



COUNTY OF ST. PAUL AND COUNTY OF TWO HILLS

A PROPOSAL TO PROVIDE ENGINEERING CONSULTING SERVICES WASTEWATER TREATMENT FEASIBILITY STUDY

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DCL SIEMENS

COUNTY OF ST. PAUL AND COUNTY OF TWO HILLS
REQUEST FOR PROPOSALS
WASTEWATER TREATMENT FEASIBILITY STUDY
01-14-732

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1.0 INTRODUCTION

1.1 General

This proposal has been prepared by DCL Siemens Engineering Ltd. in response to a Request for Proposal (RFP) received from the County of St. Paul and the County of Two Hills Regional Collaboration. The RFP requires the provision of engineering consulting services from pre-qualified consulting firms for the completion of a Wastewater Treatment Feasibility Study. The Terms of Reference outlining the scope of the project and the services required are included in the appendices of our proposal.

1.2 Background

Councils from the communities of the County of St. Paul and the County of Two Hills (referred to in our proposal as "the Counties") have mutually agreed to undertake a Feasibility Study to develop a new wastewater treatment facility. It is understood that the new facility will be a lagoon system designed to receive the region's trucked waste. It is also understood that at this time the facility will not be directly connected to any urban or Hamlet community within either County.

1.3 Basis of Proposal and Key Services

Our proposal is based on the information provided in the RFP/Terms of Reference and discussions between the Counties' representative and representatives from DCL Siemens, and our extensive experience in the planning, study, design and implementation of lagoon based wastewater treatment facilities throughout Alberta. Our proposal is further based on the following key services provided by our firm:

- An experienced team who have worked together on similar projects.
- Experienced specialists in municipal wastewater treatment systems.
- A team experienced in working with, and listening to public works utilities operators, administrative staff and Councils.
- A thorough understanding of the project requirements and its crucial aspects through our experience in the completion of previous wastewater treatment assessments and studies.
- Our familiarity with the requirements of the regulatory authorities, both provincial and federal.
- A team that understands the importance of communications and reporting.

1.4 Project Objective and Scope

The overall objective of the feasibility study will describe the feasibility for the development of a wastewater treatment facility that will enable the Counties to service their respective municipalities through the provision of trucked wastewater disposal. The study will further include a Class 'D' cost estimate and provide a review and recommendations for a governance model by which the facility will be owned and operated.

The scope of the project is clearly described in the Terms of Reference and will include, but not necessarily be limited to, the following major components:

- Evaluate two (2) sites and identify the ideal site.
- Identify current and future projected wastewater flows and sewerage characteristics.
- Recommend wastewater treatment options and include a conceptual design.
- Confirm regulatory and environmental requirements (Provincial and Federal).
- Confirm geotechnical, soil and groundwater condition, and liner recommendations.
- Confirm boundaries, set back and proximity to existing residents.
- Provide Class 'D' cost estimate.
- Make recommendations for governance model.
- Maintain communications with the Counties throughout the project.
- Provide a feasibility study and present to the Counties.

2.0 PROJECT UNDERSTANDING

2.1 General

As a result of a collaboration between the County of St. Paul and the County of Two Hills, the Counties have received a Collaboration Grant from Municipal Affairs to conduct a feasibility study for a new wastewater treatment facility. The regional wastewater treatment philosophy not only reduces the number of individual treatment systems at risk, but also, through economies of scale, can improve the level of service and the cost of operation and maintenance.

2.2 Tentative Sites

Discussions with a representative of the Counties suggest that two (2) tentative sites have been identified. Site No. 1 is a current regional landfill site SW of St. Paul and Site No. 2 is an old lagoon site closer to Lac Sante'. Site No. 1 is not close to a potential discharge drainage course or river but could utilize an existing weigh scale at the landfill. Site No. 2 has sandy soils and is not considered to be a good site. It is understood, however, that the Counties would prefer the new wastewater facility be located closer to Lac Sante'.

2.3 Site Selection and Separation Distances

Factors to be considered in the siting of wastewater treatment lagoons include soils condition, location of watercourse, flood plain (subject to flooding), proximity to existing residents, i.e. more than 300 meters, proximity of a busy public road, and high groundwater conditions. Another key consideration is the site must be able to accommodate future expansion and/or potential hook-up to a piped sewage collection or pumping system in the future.

