

F I N A L R E P O R T

**ALBERTA ENVIRONMENT - SEPTAGE
MANAGEMENT ADVISORY COMMITTEE**

**Recommendations for Septage
Management in Alberta**

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INTRODUCTION

1.1 BACKGROUND

Alberta Environment (AENV) established a stakeholder Committee, known as the Septage Management Advisory Committee (SMAC), to provide advice and recommendations on septage management¹ practices and legislative requirements (see Appendices for Terms of Reference) in Alberta.

Rural residential developments that are not connected to central wastewater collection and treatment systems (communal systems) are dependent upon septic tanks, on-site field systems, or holding tanks for the disposal of their wastewater. Each of these systems requires the septage to be hauled from their tanks and disposed of elsewhere. The mandate of the SMAC was to focus their review on addressing the ultimate disposal of the septage that is hauled away from these systems.

AENV currently allows application of septage to land, in addition to disposal at approved wastewater treatment facilities. Prior to application of septage to land under provincial jurisdiction, the hauler must obtain a Letter of Authorization (LOA) from AENV. These LOAs define the requirements haulers must meet when applying septage to land.

The Committee recognized a range of concerns related to septage disposal. The Committee considered each of the concerns listed below as high priority items:

- Septage haulers have difficult access (restrictions, distance, cost) to wastewater treatment facilities, leading to land disposal of untreated septage.
- Compliance and enforceability of the current LOA and regulatory requirements for land application of septage is difficult due to:
 - need for improved clarity for some criteria such as setback distances
 - restrictiveness such as not allowing application on frozen ground or snow covered ground

¹ In this report, septage refers to wastewater removed and hauled from a septic tank, holding tank, pit toilet, or similar system that receives only domestic wastewater. This does not include wastes from grease traps, industrial processes, commercial processes or agricultural processes. Domestic wastewater is defined in the *Wastewater and Storm Drainage Regulation* as “the composite of liquid and water-carried wastes associated with the use of water for drinking, cleaning, washing, hygiene, sanitation or other domestic purposes.”

- lack of awareness or the reluctance of septage haulers to obtain the necessary approval for septage disposal on land.
- limited administrative and enforcement resources
- Improper land application of untreated septage can adversely impact surface and groundwater quality (pathogens and nutrients).
- Application of septage to frozen ground² has a higher potential for environmental and health impacts and requires more stringent management.
- There has been a lack of innovation/incentive in managing septage as a resource for improved environmental protection.
- Lack of consistent knowledge of regulations and guidelines among septage haulers may lead to undesirable (and illegal) practices in some situations.
- Land application of septage to inappropriate vegetation, or where the septage can run-off from the site, increases the potential for human contact with pathogens.

1.2 REPORT SCOPE

This report provides advice from a wide range of stakeholders about:

- Acceptable methods for the disposal of septage, including management standards to address human and environmental health concerns.
- Broad recommendations and an implementation plan for septage management.

These recommendations are based, in part, on a separate report, “Technical and Regulatory Literature Review,” prepared by Associated Engineering with the advice and support of this Committee.

The recommendations do not apply to farmers or septage haulers who apply a farmer’s own septage to his own land.

² “Frozen ground” should be defined for the purposes of enforcement. The Committee considered the use of specified dates: e.g. from October 15 to April 15 as an approach that would be easy to define in the field. The Committee noted that application on snow-covered ground increases the risk of contamination.

RECOMMENDATIONS

The Committee believes that improvements in septage management are important to human and environmental health. Both human health and environment issues are also important priorities for Albertans. The following recommendations will require additional public and private investment (e.g. infrastructure, resources, training, education). The consequences of not acting could be severe if land application of septage results in pathogen transmission via food or water to humans or if it results in adverse environmental impacts.

2.1 VISION

By 2010, Alberta will have established an effective septage disposal system supported by the regulators, municipalities, septage haulers and wastewater facility operators. This system will eliminate the practice of septage land application except in those cases where reasonable access to approved wastewater treatment facilities is not practical. Access to appropriate disposal facilities and beneficial management practices assures the protection of human and environmental health.

The Committee expects that a number of actions will be taken to meet the identified goals. The rapid growth of rural subdivisions served by private sewage disposal systems in some portions of Alberta makes proper septage management an urgent matter.

