

Proposal

County of St. Paul and County of Two Hills

Wastewater Treatment Facility
Feasibility Study

URBAN
systems

CD3144.0013.00

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Proposal to:

Sheila Kitz, CLGM

Chief Administrative Officer

County of St. Paul No. 19

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Prepared by:

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March 3, 2014

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March 03, 2014

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County of St. Paul No. 19
5015 – 49 Avenue
St. Paul, Alberta
T0A 3A4

Attention: Sheila Kitz, Chief Administrative Officer

RE: Request for Proposal – Wastewater Treatment Facility Feasibility Study

We are pleased to submit our proposal for engineering services for your proposed wastewater treatment facility feasibility study. Your goals and objectives are articulated very clearly in your Terms of Reference.

The enclosed document provides a breakdown of the scope that is included in the project budget and an outline as to how we plan to complete the wastewater treatment facility feasibility study for the regional collaboration between the County of St. Paul and the County of Two Hills.

We trust the proposal meets with your approval and very much look forward to continue working with you.

Sincerely,

URBAN SYSTEMS LTD.



Bill Marsh, M.Sc., P.Eng.

Environmental Engineer

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1.0 Background and Objectives

This proposal for consulting services is made in response to a Request for Proposal (RFP) by the County of St. Paul and the County of Two Hills received February 14, 2014. The subject of the proposed feasibility study is a regional collaboration effort to develop a new wastewater treatment facility to support trucked waste from both municipalities. It is anticipated that the new facility will be a lagoon system with no direct connection to any urban or hamlet community within either County. The Counties have received a \$35,000 grant in order to fund the study.

The RFP outlines the main objectives of the feasibility study as follows:

1. Identify the ideal site for the new treatment facility
2. Include a conceptual design and Class D cost estimate
3. Recommend a governance model for ownership and operation of the new facility
4. Recommend next steps for the Counties to undertake

2.0 Work Plan

The work plan is based on a series of tasks and activities required to complete the study. We have numbered each activity with a brief description of what's involved in completing the task.

2.1 Start-Up Meeting

We have assumed this meeting will be held at the County of St. Paul office and will include key Urban Systems team members and members of the client team from the County of St. Paul and the County of Two Hills. The purpose of this meeting will be to discuss and confirm the study scope and schedule, and expected deliverables. It is anticipated that consensus will be reached on articulation of the "vision" for the study in accordance with the goals and objectives. We will also use this meeting to obtain historical trucked waste records, discuss the anticipated demand of the new facility and discuss the requirements of the location for the new facility.

2.2 Determine Design Flows and Loading

To determine the anticipated design flows and loading for the new facility, we will largely rely on existing records from each County for trucked waste (number of septic hauler contracts, total trucked volumes, number of septic tanks, etc). We will also assess recent population surveys and projections to establish future wastewater demands. Similar to our work on the Ashmont Wastewater Feasibility Study, we anticipate that much of the detail for the current trucked waste volumes and composition will need to be obtained through discussions with Public Works staff (specifically the percentage of waste from sewage holding tanks vs. septic tanks).

2.3 Review Regulatory Requirements & Design Effluent Criteria

This task will include a review of the latest regulations for their impact on the design, location and operation of the proposed new facility. As part of this task, we plan to review the following legislation:

- Federal
 - Wastewater Systems Effluent Regulations, July 2012 (discharge to fish bearing surface waters)
 - Navigable Waters Protection Act
 - Fisheries Act
- Provincial
 - Environmental Protection and Enhancement Act (Effluent Standards and Monitoring Requirements, Discharge Type, Setback Restrictions, Registration and Approval)
 - Water Act (for new outfalls)

The applicable regulations will help to define the design effluent criteria, including: BOD₅, TSS, ammonia, phosphorus, nitrogen, and fecal coliform.

2.4 Review Treatment Options

This task will include a review of the potential treatment options for the trucked waste from both Counties. As part of our review, we will consider overall cost, design efficiency, footprint requirements, treatment capacity, etc.

We plan to review the feasibility of a mechanical activated sludge plant, a facultative cell lagoon, an aerated lagoon system, and an evaporation lagoon. Based on the Terms of Reference outlined in the RFP, we understand a lagoon system will be the most likely option, however depending on the preferred site; multiple systems must be assessed as they each have distinct advantages and disadvantages.

2.5 Review Discharge Options

As part of this task we will review a number of discharge options including no discharge (evaporation), surface water discharge, effluent re-use, and ground disposal. The preferred discharge option will be affected by proximity to water bodies, environmental conditions, regulatory requirements, annual rainfall/evaporation amounts, effluent criteria, etc.

