



PLANNING RESOURCE GUIDE
**Guide to Developing
a Wastewater
Management Plan**



The background features a light orange illustration of a house with three windows and a group of stylized human figures below it. The house is positioned in the upper middle, and the figures are spread across the lower half of the page. The overall style is simple and graphic.

The Provincial Planning Regulation promotes sound land use planning and expresses the provincial interest in the sustainable development of land, resources and infrastructure. However, several new ideas promoted and a number of new provisions included are significantly different from the previous regulation.

To support the understanding of these new ideas and provisions, and their application at the local level, the Province of Manitoba is developing a variety of resources and tools that will provide additional information and direction, including a series of planning resource guides that will further elaborate on some of the ideas promoted in the new regulation and provide additional direction to support their local application.

Because of their technical nature, the resource guides are intended mainly for a planning audience, such as planning staff from municipalities and planning districts, consultants and provincial staff involved with land use planning.

The guides are intended to support planning, rather than dictate how it be done. While a guide may discuss or promote a certain approach, the province does not require a particular approach to be used. The guides are intended as supplementary resources to further elaborate and explain select ideas or provisions in the Provincial Planning Regulation and their use is optional.

For more information on planning resource guides and other resources available to support local planning, go to the Provincial Planning Regulation Web site at: www.manitoba.ca/ia/plups

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1.0 INTRODUCTION TO WASTEWATER MANAGEMENT PLANS IN MANITOBA

1.1 What is a Wastewater Management Plan?

A Wastewater Management Plan (WWMP)

- outlines wastewater management (treatment and associated infrastructure and services) within a planning area (a municipality or planning district)
- identifies plans for the future development, expansion or upgrade of wastewater systems to accommodate changing needs
- provides an estimate of the associated costs and financing mechanisms of the existing and planned systems
- integrates elements of the development plan, municipal financial plan and capital plan to ensure that new development can be accommodated without financial burden on the existing community (ideally, that new development pays for itself)
- is an asset that can support and inform decisions about land use, infrastructure funding and any necessary permits and licensing.

1.2 Which municipalities are required to prepare a WWMP and what should the plan contain?

With the introduction of the *Save Lake Winnipeg Act*, all planning authorities (municipalities or planning districts) in the capital region are now required to prepare a WWMP as part of a development plan review or major amendment. The minister of Local Government may also require other planning authorities to prepare a WWMP. These may include areas of high growth, or areas where onsite systems are failing or are at risk of failing.

The WWMP must demonstrate to the minister of Local Government that there is sufficient capacity to accommodate any projected development set out in the development plan. If increased capacity will be required, the WWMP must estimate and plan for the infrastructure investments necessary to accommodate the projected development. The plan ensures that proposed infrastructure investments will be environmentally and economically sustainable, with implementation timelines that match population projections.

The WWMP must also demonstrate that the responsible local authority will address any existing or anticipated environmental or public health issues, such as a boil water advisory.

More than an Engineering Report

The WWMP is different from an engineering report. The engineering report may describe in detail the state of existing infrastructure, capacity and potential engineering solutions to specific problems. The WWMP projects infrastructure needs and capacity into the future, reviews potential servicing options and presents plans for the next five to 25 years.

The WWMP is a municipality or planning district's plan, not a consultant's report, so it must do more than identify options for the planning authority to consider. The final WWMP submitted to the technical advisory committee (TAC) must specify how the planning authority will carry out and finance the updated or amended development plan.

Finally, the WWMP must indicate how new development will strive to pay for itself. The WWMP makes the link between planned development and the financing of related services. This is achieved by integrating the capital plan into the planning process, ensuring an adequate budget for new, expanded or improved services, and ensuring proper allocation of fees to users of new infrastructure.

Details of the contents of a WWMP are provided in Part III of this guide. All WWMPs are reviewed by a technical advisory committee (TAC). See Appendix A for information on the regulatory process and what the TAC will look for when reviewing WWMPs.

1.3 Who should be involved in preparing a WWMP?

Wastewater management is a key municipal service that can influence land development patterns. Because of the significant land use implications of wastewater management, the planning authority (the municipality or planning district) should lead the wastewater management planning process.

