

Wastewater Management Systems

What is the Issue?

Wastewater (domestic) is the combination of liquid and water-carried wastes associated with drinking, cooking, cleaning, hygiene, sanitation, or other domestic purposes. The effective and safe collection, storage, treatment, and disposal of wastewater are important issues that can be complex for Summer Villages.

Poorly designed and improperly operated wastewater systems - private and municipal – can lead to wastewater seeping into the lake. This effluent is both nutrient rich and high in biological contaminants (pathogens). Its presence in the water exposes lake users to public health risks, and contributes to increased plant growth in the lake. Effective and safe management of wastewater is a necessity.

Councillors should try to assist Summer Village residents with making the very best decisions regarding how they treat domestic wastewater. They should keep in mind that standards set by the government are minimum requirements based on most common situations. There are times, however, when unique circumstances or the wish to go beyond the minimum standards requires considering higher standards. As an example, people living around lakes, because of their proximity to a water body, should aim higher than the minimum standards when it comes to protecting the environment. A small cost increase today for a properly installed and maintained system can have huge benefits for future generations.

Background

Wastewater Effects on the Environment

A brief summary of harmful affects resulting from the improper release of wastewater effluent includes:

- **Ecosystem change and loss of biodiversity.** Pollutants entering the water can cause changes in water chemistry. This can lead to the increased presence of some species (e.g., algae), and also to a decrease in the presence of others. Fish are very sensitive to habitat changes, including the presence of toxic substances. Fish populations will usually decline as water quality declines.
- **Decreased quality of the environment for citizens.** Nutrients coming into the lake with wastewater can cause an increase in algae and plant growth in the lake.
- **Harm or material discomfort to citizens.** Wastewater contains sewage and can cause serious health concerns for citizens. Blooms of toxic cyanobacteria, often caused by increased nutrient input into the lake, are also a health concern for animals and people.

Wastewater Systems

When it comes to cottages, homes, and businesses in a Summer Village, there are typically two systems used to manage wastewater; municipal wastewater collection and treatment facilities, and onsite sewage disposal systems. There are acts, regulations, standards and guidelines, and codes of practice for both public and private systems to regulate their installation, and the collection and disposal of wastewater. Around lake communities, wastewater disposal from boats may also be an issue.

Municipal Wastewater Systems

Municipal wastewater collection and treatment facilities release treated effluent to the environment by evaporation, irrigation, or by discharge to a receiving watercourse or water body. During government approval of these systems, approval conditions are established to ensure that treated effluent does not adversely impact the environment and acceptable precautions are taken to avoid human health concerns. It is the responsibility of the operator to ensure that the system operates within the guidelines.

Private Onsite Systems

Onsite sewage disposal systems include septic tanks, holding tanks, fields, mounds, sand filters, packaged sewage treatment plants, lagoons, and open discharge. With the exception of holding tanks and lagoons, these systems, or combination of systems, use the soil for the final treatment and dispersal of the effluent to the surrounding environment. A system that is well designed for the development it serves and meets the required standards will effectively treat the wastewater. A system that is not properly designed for the development could cause groundwater contamination and have a negative impact on nearby lakes.

Effective and safe onsite treatment of sewage is a complex process and site specific. Proper decisions regarding the initial design of the system must consider the soil texture and structure, depth to ground water, and other site-specific information. A soil profile evaluation to a depth of approximately two point four metres (eight feet) is required. The correct initial design of the system will help prevent system failures, which can create health hazards and contaminate the environment.

Private Onsite System Maintenance

Private onsite systems require regular maintenance. Holding tanks have all collected materials pumped out routinely. Septic tanks require the periodic pump out and removal of solids to maintain treatment effectiveness and prevent severe failure of the treatment field. These solids are referred to as septage. Pump out trucks are contracted by homeowners to take out and dispose of the septage. For more information see **What Does the Law Say** of this chapter.

Private Boats and Yachts

Boats or yachts may have their own holding tanks to manage wastewater generated while boating, sailing, or while sitting in port. If the wastewater, including the contaminated water that collects at the bottom of a boat or yacht, is improperly disposed of, it can pose a health risk, as well as contribute pollution and add to the eutrophication of the lake.