Soil conditions will determine the use of a synthetic or clay liner. A clay liner can be considered if there are good soil conditions with medium to high plastic clays. If synthetic liners are preferred, soil conditions are less important.

2.4 Geotechnical

For this level of study, DCL Siemens proposes a test pit program at each site in lieu of a full geotechnical investigation. A specialist geotechnical firm will be subcontracted to take soils samples on site and conduct laboratory tests to confirm soils classification.

2.5 Regulatory Authorities

Alberta Environment

Discussions with Alberta Environment will be held during the preparation of this feasibility study to confirm the requirements of an approval for the operation of a wastewater treatment system. The

approval will allow the Counties to discharge lagoon effluent to a receiving watercourse or river on a yearly basis. Treatment parameters will be as described in the current AENV Standards and Guidelines. A typical operation would require grab samples of the effluent and shall be collected after the first day of discharge and shall be analyzed for Biochemical Oxygen Demand (BOD₅) and Total Suspended Solids (TSS).

Federal Regulatory Authorities

Effluent quality limits for wastewater treatment facilities across North America and Canada have become more stringent in recent years. It is anticipated that the new federal requirements for nutrient removal, including ammonia as nitrogen, will soon become a requirement in Alberta.

The proposed wastewater treatment system would be required to consistently meet effluent ammonia limits of 9.6 mg/L in summer and 10.4 mg/L in winter. The limits would be confirmed during the preparation of this study.

It should be noted that the more stringent federal requirements would take precedence over Provincial Regulations.

2.6 Lagoon Design and Layout

The configuration of the lagoon system, i.e. requirement for anaerobic cells, facultative cell and storage cell will depend on the design population and flow rate. The lagoon can be designed as a drainage system or evaporation pond. The traditional lagoon system is designed to accommodate one year of storage and must be located close to an acceptable drainage course. Evaporation ponds are shallower and bigger and are designed for two years of storage. An advantage of evaporation ponds is that they have the potential to take non-domestic waste.

Innovative Treatment Approach

An innovative treatment approach would be the construction of a "Lagoon Nitrification and Effluent Polishing System". A typical system would be an Aerated Flow Submerged Attached Growth Reactor (SAGR®) as developed by Nelson Environmental. The SAGR® system is designed to meet the low ammonia requirements of small communities without constructing extensive treatment facilities requiring higher capital and O & M costs. In addition to ammonia reduction the SAGR® system provides BOD₅ and TSS polishing.

The system would be reviewed as part of our Feasibility Study and through discussion with the Counties.

2.7 Environmental Considerations

The major environmental concern with wastewater lagoons is the potential for leakage to groundwater. The lagoon lining and method of construction will depend on the type of aquifer/soils classification and occurrence/depth to groundwater in the selected location. A leakage detection system can be employed during construction to assess the ongoing integrity of the liner.

2.8 Septage Receiving Station

A septage receiving station can be installed at the lagoon to provide metered and controlled sewage dumping by all users. The station can be a standard design and/or custom designed by a specialist equipment supplier such as Flotech Systems. A typical system would include a heated enclosure mounted on a concrete slab, stainless steel piping and fixtures, user friendly software, flushing system, curbside pump-out and security system. This system allows users a 24/7 keyless, cardless access with on-screen instruction. The Owner (the Counties) can check account balances and authorize, decline or limit usage.

Electrical (power) service to the station will be required. The level of telemetry or monitoring will be as required by the Counties.

An alternate to the septage receiving station approach would be the installation of a truck/vehicle weighing scale similar to those used at landfills and transfer stations. They are tough, dependable and accurate and built to last in severe environments. They are paired with a range of indicators, software and accessories for a complete weighing and data management system.

2.9 Governance Model

DCL Siemens, in consultation with the Counties, will prepare and recommend a Governance Model that will suit a regional sewage disposal and treatment system, with an ownership structure that will be to the satisfaction of all members.

The findings of the feasibility study will be important in that it will provide direction and establish a basis for the creation of a Governance Model for a regional sewage collection, disposal and treatment system. The model would be created to allow the system to be operated in a business-like manner which will establish mechanisms and lines of accountability to enable the continual improvement and upgrading of the sewage disposal and treatment system. With a mandate to own and operate the system, the Counties can transform the sewage system into a modern, efficient and financially sound operation providing a high quality service to its customers.