Depending on the complexity of local wastewater issues and the amount of data already collected through various studies, the WWMP may need to be carried out by a professional engineer. At a minimum, consultation with engineers, as well as planners and other professionals, is recommended in all cases.

Begin by setting up a small committee to ensure various components of a WWMP are examined from a broad perspective. Involving the following individuals, as committee members or for consultation as needed, will ensure a smooth planning process and result in a thorough WWMP:

- chief administrative officer/office manager (to help facilitate the overall process and provide information on capital costs)
- finance department
- council members
- professional planners
- development officer
- operations engineer or technologist
- consulting engineer (if no full-time engineering staff)
- owners of larger private wastewater systems (lagoons or piped systems)
- regional office of Manitoba Local Government's Community and Regional Planning Branch
- local environmental health inspector
- Manitoba Conservation and Water Stewardship

Wastewater Systems and Development Patterns

In many cases, higher densities of development can be accommodated in areas where centralized wastewater treatment systems provide a level of treatment that meets provincial standards. Package plants and alternative treatment systems may or may not support relatively compact development. Individual, on-site septic systems generally require more land area per system, necessitating low densities and resulting in sprawling development.

2.0 USING THE GUIDE

This guide helps planning authorities collect appropriate information and use it to:

- produce an inventory of the wastewater management systems in the planning area or region
- determine the current and future wastewater management needs of the planning area
- identify options for addressing those needs and select an approach
- outline how the selected approach will be implemented and financed, including phasing and timelines

A planning area's wastewater management system depends on a combination of factors, including the following:

- size of the planning area
- rate of development or population change
- land use types
- service standards
- fiscal capacity
- environmental features and influences
- relationships with neighbouring jurisdictions
- water use

Different planning areas have varied wastewater management needs that require individual approaches. This guide is for use by planning authorities of all sizes, with wastewater systems of varying complexity. Planners are encouraged to use it only as a basis for putting together a plan that meets their own unique needs.

3.0 ELEMENTS OF A WWMP

This section of the guide walks through the process of preparing a WWMP, indicating what information to obtain and include. The final document should contain an executive summary outlining WWMP highlights, findings and course of action. Each section should conclude with observations that summarize the key points of that section. Maps and tables are useful to illustrate much of the information contained in a WWMP and should be

Community Planning Assistance Grant Program

Community Planning Assistance Grants are available to fund the services of a qualified consultant to prepare studies required to address important planning and land use issues in the planning area, including WWMPs that have been ordered by the minister. Funding of up to 60 per cent of the costs to a maximum of \$40,000 per plan for a planning district and up to 50 per cent to a maximum of \$20,000 for a municipality that is not part of a planning district is available. Visit our website for more information: www.gov.mb.ca/ia

"Green" Wastewater Management

Consider exploring greener alternatives to expansion or chemical treatment, such as water conservation and demand-side management, naturalized wetlands, or even compact development that reduces infrastructure requirements.

included where applicable. Appendix B provides a sample Table of Contents showing all the sections of a complete WWMP. Since wastewater management is a specialized area, it may be helpful to include a glossary. Appendix C is a glossary of wastewater terms that may be used as needed.

3.1 Context: Current situation

This section of the WWMP summarizes how the municipality or planning district currently manages wastewater. Use the statements below to assess the current situation and determine what information will complete the assessment:

3.1.1 Describe the sources of wastewater in the planning area and how much wastewater is being produced annually:

- On a map, locate the settlement areas and residences in rural areas. Also, locate commercial, institutional and industrial developments, particularly those with high wastewater production rates or those requiring special wastewater treatment.
- Describe the annual wastewater volume produced by the sources listed above. Use existing wastewater system annual volume data, if available, and projected growth rates to calculate future needs. If existing volume data is not available, annual volume can be estimated with information such as:
 - current population and past growth rates
 - number of residential units and average number of people per household
 - estimated average volumes of wastewater produced per person or per residence
 - estimated organic loading per person or per residence
 - estimated amount of truck hauled wastewater being produced from onsite systems, including septic tanks and holding tanks
- For private treatment facilities, contact the business or institution that owns the facility for volumes.
- Describe any water demand management programs currently in place that may reduce the volume produced. Examples include low flow toilets, composting toilets, low flow shower heads, sewer use or drainage bylaws.