What Does the Law Say?

The Environmental Protection and Enhancement Act (EPEA) regulates the release of substances into the environment, including releases into water. Alberta Environment has authority under the EPEA to regulate wastewater management and stormwater drainage systems.

The deposit of a deleterious material of any type, including wastewater, into water, or in a place where it may enter water frequented by fish, is contrary to the federal *Fisheries Act* [Sec. 36 (3)]. Environment Canada administers this section of the Act.

Summer Village Responsibility

A Summer Village has responsibilities as either the owner of a municipal wastewater collection and treatment system, and/or in relation to the use of private onsite wastewater treatment systems. The Summer Village is responsible for deciding whether a municipal wastewater collection and treatment system or private sewage systems may be used to serve a subdivision.

A Summer Village may be accredited by the Alberta Government, under the *Alberta Safety Codes Act*, to be responsible for issuing permits and inspecting private onsite systems within its municipal jurisdiction. If the Summer Village is accredited to administer the Safety Codes Act and Private Sewage Regulation, it also has responsibility for the permitting and compliance inspection of private sewage systems. A Summer Village may employ a private sewage system inspector or chose to use the services of an accredited Safety Codes Inspection Agency for the delivery of the permitting and inspection services. If a Summer Village is **not** accredited, the responsibility for issuing permits and inspecting private onsite systems remains with Alberta Municipal Affairs. Municipal Affairs uses Accredited Inspection Agencies to deliver these Services.

Municipal Wastewater Systems

Under the EPEA, Alberta Environment regulates the construction and operation of municipal wastewater collection and treatment facilities. The facility operation must comply with approvals issued in accordance with the EPEA or Code of Practice for wastewater systems using a wastewater lagoon. Specific design and operating criteria for wastewater management systems are included in the *Standards and Guidelines for Municipal Waterworks, Wastewater and Storm Drainage Systems*, published by Alberta Environment.

An approval or registration must be obtained from AENV for construction and operation of a municipal wastewater system. An approval or registration for a municipal wastewater system will specify operating and monitoring requirements, and the level of certification required for the facility operators.

The quality of treated effluent is regulated to provincial standards to ensure minimal release of organic and inorganic materials, nutrients, and pathogens.

Private Onsite Systems

Private onsite sewage systems handling less than 25 cubic metres (5500 Imperial gallons) sewage volume per day are regulated by Alberta Municipal Affairs. Regulations for onsite sewage disposal systems are established under the *Alberta Safety Codes Act*. Under this Act, the Private Sewage Disposal Regulation adopts the *Alberta Private Sewage Systems Standard of Practice 1999* as the rules in force.

As an accredited municipality, the Summer Village may decide that residents must use the services of a “certified contractor” in the design and installation of private onsite systems, as outlined in the *Alberta Safety Codes Act* and the *Alberta Private Sewage Systems Standard of Practice 1999*. Design and installation by the homeowner could be restricted.

Onsite System Maintenance

The owner of a private onsite system is responsible for ensuring that the system is maintained and operated to ensure it continues to effectively treat the wastewater.

An onsite system will require the periodic removal of solids, referred to as septage, from the septic tank or treatment plant. Alberta Environment (AENV) regulates the disposal of septage. Septage must be disposed of at an approved wastewater treatment facility. If a septage hauler is using an alternative method of disposal, the hauler requires Letter of Authorization (LOA) from AENV.

An alternate method of septage disposal is land application. The LOA outlines the criteria for

land application, such as setback distance from a water body, limited application rates, and that septage must not be applied to frozen ground. These criteria have been established to prevent potential environmental impacts and health danger. If land application of septage is not carried out according to these criteria, there is a potential for the septage, which is high in nutrients and pathogens, to enter into a watercourse or groundwater and negatively impact it.

Municipal Bylaws

The *Safety Codes Act* sets out some restrictions on the bylaws a municipality may make in relation to requirements set out in the Act, including those relating to onsite sewage systems. It is best for the Summer Village to obtain legal advice from their solicitor before drafting bylaws concerning this matter.

