Program Profile ([PR-200](#)) - Rural Water Quality Advisory Program and Fact Sheet ([FS-306](#)) - Rural Water Quality Collection and Testing.

One factor to consider regarding your surface water source is its proximity to livestock. All livestock should be fenced from the dugout and adjacent areas. It is also important to ensure to divert barnyard runoff away from the dugout by using dykes or holding ponds. A dyking system can also be used to ensure that the best possible surface water is collected.

Dugout Aeration

Many dugouts in Saskatchewan share common water quality problems – a foul, rotten egg odour, earthy taste and dark colour. All of these problems are created by decaying organic material in an oxygen-free (anaerobic) environment. In summer months, oxygen is dissolved in the water by wind and wave action. If, however, organic matter in the dugout is in high enough concentrations, wave and wind activity is not sufficient to keep enough dissolved oxygen in the water. This problem is compounded in winter by an ice cover.

Once the dissolved oxygen is used, anaerobic decomposition occurs and carbon dioxide, hydrogen sulphide, methane and ammonia gases are produced. The hydrogen sulphide, (which smells like rotten eggs), reacts with organic matter causing it to become black and taint the water. Maintaining aerobic (with oxygen) decomposition in dugout water throughout the year should eliminate this problem. The process of adding air to water is known as aeration and is the method most recommended to help improve water quality.

Aeration systems should be operated continuously using a fine bubble diffuser. Diffusers create small bubbles, provide better wave circulation and maintain higher levels of dissolved oxygen than other aeration techniques, such as open-end tubing.

It is important to ensure the diffuser is positioned at the deepest part of the dugout so the aerated water circulates over the surface of the mud. This keeps the bottom oxidized, preventing nutrients and other substances from being released from the sediment.

Once aeration equipment is installed, it is important to check the equipment regularly. This will help ensure continuous aeration and help maintain the dissolved oxygen at its optimum level and provide better water quality.

Need More Information?

Call the Saskatchewan Watershed Authority's Water Quality office toll free at 1-866-TEST-H2O (1-866-837-8420) or contact any of the offices listed on the next page.

Saskatchewan Watershed Authority Offices

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General information about the Saskatchewan Watershed Authority, our programs, Fact Sheets and forms can be found on our website at www.swa.ca.