Wastewater Volume Considerations

Annual wastewater volumes can be either measured or estimated.

Some systems have flow measuring devices that record total flows or allow them to be calculated. Volumes can also be calculated from pump operation records — the running time of a pump multiplied by its capacity. Frequent measurements allow accurate calculations. They can also capture daily, weekly and monthly variations that may be significant for planning purposes.

Estimates may be made in various ways. Using average per capita daily volume figures is one. Ideally, volumes will be calculated and compared using both measurements and estimates. This provides insight into unusual patterns of wastewater generation for a planning area. This could indicate problems with large generators or with a collection system.

If volumes are seriously overestimated, new collection and treatment facilities may be oversized at considerable cost. Underestimated volumes may lead to undersized facilities unable to handle expected future capacities.

Please note that agricultural manure storage/land application should not be included as a source of wastewater.

3.1.2 Describe the type(s) of wastewater management systems currently used to manage/treat wastewater in the planning area:

- Describe the wastewater management systems used, including any wastewater treatment plants and lagoons (public and private) and associated collection lines, lift stations, discharge routes and receiving waters, as well as constructed wetlands and on-site systems (holding tanks, septic tanks and fields, ejectors). On a map, indicate the general location or service area of the existing system(s) in the planning area and any associated components.
- Provide the annual volume treated, treatment type and remaining capacity available for each wastewater management system.
- Identify how and where septage from onsite systems is treated and any impact it has on the system that treats it.
- Identify areas that have wastewater servicing limitations or problem areas (Nutrient Management Zone 4, high water table, poor soil quality, topographical issues, etc.).
- Identify any sources of wastewater from outside the planning area boundary that is managed at a facility within the planning area and describe any service arrangements that have been established (ex: capacity allotted to external sources, amount that external sources contribute to the system, amount charged to manage, etc.).
- If any wastewater produced in the planning area is managed at a facility outside the boundary of the planning area, identify the facility and any service arrangements with the operator.
- Identify any service agreements for wastewater management within the planning area (ex: industrial service agreements).
- Provide a history of how the current wastewater management system came to be, explaining why the existing systems were adopted.

Nutrient Management Zones are based on agriculture capability.

See www.gov.mb.ca/conservation/waterstewardship/wqmz/index.html for more details

Some agriculture capability maps are available at <http://geoapp2.gov.mb.ca/website/mafri/index3.html>

Where agriculture capability maps are not available, please contact Manitoba Conservation and Water Stewardship at www.gov.mb.ca/conservation.

3.1.3 Outline the costs associated with the current system(s) and the mix of financing mechanisms:

- **Costs**
 - original construction costs
 - annual operating and maintenance costs, including depreciation
 - past repairs and upgrades

InfraGuide

See the Federation of Canadian Municipalities website for InfraGuide materials on asset management planning, dedicated funding models and more:

<http://fmv.fcm.ca/InfraGuide/>

- **Financing Mechanisms**

- borrowing
- grants from senior levels of government
- reserve funds, capital levies
- property taxes
- user fees and utility rates

- Do current financing mechanisms cover the costs associated with current systems (ex: borrowing costs, operations and maintenance, depreciation)? Describe any shortfalls with the current financing mechanisms.

3.1.4 Describe how well current systems address current needs:

- Compare the current functioning of the system to its design capacity (for treatment and storage). How well does the current system meet the demand?
- Describe how the current system meets regulatory standards (*Environment Act* licence conditions) for effluent quality. Include effluent concentrations of phosphorous and nitrogen if applicable and available.
- Identify any organic or hydraulic overloading problems. List any emergency discharges that have occurred in the last ten years.
- Describe how the current system can accommodate excess rainfall or other external influences.
- Describe the condition of the current system, including any limitations:
 - age and condition of existing lagoons and treatment plants (continuous discharge or storage)
 - damage or outstanding repairs
 - leakage or seepage, extraneous flows into the collection system
 - operational issues of concern
 - obsolete technology or inadequate chemical facilities
 - combined sewer and storm lines
 - condition of truck dump
 - condition of onsite systems
 - number of discharges annually
- Describe any real or potential public health or environmental concerns related to current systems.