3.0 Methodology

3.1 General

The Terms of Reference indicate that engineering consulting services for the completion of a feasibility study for a wastewater treatment facility will be required. It is our intention to provide these services as requested in the Terms of Reference.

The DCL Siemens Team has developed a methodology to implement the requirements of the feasibility study in an efficient and thorough manner.

Our methodology includes the following key components:

1. Project Initiation
2. Project Management, Communications and On-Going Meetings
3. Study Tasks
 - Site visit and data gathering
 - Geotechnical
 - Determine populations and volumes
 - Site selection, present and future
 - Regulatory requirements
 - Lagoon design and layout
 - Environmental considerations
 - Sewage truck disposal system
 - Electrical and controls requirements
 - Construction costs, O & M costs
 - Governance model
4. Develop Draft Feasibility Study
5. Submit Draft Study for Review
6. Review Comments and Finalize Feasibility Study
7. Submit Final Feasibility Study and Present to the Counties

Please refer to the Methodology Activity Flow Chart, Figure 3.1, in our proposal, outlining the key elements of the Methodology and the general sequence of activities.

3.2 Project Initiation and Start-Up Meeting

DCL Siemens considers the Project Initiation phase to be of prime importance. It is during this short, yet intensive time period that the working relationship between the Counties' Project Manager and the DCL Siemens Project Manager is established. The scope of work, goals and objectives are established; Project Management and Project Communications Systems are set up. A Project Management and Communication Memorandum is prepared which will form the basis for the further implementation of the project.

Special concerns will be identified, regulatory requirements will be identified and the project schedule confirmed. The overall project background and the Counties' expectations will be discussed. A communications plan will be prepared to ensure the conveyance of timely information on project progress, budget and schedule.

Project initiation would include, but not be limited to, the following:

1. Set up project cost, schedule and line of communications.
2. The starting point for the project will be the project schedule as presented in this proposal or as amended through discussions with the Counties.
3. Schedule of consultant engineering activities will be developed.
4. Fundamental quality control requirements will be applied to ensure all of the Counties' project requirements are satisfied.
5. Setting up a regular project meeting schedule, both in-house and with the Counties.
6. Ensure timely distribution of minutes of meetings.
7. Confirm the formats for reporting to the Counties on schedule, quality control and communications issues.
8. Collect all previous pertinent data, reports and studies.
9. Confirm design population requirements, volumes and flows.
10. Identify AENV, Federal and other regulatory requirements.
11. Confirm specific requirements of the Counties.
12. Provide implementation schedule and set milestone dates.
13. Obtain the Counties' thoughts regarding Governance.

3.3 Development of Feasibility Study

The data and information collected in previous tasks and as outlined in Figure 3.1 will be reviewed and summarized and a technical memorandum will be forwarded to the Counties. Population projections and per capita wastewater flows will be established for the ultimate capacities of the system. The criteria will be confirmed by the Counties and DCL Siemens to ensure relevance to the development of the Feasibility Study.

3.4 Preparation and Presentation of Draft Feasibility Study

DCL Siemens will prepare a draft Feasibility Study and present it to the Counties for discussion, review and comment. The draft study will include all requirements of the RFP as well as a cost estimate, summaries of design criteria and report of geotechnical and site inspections, previous meetings and discussions and Governance Model Recommendations.

3.5 Prepare Final Overall Water Study

Based on comments received from the Counties, DCL Siemens will finalize the Feasibility Study. The finalized product will be a clear, concise study written in non-technical language that can be used as a living document to ensure a sustainable wastewater treatment facility and infrastructure planning operation for the Counties, both current and in the future.