2.2 PRIORITY GOALS

Eliminate risks of septage mismanagement impacts on human and environmental health. This will require the following:

1. Disposal of septage at approved wastewater facilities as a general rule.
2. Creation of the infrastructure needed for effective liquid waste management. (Society's investment in liquid waste management should be equivalent to its investment in solid waste management.)
3. Identification of specific sites and situations where application of septage to land is allowed in the absence of reasonable access to wastewater treatment facilities.
4. Achievement of a high level of compliance with requirements and practices that are clear, effective, achievable and enforceable.
5. Development of better ways to manage septage as a resource.

Goals 1 and 2 respond to the concern that septage haulers have difficulty accessing (restrictions, distance, cost) wastewater treatment facilities, leading to disposal elsewhere, often without treatment.

Goal 3 responds to concerns that improper land application of untreated septage can adversely impact surface and groundwater quality (pathogens and nutrients). In particular, application of septage to frozen ground has a higher potential for environmental and health impacts and requires more stringent management.

Goal 4 responds to concerns that compliance and enforceability of the current LOA regulatory approach for land application of septage is difficult due to broad requirements and limited enforcement staff.

Goal 5 responds to the concern that there has been a lack of innovation/incentive in managing septage as a resource for improved environmental protection.

2.3 CRITERIA

To guide future decisions about septage management, the Committee applied the following criteria to their recommendations. The recommendations must:

- Contribute to the elimination of risk to human and environmental health.
- Describe specific and measurable changes (action required is clearly stated; outcomes are measurable in comparison to a benchmark).
- Be directed toward achievement of the stated vision.
- Be achievable.
- Be adaptable to accommodate new information and technical knowledge.
- Be fair and reasonable in terms of cost and responsibility allocation (e.g. sectors who benefit share the cost of changes).

2.4 RECOMMENDATIONS

The Committee's recommendations to address the stated priority goals are as follows:

Recommendations to Address Goals 1 and 2: Disposal at Approved Wastewater Facilities and Infrastructure Creation

1. Improve support for facilities that (a) support regional initiatives, (b) enable effective monitoring to alleviate municipal liability concerns, and (c) control septage disposal at wastewater treatment facilities.³
2. Ensure that existing liquid wastewater management facilities are made available to septage haulers.
 - a. Clarify responsibilities and legal obligations of all parties – regulators, municipalities, haulers and wastewater facility operators to ensure that septage is disposed at approved wastewater management facilities.
 - b. Enlist support of the Alberta Association of Municipal Districts and Counties (AAMDC) and the Alberta Urban Municipalities Association (AUMA):
 - i. to work with municipalities to improve access
 - ii. to establish septage management requirements prior to approval of new subdivisions
 - c. Inform municipal wastewater operators that approvals **do** enable acceptance of septage originating from outside the municipality. This is currently misunderstood.
 - d. Apply the user-pay principle to septage pre-treatment and disposal at municipal treatment facilities so that there is no net cost impact on ratepayers connected to the facilities.
 - e. Improve access hours at municipal wastewater treatment facilities (e.g. Cardlock, video camera system, private tanks, and/or telephone notification).
3. Promote the formation of an industry association that administers the registration and accreditation of haulers to improve septage management industry and to help clarify hauler/operator responsibilities. This

³ The concern is that undesirable substances could enter the municipal system. Controls would be used to ensure that these substances are discovered before they are placed in the system.

accreditation will require development of an agreement between haulers and regulators about certification requirements.

Recommendations to Address Goal 3: Suitable Land Sites

4. AENV should lead the development of requirements that describe specific exemptions under which land application of septage will be allowed by the LOA if access to proper disposal facilities is unavailable. These requirements would identify restrictive conditions for land disposal, ensuring that this method is used as an exception to preferred practice. The committee notes that improved access to approved wastewater facilities is necessary and preferred (see above).
5. Recognizing that disposal on frozen ground currently occurs (despite regulations), regulators should allow a limited “amnesty” period, using the LOA for frozen ground septage application (because of poor access to proper facilities) under the following conditions:
 - a. More conservative application rates in view of public health and environmental concerns.
 - b. Strict adherence to topographic guidelines (same types of criteria for winter and summer, but more restrictive for winter (e.g. milder slopes, greater setback from surface waters/wells).
 - c. Stabilization of septage before application.
6. AENV should lead the development of a guidance document that defines a timeline and conditions under which disposal of septage on frozen ground will be phased out. This type of disposal is more likely to create environmental problems, and the resource value of the septage is lost.