3.2 Projected needs and considerations

This section of the WWMP provides estimates of the planning area's wastewater needs over the **next 25 years**, identifying short and long term needs.

3.2.1 Describe the anticipated growth rate and pattern of land use in the planning area:

- Estimate populations and provide demographic projections for the planning area over the next 25 years (using background studies on supply and demand, Statistics Canada Community Profiles, etc.). See Appendix D for a sample.
- Based on these estimates and trends, describe the anticipated rate of residential development that will take place over the short (next five to 10 years), medium (11 to 20 years) and long (20 plus years) terms.
- Identify any anticipated commercial, industrial and institutional developments expected to have significant wastewater management needs in the next 25 years.
- Identify areas that are currently using onsite services, but expected to connect to a wastewater treatment facility within 25 years, and what the timing is expected to be.

3.2.2 Based on the current amount of wastewater produced in the planning area (as determined in Section 3.1.1), and the anticipated growth rate and pattern of land use (as determined in Section 3.2.1), describe how much wastewater is anticipated and how it will affect the current system used:

- Estimate the volume of wastewater to be produced by anticipated development as designated in the development plan.
- Estimate future treatment and storage capacity needed to accommodate wastewater produced by all potential development, divided between serviced areas and areas with onsite systems (identify and include the capacity needed to handle wastewater and septage from existing and anticipated development with onsite systems).
- Describe the ability of the current system to accommodate new or expanded residential, institutional, commercial, industrial or other developments over the short, medium and long terms.
- Identify the impact of any anticipated changes in the density of development on the current system.

3.3 Mapping

Mapping is an important tool for preparing a WWMP. A wastewater management map identifies where current wastewater servicing exists and where it is planned. A map is also critical for determining where wastewater servicing should be avoided (for topographical, environmental or financial reasons).

A wastewater map is useful for supporting policies in the development plan. For example, if a development plan requires new developments to connect to services where they are available, the map shows the services. The map can help identify where new development will connect and illustrate the cost implications of accommodating development in areas with specific services.

A map can also illustrate timelines or phasing of services. For instance, dwellings are required to hook up to new servicing no longer than five years after installation, as per 8.1(1) of the Onsite Wastewater Management Systems Regulation. This can be shown in five-year horizons.

A map can also show areas where disposal fields or ejectors are not allowed due to soil limitations, environmental or public health issues, new regulations or other reasons.

Layering wastewater system maps over land-use designation maps will help integrate land use with wastewater management planning.

Contact the Community and Regional Planning Branch of Manitoba Local Government, the Manitoba Water Services Board and Conservation and Water Stewardship for more information and assistance with wastewater mapping.

3.4 Wastewater management requirements and costs

This section of the WWMP identifies the wastewater treatment options, system requirements and costs associated with managing the planning area's wastewater over the long term. It is important to consider a variety of options before selecting an approach.

3.4.1 Describe the wastewater management option(s) available and the approach that is best suited to address the current and future needs of the planning area:

- Explore the different types of systems available to manage wastewater, such as wastewater treatment plants, sewage lagoons, engineered wetlands and on-site systems. Researching best practices and consulting with qualified professionals is recommended.
- Compare the feasibility of different options based on the geography, size, rate of growth and development, and financial capacity of the planning area.
- Other considerations to help decide on an approach include:
 - regional systems
 - service sharing and other agreements
 - co-ordination of municipal or district-wide inspection schedules and pump-out of onsite systems

- current water rates and possible rate adjustments
- existing land use patterns, development direction and densities, and possible changes to these to accommodate different wastewater management systems
- Describe the selected approach and any limitations it may have.
- Describe how the community was consulted on the selected approach and alternatives.
- See Appendix E for more details.

3.4.2 Based on the approach selected, describe the improvements necessary and the associated costs:

- repairs to fix leaks and other damage
- upgraded technology or facilities to meet standards for treatment and storage
- operational enhancements
- elimination of combined sewers, where applicable
- demand management strategies to reduce wastewater production and need for expansion
- decommissioning failing onsite systems and associated remediation

3.5 Implementation and financing

This section of the WWMP should identify where and when wastewater management systems are expected in the planning area and how they will be financed. Information in this section will support future land development as designated in the development plan.