Contaminated Water From Boats and Yachts

Wastewater generated on boats and yachts, including water that collects in the bottom of boats and yachts, is contaminated and must be collected and disposed of at an approved wastewater treatment facility. Improper dumping violates the pollution prevention aspect of the federal *Fisheries Act*, administered by Environment Canada.

What Should I Do?

Getting a Municipal Wastewater System

The Alberta Association of Municipal Districts and Counties (AAMDC) has developed a *Model Process for Considering Subdivisions*, which provides information on how to obtain information that assists with making decisions on whether onsite systems can be used and what type are appropriate, or if a municipal collection system is most appropriate.

If your Summer Village residents express the wish to change from private systems to a municipal wastewater system, it is often most effective to use input from the community to establish upgrading requirements. Town Hall meetings, newsletters, information sessions, and assistance from a public consultation expert are helpful in determining community needs, and developing support and understanding for the project.

Maintaining a Municipal Wastewater System

The construction and operation of municipal wastewater systems are regulated by Alberta Environment. All municipal wastewater systems are required to have certified operators.

Follow the monitoring and operating conditions that are outlined in the approval or the codes of practice for the municipal wastewater facility. Conditions and reporting requirements will depend on the type of wastewater system in place. Immediate notification is required in the event of an accidental release.

Regarding Private Onsite Systems

Summer Villages should strongly consider becoming an “accredited” municipality that has the authority to administer the *Safety Codes Act* and the provincial *Private Sewage Disposal Regulation and Standards*. An accredited municipality is better positioned to manage the onsite sewage systems within their municipality. Benefits include being able to set inspection times and having the power to ensure that installations within the Summer Village have permits and inspections conducted as per the *Safety Codes Act*.

Consider exploring the development of a Private Onsite System re-inspection program that has the purpose of ensuring continued effective operation and maintenance of all private onsite systems, and to minimize the impact of older faulty systems.

Note:

The *Safety Codes Act* does not directly address re-inspection and what a municipality could do. The municipality should get direct legal advice on what it is they want to do and if they can do it. The specifics of the program should be set up after the municipality considers how best to manage the risk and cover cost in a way that is appropriate for the individual Summer Village.

Guiding Residents Through the Legislation

Provide assistance to ensure residents develop their lands according to the Land Use Bylaw, other municipal bylaws controlling disposal of waste, and any required provincial legislation.

The *Model Process Reference Document* developed by the AAMDC can be used to assist in the planning of subdivisions and subsequent development. Before a development permit is issued, the applicant could be required to provide a report of the proposed private onsite system, which must be designed to meet the *Alberta Private Sewage Systems Standard of Practice*. This ensures that the landowner has properly planned and designed the system (i.e., the soil is suitable for an onsite sewage disposal system and they have good knowledge of ground water levels).

Boats and Yachts

A Summer Village cannot create a bylaw requiring owners and operators of boats and yachts to treat their wastewater in a certain way, because a Summer Village has no authority over the federal *Fisheries Act*.

If a Summer Village rents docking space to boats and yachts, they should have a clause in the rental agreement that is very clear about watercraft owners not dumping wastewater into the lake. They could stipulate that watercraft owners store their wastewater, including the contaminated water that collects at the bottom of a boat/yacht, in approved holding tanks that must be pumped out and disposed of by approved haulers. If they do not require such a clause, there is a possibility that the Summer Village could be charged, along with the craft owner, should there be a violation against the federal *Fisheries Act*.

Education and Information

Consider publishing articles in the Summer Village newsletter (or in any other publication) informing residents of how dangerous improper wastewater disposal can be to the lake environment and to their own health. Encourage them to be proactive in protecting the lake they love. Include tips such as proper maintenance and regular inspections of their onsite sewage system.

Who Can I Contact?

Becoming Accredited

A Summer Village administration can choose to become accredited for managing the private onsite sewage treatment systems within its jurisdiction. To do so they must apply to the Alberta Government. The accreditation form can be downloaded at: <http://www.safetycodes.ab.ca/Forms/accredit.pdf>. Further information can be obtained from the Safety Codes Council or Alberta Municipal Affairs.