Recommendations to Address Goal 4: Compliance

7. Alberta Environment should ensure that septage management requirements are enforceable and clearly defined (by license, approval, code of practice, or registration).
8. Through the previously recommended industry association and as part of due diligence, haulers should develop an environmental management system (EMS) with clear septage management requirements.
9. Haulers should be required to document and track septage transport and disposal (e.g. a manifest). This can be part of the EMS.

10. To reduce non-compliance with new requirements, AENV should (a) promote industry association education programs and (b) implement significant penalties.
11. AENV or a contracted inspection authority should utilize unannounced inspections of septage land applications to determine compliance levels and should also take corrective actions where required.

Recommendations to Address Goal 5: Manage Septage as a Resource

12. Undertake regular reviews of technologies to promote the application of the best available septage management approaches in new developments or retrofits. Examples include the following:
 - a. Determine whether there are cost-effective ways to treat wastewater before it is hauled away. Consider on-site waste management systems being developed as alternatives to wastewater disposal facilities (new systems, in demonstration phase).
 - b. Identify potential to improve performance of on-site systems (e.g. temperature, amount of solids).
 - c. Develop haulage truck solids-liquid separation technology to improve the economics of long distance solids transport (haulage of relatively small volumes of septic tank solids to wastewater treatment facilities and return of the relatively large volume of liquid to the septic tank for subsequent on-site disposal) when land-spreading restrictions apply or where haulage distances are long.

2.5 OTHER RECOMMENDATIONS

The Committee also identified a number of other goals and associated recommendations that, although important, were considered to be of lower priority. Appendix C lists these additional goals and recommendations.

2.6 IMPLEMENTATION

The Committee emphasized that successful implementation will require cooperation among several stakeholders: regulators, municipalities, haulers, wastewater treatment plant operators and septage generators. All parties will have to work together to achieve the 2010 vision identified in this report.

As soon as the Province develops a response to this report, it should support the following implementation requirements:

1. Raising public and stakeholder awareness of the concerns and the need for changes to improve septage management. (Within one year.)
2. Working with AUMA and AAMDC to gain municipal support regarding improved access for septage disposal at municipal facilities. These organizations can also help municipalities consider the best way to address septage disposal during the subdivision development approval process. (Within two years.)
3. Working with haulers to help them form an industry organization and establish acceptable requirements for criteria. (Within one year.)
4. Working with the industry organization to promote widespread adoption of best management practices, including an environmental management system. (Within three years.)
5. Investing in public liquid waste treatment facilities that improve hauler access. (Within five years.)

2.7 PROVINCE'S ROLE

- The Province should review and make legislative changes necessary to implement these recommendations. Alberta Environment will be the leader in ensuring compliance with regulations.
- The Province should oversee the overall program with minimum day-to-day program involvements.
- The Province should provide adequate funding for treatment and disposal facilities to enable septage acceptance (municipality sanctioned and privately operated facilities).

ADVISORY COMMITTEE PARTICIPANTS



F I N A L R E P O R T

The participation of the following organizations and individuals is gratefully acknowledged:

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TERMS OF REFERENCE



Septage Management Advisory Committee

TERMS OF REFERENCE

February 2004

PURPOSE

Provide advice and recommendations to Alberta Environment on septage management practices and legislative requirements.

COMMITTEE MEMBERSHIP

See attachment 1 for the list of stakeholders and their interest in septage management. Representatives from the listed stakeholders will be invited to participate as members of the advisory committee.

COMMITTEE TASKS

1. Review current practices and Alberta regulations related to the management of septage from residential dwellings and commercial facilities that are not served by sanitary sewer collection systems. This includes lake cottages, rural residential, roadside commercial facilities, campgrounds and pit toilets. Also include private systems/farms where they apply domestic wastewater to their own land.
2. Review Alberta Environment's standards and requirements related to land application of septage;
3. Review other jurisdictions' standards and requirements related to land application of septage;
4. Prepare a supporting document presenting
 - a. The findings outlined in items 1-3;
 - b. Environmental and health concerns, and advantages and disadvantages of management options for the management of septage;
5. Prepare a supporting document outlining regulatory options for the management of septage;
6. Prepare a recommendation report that:
 - a. Proposes acceptable methods for the disposal of septage including management standards, to address environmental and health concerns;
 - b. Proposes a regulatory strategy for the disposal of septage that is effective and streamlined. This must include an implementation plan.