New development that requires wastewater treatment services should ensure that the capital costs associated with the development and related servicing requirements are built in to a system of lot levies and charges established by the municipality. By incorporating local capital plans into the WWMP process, the planning authority will anticipate and budget for service extensions, ensuring that users of new, extended services pay their fair share of these costs.

3.5.1 Describe how wastewater management will be introduced:

- If a wastewater treatment facility will be built in the future, indicate on a map where the facility and associated components such as lift stations or line upgrades, if required, will be located and explain the reasons for the site choice.
- Describe where future expansion of facilities will occur and outline any phasing.
- Given existing regulatory processes (see Appendix A), estimate the length of time required to implement the plan.
- Describe anticipated stages of construction and estimate timing. Identify factors that may influence timing.
- Summarize this information in a table.

3.5.2 Describe the short and long term projected costs of the selected approach, including maintenance, repair and renewal, and how these costs will be recovered:

- Estimate the capital and operating financing needed to construct, operate and maintain systems, from a life-cycle costing perspective.
- Estimate the costs of any planned upgrades or phasing.
- Identify methods of financing (ex: property tax increase, capital borrowing, capital lot levies, special levies, gas tax rebate funds, septic dumping fees, utility rates, building permit costs).
- Explain how costs to expand or construct new infrastructure will be recovered by the developer (ex: lot levies).
- Explain the cost-sharing formulas of any regionalized approach, if applicable.
- Consider any recently updated regulatory requirements and their long-term cost implications.

3.5.3 Identify policy guidance to include in the development plan, as related to the approach to be implemented. The following are examples of possible guiding policies that could be included in a development plan, as appropriate:

- New development must be connected to wastewater systems either where they exist now or where they are planned to be implemented.
- Unless physically impractical, existing non-serviced development eventually must be connected to wastewater systems through a phased approach (identify the amount of time until existing development will connect).
- Extension of piped wastewater services beyond the boundaries of a settlement area must occur in a planning context that takes into consideration the broader region that may be affected by the extension.
- Piped wastewater infrastructure will not be extended beyond the boundaries of an urban centre in a way that supports the expansion of new development on the periphery of the urban centre.



3.6 Conclusion

The concluding section should summarize the information and the approach endorsed by the WWMP. It should also highlight next steps for the planning area regarding land use, wastewater infrastructure and servicing, and financial planning.

See Appendices A-H for additional information, including links to sample WWMPs.



APPENDIX A: REGULATORY PROCESS FOR WASTEWATER MANAGEMENT PLANS

The WWMP is now a requirement of all capital region municipalities and planning districts, and other planning authorities as deemed necessary, under Section 62.2 of *The Planning Act*.

The Community and Regional Planning Branch of Manitoba Local Government will help determine whether a WWMP must accompany a development plan review or major amendment. A WWMP should be prepared prior to, or in tandem with, the planning area's development plan. The development plan itself generally should be reviewed every five years. Preparing the documents together will ensure land use decisions reflect the WWMP, and that wastewater management investments reflect the development plan. This is also in keeping with Part 4 of the Provincial Planning Regulation, which requires plans to be co-ordinated.

The completed WWMP is submitted to the province for review by a technical advisory committee (TAC) with representation from various government departments. The review process will take approximately 30 days, plus additional time to address TAC comments or questions, and further time for approval. The review and approval process can occur concurrently with other regulatory processes.

The TAC will use the information in this guide as a standard. Questions the TAC will ask when reviewing WWMPs include the following:

- Does the WWMP provide evidence that there is sufficient wastewater management capacity (for storage, treatment, collection, etc.) to accommodate the projected development proposed in the development plan?
- Is the approach selected in the WWMP to provide additional capacity appropriate? Are there other options that should be considered?
- Does the WWMP indicate how the wastewater management system (existing and proposed) ensures the health and safety of residents, protection of the environment and overall efficiency of the system?
- What are the land use and development implications of the wastewater management system selected? Does the approach fit with development as it is planned?
- Is the plan for addressing future capacity requirements realistic and sustainable?
- Are there other financing mechanisms the municipality or planning district should consider?
- Are the data used in the WWMP accurate and consistent with data used in other plans?