Municipal Wastewater Systems

Contact Alberta Environment for information on establishing a municipal wastewater system or to ensure an existing facility is operating properly.

Private Onsite Systems

All new onsite sewage systems require a permit, either from an accredited municipality, or from an Inspection Agency working on behalf of Alberta Municipal Affairs. Unauthorized installation of private onsite systems can be reported to the Summer Village administration or safety codes officer, if the municipality is accredited, or to the Province at safetyervices@gov.ab.ca.

On occasion, there are complaints of private citizens running hoses from holding tanks into a lake or stream. For a suspected release of sewage from a private onsite sewage system into the lake or any other water body, contact your local Public Health Authority, Alberta Environment, Summer Village administration, or, if the Summer Village is not accredited, Alberta Municipal Affairs.

The inappropriate disposal of septage from private onsite systems should be reported to the Summer Village administration, Alberta Environment, and the Regional Health Authority.

Anyone who observes a person dumping wastewater or contaminated water into a lake, or in a place where it can enter a lake, can call the Alberta Environment Emergency Complaint number at 1-800-222-6514. Alberta Environment will handle the complaint and refer it to Environment Canada, if necessary.

For more information about private onsite systems, contact a certified private sewage installer, a certified private sewage system inspector, or a Public Health inspector.

Boats and Yachts

If you observe a person dumping any waste or contaminated water from a boat or yacht into the lake, or in a place where it can enter the lake, call Environment Canada.

Are There Any Resources Available?

- **Alberta Private Sewage Systems Standard of Practice, Safety Codes Council 1999.** This is the legal document for Alberta's private sewage treatment systems codes and standards. To order a copy go to: <http://www.lrc.learning.gov.ab.ca/pro/resources/item.htm?item-no=384298>
- **Alberta Private Sewage Systems Standard of Practice 1999 Handbook.** This is a convenience document for explanatory and interpretive information only. It does include the content of the actual Standard. This handbook will be of more use than the Standard on its own. It does not replace the legal, regulatory document. Available online at: http://www.municipalaffairs.gov.ab.ca/ss_handbook_handbook_index.htm
- **Alberta Environment: Standards and Guidelines for Municipal Waterworks, Wastewater and Storm Drainage Systems**
http://www3.gov.ab.ca/env/protenf/publications/SandG_MuniWater.pdf
- **Alberta Onsite Wastewater Management Association**
The Association and its members can provide advice on private sewage systems. The association is made up of private companies and individuals having an interest in the private sewage industry. They actually design and install private sewage treatment systems. They have useful information on their web site at: <http://www.aowma.com>
- **Alberta Association of Municipal Districts and Counties (AAMDC): Model Process for Considering Subdivisions**
- **Alberta Environment: Wastewater and Storm Drainage (Ministerial) Regulation**
<http://www.canlii.org/ab/laws/regu/1993r.119/20050801/whole.html>
- **Municipal Affairs: "Tips on Private Sewage Systems"**
www.municipalaffairs.gov.ab.ca/ss/pdf/ps/TipsPrivateSewageSystems.pdf
- **Alberta Environment: Approvals and Registrations Procedure Regulation**
<http://www3.gov.ab.ca/env/protenf/approvals/factsheets/approv.html>
- **Alberta Environment: Code of Practice, for Outfall Structures on Water Bodies**
<http://www3.gov.ab.ca/env/water/Legislation/CoP/>
- **Alberta Environment: Release Reporting Regulation**
<http://www3.gov.ab.ca/env/protenf/legislation/factsheets/release.html>
- **Alberta Environment: Substance Release Regulation**
<http://www3.gov.ab.ca/env/protenf/legislation/factsheets/substrel.html>
- **Final Report: Alberta Environment-Septage Management Advisory Committee- Recommendations for Septage Management in Alberta, October 2004**
<http://www3.gov.ab.ca/env/waste/domwwater/pubs/FinalReport.pdf>