OUTCOME

A recommendation report by the stakeholder advisory committee that includes:

- Best management practices for the septage from residential dwellings and commercial facilities; and
- Effective regulatory strategies for the disposal of septage, including an implementation plan.

TIME LINE

It is proposed that the initial committee meeting be held in February 2004 and the committee's final recommendation report be completed by end of July 2004. The committee will have to confirm their commitment to the proposed timelines.

ROLE OF CHAIR

The Chair, from Alberta Environment's Science and Standards Branch, will:

- Clarify Alberta Environment's expectations to the Committee,
- Prepare agendas and run the meetings,
- Ensure the Committee has adequate support to effectively review current information and practices, and make informed proposals to Alberta Environment,
- Help to ensure the Committee remains on topic with their discussions and advise on how to proceed, should a discussion become "stalled,"
- Manage the project budget.

ROLE OF CONSULTANT

The services of a consulting company will be required to:

- Carryout a scientific literature review and preparation of a document that outlines environmental and health concerns, and advantages of alternative management strategies for septage,
- Compile a summary of other jurisdictions regulatory approach and alternative regulatory options for the management of septage,
- Present a summary of the literature review and alternative regulatory strategies to the advisory committee,
- Assist the Chair in preparing the meeting agendas and record of the meeting decisions and consensus.

- Prepare a draft and final recommendation report for committee approval

DISCUSSION PROCESS

Open participation is essential to the success of the Committee. The chair will make every effort to invite all members to comment during discussions. Members are asked to share the “air time” and avoid situations in which only a few members dominate the discussion. Members are also asked to work together to identify all issues and options initially (immediate judgement or blocking is discouraged). Once the Committee is satisfied that ideas are “on the table,” members are encouraged to identify the benefits and costs that should be considered in developing recommendations.

STAKEHOLDER INPUT

In order to understand the range of issues and options, every committee member is encouraged to discuss these items with other stakeholders within their sector. Committee members who represent organized stakeholder communities are encouraged to keep those communities informed as the discussion proceeds.

DOCUMENTATION

The consultant will be responsible for documenting all discussions and consolidating the decisions and recommendations into a recommendation report for the Committee. Committee members will make sure of the accuracy of the recommendation report before it is forwarded.

**ATTACHMENT 1:
STAKEHOLDERS AND THEIR INTEREST**

Membership	Interest
Alberta Environment - Regional Services (Approval and Enforcement) - Science and Standards Branch	Section 176 of Environmental Protection and Enhancement Act (EPEA) outlines the legislative requirements for the disposal of waste. This includes domestic wastewater from residential and commercial facilities collected in septic tanks and hauled away for disposal. Alberta Environment (AENV) Regional offices are the agencies that implement the legislative requirements and standards. AENV Science and Standards Branch (SSB) is the lead agency that develops standards and legislative requirement strategies. Bijan Aidun of SSB will be the chair of the advisory committee.
Academia – U of A, U of C, or one of the colleges	Participation from academia will be sought after to provide scientific input. This is to ensure that up to date and scientifically defensible management strategies are presented for the advisory committee’s consideration.
Septic Haulers	Septic Haulers are the industry sector that will be directly affected by this initiative since they will have to meet the environmental standard and legislative requirements. (This industry does not have an association to represent their interest hence appropriate representation form this industry needs to be identified.)
Alberta Association of Municipal Districts & Counties (AADMC)	The residential dwellings and roadside commercial facilities that are not served by sanitary sewer collection systems and have septic tanks are located in rural areas. The Municipal Districts and Counties are the governing bodies responsible for rural residents.
Albert Urban Municipalities Association (AUMA)	Members of this association are the owners of the approved wastewater facilities where the waste from septic tanks can be disposed. Disposal of septic tank waste into approved municipal wastewater facilities is the best option from both health and environmental perspective. Therefore, availability of these facilities for disposal of septic tank waste needs to be confirmed.
Alberta Onsite Wastewater Contractors’ Association	This association certifies installers of onsite wastewater systems, which include installation of septic tanks. This association has a keen interest to ensure environmentally acceptable maintenance of their systems (e.g. disposal of waste from septic tanks). This association may consider expanding its activities to include haulers.
Safety Codes Council and Alberta Municipal Affairs	These two organizations are the coauthors of the <i>Alberta Private Sewage Systems Standard of Practice</i> that outlines the design requirements and standards for onsite wastewater systems.
Alberta Transportation	This agency is responsible for the management of provincial grants to municipalities for the construction of public wastewater treatment facilities.