Submit the complete WWMP to this address:

WWMP TAC Co-ordinator

Planning Policy and Programs Branch

Manitoba Local Government

607 – 800 Portage Avenue

Winnipeg, MB R3G 0N4

cpdppb@gov.mb.ca

Please note that the WWMP supports existing regulatory processes (such as environmental licensing) but does not replace them.

APPENDIX B: SAMPLE TABLE OF CONTENTS

EXECUTIVE SUMMARY

INTRODUCTION

Methodology: Methods used, individuals involved, documents referenced

CONTEXT – CURRENT SITUATION

Sources of wastewater

Overview of wastewater infrastructure in area

Current wastewater management system

Costs and financing of current wastewater management system

Functionality of current wastewater system

PROJECTED WASTEWATER MANAGEMENT NEEDS

Anticipated growth and development patterns in area

Anticipated wastewater production and impacts on current system

WASTEWATER MANAGEMENT REQUIREMENTS AND COSTS

Wastewater management options available

Selected approach and necessary improvements

Probable costs associated with selected approach

Potential future regionalization of wastewater treatment (shared facilities/services with other communities), if applicable

WASTEWATER UPGRADE IMPLEMENTATION AND FINANCING

Staged implementation of upgrades (timing and location)

Capital costs, ongoing utility operating costs and financing mechanisms

Related policy guidance for development plan

SUMMARY AND CONCLUSIONS

APPENDICES, TABLES, FIGURES, GLOSSARY

APPENDIX C: GLOSSARY

Facultative wastewater treatment lagoons: an impoundment into which wastewater is discharged for storage and treatment that has an anaerobic lower zone, a middle zone, and an aerobic upper zone maintained by photosynthesis and surface reaeration.

Hydraulic loading: the loading of a wastewater treatment facility in terms of the volume of incoming wastewater per unit of time. In facultative wastewater treatment lagoons, the hydraulic loading determines the size of secondary cell needed to store treated wastewater during periods when treated effluent cannot be released.

Organic loading: the loading of a wastewater treatment facility in terms of the strength of incoming wastewater, usually expressed as the five-day biochemical oxygen demand of the wastewater. In facultative wastewater treatment lagoons, the organic loading determines the size of the primary cell needed to treat incoming wastewater.

Septage: sludge produced in individual onsite wastewater disposal systems such as septic tanks.

Sewage: household and commercial wastewater that contains human waste.

Sludge: accumulated solid material containing large amounts of entrained water, which has separated from wastewater during processing.

Wastewater: spent or used water with dissolved and suspended matter from a community or industry.



APPENDIX D: HYPOTHETICAL EXAMPLE OF HOW TO ESTIMATE RESIDENTIAL TYPES AND LAND REQUIREMENTS

ESTIMATED NEW DWELLING UNITS AND ACREAGE REQUIRED											
Year	Population Change (Cumulative)	Un-serviced		Serviced						Totals	
		Single Family		Single Family		Semi-Detached		Multi-Family			
		New Dwelling Units (Cumulative)	New Acres (Cumulative)	New Dwelling Units (Cumulative)	New Acres (Cumulative)	New Dwelling Units (Cumulative)	New Acres (Cumulative)	New Dwelling Units (Cumulative)	New Acres (Cumulative)	New Dwelling Units (Cumulative)	New Acres (Cumulative)
0	0	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)
5	597 (597)	35 (35)	70 (70)	78 (78)	19 (19)	24 (24)	4 (4)	18 (18)	1 (1)	155 (155)	94 (94)
10	650 (1,247)	35 (70)	71 (141)	119 (197)	30 (49)	29 (53)	5 (9)	18 (36)	1 (2)	203 (358)	107 (201)
15	707 (1,954)	36 (106)	72 (213)	160 (357)	40 (89)	33 (86)	5 (14)	18 (54)	1 (3)	247 (605)	119 (320)
20	769 (2,724)	37 (143)	73 (286)	214 (572)	54 (143)	37 (123)	6 (20)	18 (72)	1 (4)	307 (912)	134 (454)
25	837 (3,560)	37 (181)	75 (361)	288 (859)	72 (215)	42 (165)	7 (27)	18 (90)	1 (5)	385 (1,297)	155 (609)

The table shows estimates of the number of dwelling units and land required to accommodate shifting the population from single family unserviced lots (rural residential two acre lots) to smaller serviced lots (note the increasing number of single family serviced dwelling units compared to unserviced). This example assumes a current starting population of 6,793 with a cumulative annual growth rate of 1.7 per cent and a constant 2.7 people per dwelling unit.