No environmental or geotechnical reviews will be conducted at this time, however costs associated to follow up studies will be included in the Class D cost estimates.

2.6 Site Selection

We anticipate that potential locations for the new facility will be discussed in the start-up meeting. For any potential sites we will review available data provided by the client team such as environmental assessments, geotechnical reports, Lidar survey and aerial photos. If this data is not available for the preferred location, assumptions will need to be made for the purpose of the feasibility study. The approved grant funding budget does not allow for completion of additional engineering, survey (including Lidar) or environmental studies. If air photos have not already been obtained, we will order digital copies of the latest photos to review.

An important consideration for the new facility location will be proximity to fish bearing water bodies as it will have a significant impact on the applicable legislation and discharge requirements. It will also be important to select a site that is at least 300m away from existing or anticipated residences.

2.7 Conceptual Treatment Facility Design

A conceptual design will be established for the preferred treatment option to include: a generic facility footprint, biosolids management, and truck dump concept. The level of detail will be suitable to commence pre-design and establish a Class D cost estimate.

2.8 Prepare Class D Cost Estimate

The cost estimates for the short list of preferred alternatives will include 3 components:

- Capital construction costs
- Annual maintenance and operation costs
- Capital replacement costs (of major components)

All three cost estimate components will be combined into a total present value comparison using a 20-year life cycle.

2.9 Governance Model Analysis

This task will include a summary of applicable governance models and their functionality in relation to this specific application. Next steps subsequent to this report would include meetings with the client team to establish an assessment matrix for identification of the most appropriate governance model.

2.10 Prepare Draft Feasibility Report

At the completion of the work to date, we will prepare a draft feasibility report that summarises the outcomes from the tasks above. The primary objective of this report will be to present the preferred wastewater treatment and disposal alternatives for the Client team. Key elements of the draft report will include:

- Concept drawings of the preferred alternatives located within the preferred site.
- A summary of the Federal, Provincial and Local government permits and other authorizations needed for implementation of the preferred alternatives.
- Discussion of the wastewater treatment and disposal alternatives reviewed
- Class 'D' capital, O/M, and life cycle cost estimates for preferred alternatives
- Recommendations of potential governance models and next steps for the Client team

2.11 Present Report to Client Team

We have assumed this presentation will be held at the County of St. Paul office and will include key Urban Systems team members and members of the client team from the County of St. Paul and the County of Two Hills. The purpose of this meeting will be to present the findings of the draft feasibility study and answer any questions in regards to design methodology, cost estimates, site selection, etc. The floor will be open to all attendees to contribute feedback and propose revisions to the draft report. All input will be taken into account when making edits to the draft report and finalizing the feasibility study. Recommendations will be tabled for next steps for the Counties at this presentation.

2.12 Finalize and Submit Feasibility Report

Based on the comments received in the presentation, we will revise the draft report as necessary. We will then finalize and seal the report for the use of the County of St. Paul and the County of Two Hills.

3.0 Fees

We understand there is not a weighting for fees in the evaluation of this proposal; however, it is important to show the hours allocated to each task to highlight the level of effort required.

We will be able to complete the scope of work as outlined above within the budget allowance of \$35,000 + GST; however, additional site investigation, such as geotechnical analysis, environmental assessment or site survey would not be included.

Figure 3.1 below outlines the team man hours associated with each task for successful completion of this study.

Figure 3.1: Task Hourly Assignment

Tasks	Project Manager Bill Marsh	Mary Boulanger	Abraham Salmon / Mike Hopkins / Kyle Colburn	Dr. Joanne Harkness	Golnaz Azimi	Senior Review Chris Town	TECH SUPPORT
1.0 Start-Up Meeting - County of St. Paul Office	8		8				
2.0 Determine Design Flows & Loading	1		8				
3.0 Review Regulatory Requirements & Design Effluent Criteria	1		8				
4.0 Review Treatment Options - With Emphasis on Lagoon Facility	1	4	16				
5.0 Review Discharge Options	1		12	4		2	
6.0 Review of Potential Facility Location (Max 2 Sites)	2		10				8
7.0 Prepare Conceptual Design of Treatment Facility	2		32			2	20
8.0 Class D Cost Estimate (Capital & O&M)	2		24				
9.0 Research Governance Models for Ownership & Operation	1				4		
10.0 Prepare Draft Feasibility Report	4		16				10
11.0 Present Draft Feasibility Study to Client Team and Recommend Next Steps - County of St. Paul Office	8		16			4	
12.0 Finalize and Submit Feasibility Report	2		4			2	10
*Estimated Project Total	33	4	154	4	4	10	48

Notes:

Does not include Environmental Site Assessment, Geotechnical Investigation, or Site Survey