Membership	Interest
Alberta Lake Management Society	In the past, this society has expressed concern with the inappropriate disposal of waste near water bodies causing adverse affects on surface water quality.
Alberta Health and Wellness	The management standards developed for the disposal of septic tank waste have to address both environmental and human health issues. Therefore Alberta Health and Wellness' participation will help address issues related to human health.
Alberta Agriculture, Food and Rural Development	Requirements for application of septic waste on land need to address agricultural concerns
Federal Government	A representative from Environment Canada and Health Canada will participate on the advisory committee since the federal government is responsible for national parks and native lands where septage is generated and is often disposed outside of these areas.

Septage Management Advisory Committee

Operating Plan

February 2004

TIMELINES AND MEETINGS

The attached schedule outlines the timelines and meeting dates

ADDITIONAL GOALS AND RELATED RECOMMENDATIONS



Goal 6: Eliminate undesirable land disposal methods that may occur when septage disposal at a treatment facility is not practical due to distance, or disposal at a facility is not allowed due to concerns with impacts on the facility.

13. Alberta Environment should provide guidance to municipalities on land and facility disposal options for septage.
14. Where septage haulage distances to treatment facilities are excessive and land application is the only viable option, provide funding for temporary storage facilities to enable local land application under appropriate conditions.
15. AENV should work with municipalities to develop appropriate septage management solutions.

Goal 7: Improve haulers' knowledge about septage management requirements, proper management options, and improper management consequences to eliminate unintended illegal activities.

16. The industry association should take an active role in educating haulers and owners of private sewage disposal systems about the proper septage disposal requirements.
17. AENV should prepare publications to help support the education effort that is not only focused on existing stakeholders but also on new permit applicants (provide leaflet).
18. AENV should include septage educational information on a government website.
19. Alberta Municipal Affairs should support the education effort.
20. The government should provide funding for the education program.

Goal 8: Eliminate land application of septage to inappropriate vegetation and incorporate into the soil within 48 hours to reduce the potential for human contact with pathogens.

21. The revised septage management requirements should list vegetation types that are inappropriate for land application.
22. Since some vegetation types (e.g. pasture) are not amenable to incorporation, compensatory application restrictions should be considered (e.g. increased buffers, reduced slopes).

Goal 9: Eliminate undesirable septage disposal practices for new subdivisions.

23. Subdivision approvals should address the requirements for proper septage management.

24. The government should clarify in the Municipal Government Act the requirements for proper wastewater management.
25. The government should support education of land use planners and municipal administrators in the management of septage.

Goal 10: Reduce the impact of septage haulage on the area's roads, lands, waters and treatment facilities.

25. Municipalities should review sewage disposal locations and make appropriate access improvements (e.g. reduced haulage distances).

Goal 11: Eliminate the concerns with possible toxic or other problematic constituents in the septage and the municipalities' concerns about the liability and costs associated with accommodating septage treatment at their wastewater treatment plants.

26. Require statutory declaration/performance bond.
27. Sample septage before disposal to enable follow-up testing and corrective action where necessary.
28. Where practical, discharge septage into a separate tank to enable flow equalization and testing before release into approved treatment facilities.

Goal 12: Eliminate chemical toilet wastes that contain toxic substances or have low biodegradability.

29. Where chemical toilets are used, require the use of biodegradable chemicals.
30. Ban the use of unacceptable chemical substances.
31. Provide education about the chemicals being used.
32. Require disposal at a wastewater treatment plant (may allow for use of all current chemicals).