This kind of analysis can inform future wastewater infrastructure needs. Note that commercial, industrial and institutional land uses will also have to be considered.

APPENDIX E: CONSIDERATIONS FOR WASTEWATER MANAGEMENT OPTIONS

When selecting the planning area's wastewater management options for the future, remember that there are some key elements to consider, such as the size of the planning area, local geography and regional opportunities. Each of these considerations will have a bearing on what option will best serve the planning area.

1. Size of Planning Area

Larger communities and those in fast-growing areas will generally require a conventional system, such as a lagoon or wastewater treatment plant. However, innovative treatments such as effluent irrigation and constructed wetlands are alternatives or add-ons that have additional benefits of reducing nutrient loading to surface water and ensuring that valuable nutrients are reused and recycled.

For small, sparsely populated communities with little to no growth, it may be difficult to maintain large-scale wastewater treatment systems over the long term. In these situations, smaller scale systems that are distributed more widely and are integrated with other infrastructure may be an appropriate solution.

2. Local Geography and Site Selection

Soils, topography, climate and the local receiving waters are all factors when considering an appropriate wastewater management system for a planning area. For example, effluent irrigation has been used successfully in Manitoba but deployment of this strategy to a planning area would depend on the soils and types of crops grown in the area. Also, some wastewater treatment technologies such as engineered wetlands might work best in southern Manitoba and may not be suitable for northern areas. Site selection is also community-specific. For example, a wastewater treatment lagoon should be located downstream from community water sources and the prevailing wind direction. The amount of available land is also a factor to consider. Wastewater treatment lagoons and engineered wetlands require considerably more land than a wastewater treatment plant.

3. Regionalization

Neighbouring communities may be considering upgrading or constructing new wastewater management systems as well. Opportunities for regional co-operation are worth considering if the amalgamation of resources is cost-effective and leads to an overall improvement in wastewater servicing quality.

In some cases, a regional approach may not be feasible because of the distance between communities. The long-term maintenance of kilometres of sewer lines must be factored into the cost.

4. Technical Advice

For more advice on long-term solutions for wastewater treatment, please contact technical/engineering experts, such as staff at the Manitoba Water Services Board. They can provide advice on wastewater treatment to ensure that a planning area is well served by reliable technology over the long-term: mwsb@gov.mb.ca

APPENDIX F: GUIDANCE FOR SMALL RURAL MUNICIPALITIES

For some small rural municipalities without existing public wastewater facilities, the selected long-term approach for wastewater management may be to rely solely on individual septic systems (tank and field). This option can be suitable in areas where the rate and density of development is low enough that soils could absorb the wastewater discharges over the short and long terms; where there is little potential for water pollution (ex: not in a flood zone, no soil limitations); where there is a nearby facility to receive the pump-out from these systems.

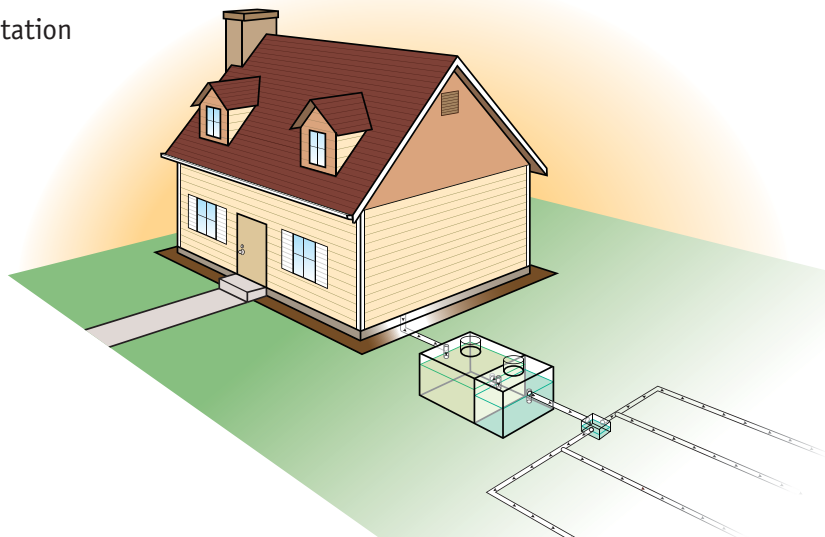
In this case, a WWMP would identify how this approach would be sustained over the long term, with the following considerations addressed:

- development as indicated in the development plan
- environmental factors
- lack of services for commercial/industrial development
- system maintenance/upgrades

Although such onsite systems are privately owned and operated, it is in the best interest of the planning authority to ensure that private systems are regularly maintained and upgraded. Any health or environmental problems arising from private systems would ultimately be the responsibility of the local and provincial governments. One way to ensure regular maintenance is to establish a municipal or district-wide schedule for inspection and maintenance (pump out) of individual systems by a qualified professional. Such a schedule should be included in the WWMP.

Finally, the WWMP should identify methods to handle and dispose of the septage collected from onsite septic systems. One option is to haul the septage to a wastewater treatment plant or lagoon designed for this purpose. If this approach is selected, the following information must be addressed in the WWMP:

- location of facility
- agreement with another community to use its facility, if applicable
- plans to build a new facility in the planning area, if applicable
- financing
- implementation



APPENDIX G: LOCATING PRIVATE WASTEWATER TREATMENT FACILITIES

Private wastewater treatment facilities are not all regulated in the same way and no single database lists them all. However, several sources can help with gathering the necessary information for a region. A third party, such as a consultant, will help to ensure collecting the correct information to meet provincial requirements.

The public registry on the website of the Environmental Assessment and Licensing Branch of Manitoba Conservation and Water Stewardship contains a database of licences issued for various projects, including wastewater treatment facilities: www.gov.mb.ca/conservation/eal/archive/index.html

This is a searchable system. It is, however, important to check with the Environmental Assessment and Licensing Branch to confirm numbers of private systems with current licences.

Finally, local knowledge is always valuable. Ask around.

APPENDIX H: LEGISLATIVE FRAMEWORK AND ADDITIONAL RESOURCES

The following acts and regulations set the parameters and requirements for a WWMP and should be consulted and referenced in the WWMP where applicable.

Federal

- *Canadian Environmental Protection Act*
- *Wastewater Systems Effluent Regulations*

Provincial

- *Planning Act*
- *Provincial Planning Regulation*
- *Environment Act*
- *Onsite Wastewater Management Systems Regulation*
- *Municipal Act*
- *Water Protection Act*

Water quality standards, objectives and guidelines: are one of many tools used to protect, maintain and, where necessary, rehabilitate water quality: http://www.gov.mb.ca/waterstewardship/water_quality/quality/pdf/mb_water_quality_standard_final.pdf

Sample Plans

This guide is intended to be used for a variety of wastewater management scenarios. To ensure its applicability a third party tested the guide, producing three wastewater management plans that represent three different scenario samples. Each is typical of the capital region.

- **City of Selkirk Wastewater Management Plan:** An example of a **low complexity** plan for a municipality with private, onsite systems that require no additional treatment (ex: disposal fields, ejectors), OR a municipality with a single public system (lagoon or wastewater treatment plant).
- **RM of St. Clements Wastewater Management Plan:** An example of a **medium complexity** plan for a municipality with both private and public systems (ex: disposal fields, holding tanks, lagoons).
- **RM of St. Andrews & RM of West St. Paul Wastewater Management Plan:** An example of a **high complexity** plan for a district or region with multiple public and private systems (ex: private and public lagoons, wastewater treatment plants, various onsite systems).

All of these plans are available on the Manitoba Local Government website:
<http://www.gov.mb.ca/ia/plups/sm.html>