THE COUNTY OF ST. PAUL AND THE COUNTY OF TWO HILLS
REQUEST FOR PROPOSALS
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PROJECT MANAGEMENT AND COMMUNICATION	
<ul style="list-style-type: none"> – Set up project cost, schedule and quality control system – Set up regular project meeting schedule – Set up status and other reporting schedule – Set up minutes preparation and distribution system 	<ul style="list-style-type: none"> – Implement project cost, schedule and quality control system – Presentations and information to the Counties relative to wastewater disposal and treatment systems – Meetings and workshops with in-house project staff and the Counties
Deliverables	Deliverables
<ul style="list-style-type: none"> – Project management and costs, project schedule, minutes reporting system 	<ul style="list-style-type: none"> – Monthly project cost, schedule and quality control reports – Information to the Counties – Presentations – Summary reports – Minutes of meetings
FEASIBILITY STUDY ACTIVITIES	
PROJECT INITIATION	TASKS
<ul style="list-style-type: none"> – Meet with the Counties' Project Manager and other Project Principals – Confirm/finalize scope of work – Review project schedule – Obtain record information – Establish project contacts and lines of communication – Review tentative sites – Review issues – Communications Plan – Note: DCL Siemens considers the preparation of a Communications Plan an important factor in the successful completion of this project. 	<p>TASK 1: Project initiation TASK 2: Data review TASK 3: Determine populations and flows/volumes TASK 4: Sewage characteristics TASK 5: Site visits with the Counties TASK 6: Geotechnical TASK 7: Regulatory authorities requirements TASK 8: Lagoon sizing, design and layout, sewage truck disposal system TASK 9: Cost estimates TASK 10: Governance model TASK 11: Prepare Feasibility Study Draft TASK 12: Presentation of Study Draft to the Counties TASK 13: Finalize Feasibility Study and submit to the Counties</p>
Deliverables	Deliverables
<ul style="list-style-type: none"> – Minutes of meetings – Provide final copies of project methodology, project schedule and project fees for Client/consultant agreement – Submit Communications Plan 	<ul style="list-style-type: none"> – Technical memorandums and cost estimates – Site inspections memorandum – Geotechnical memorandum – Minutes of meetings – Draft Study – Meetings with the Counties – Ensure completion and acceptance of the Final Feasibility Study by the Counties – Communications – Regulatory Authorities input

COUNTY OF ST. PAUL AND COUNTY OF TWO HILLS
REGIONAL COLLABORATION

DCL SIEMENS

WASTEWATER TREATMENT FACILITY
FEASIBILITY STUDY

METHODOLOGY/ACTIVITY FLOW CHART

MARCH 2014

FIGURE 3.1

4.0 Project Schedule

DCL Siemens has prepared the following Table 4.1 showing a tentative schedule for the completion of the Wastewater Treatment Facility Feasibility Study by mid-August 2014. Subject to any scope changes or issues out of our control, DCL Siemens will commit to this schedule.

Table 4.1 County of St. Paul and County of Two Hills Regional Collaboration Wastewater Treatment Facility Feasibility Study Proposed Project Schedule	
Milestone Date	Task
March 10, 2014	Project award.
March 25, 2014	Project initiation and start-up meeting.
April/May	Data review and meeting with the Counties' Operations Staff. Determine populations and volumes and sewage characteristics.
Mid to end of May 2014 (when show has disappeared)	Visit to tentative sites and review meeting with the Counties. Conduct geotechnical investigation. Review AENV and Federal Regulatory requirements.
June 2014	Lagoon design and layout, including sewage truck disposal system, c/w cost estimates.
June/July 2014	Governance model.
July 2014	Prepare and present "Draft" Feasibility Study.
July 2014	Review Draft Feasibility Study with the Counties.
July/August 2014	Finalize Feasibility Study and submit to the Counties.

The proposed project schedule can be discussed during the project initiation meeting. Milestone dates can be changed to suite the availability of the Counties' staff and other team members.

5.0 Project Fees and Disbursements

5.1 General

The Terms of Reference requires engineering consulting services to complete a Wastewater Treatment Facility Feasibility Study for the County of St. Paul and County of Two Hills Regional Collaboration.

DCL Siemens' project fees, based on completing the project in accordance with the Terms of Reference, including disbursements (not including GST) are \$35,000.00.

DCL Siemens has added Mr. Brian Locher, P.Eng., LL.B. of our firm to assist in the preparation of the Governance Model component. Brian has been a senior project manager with DCL Siemens for ten years and has three years practical experience in law. His previous relevant experience includes assistance with the preparation of Governance Models and Regional Systems for Lac La Biche County, Mackenzie County and Fox Creek. As a member of the project team, Mr. Locher's services are included in our project fee.

5.2 Disbursements

Disbursements include attendance of meetings at the Counties' office, mileage, phone, fax, normal printing costs and CADD. They further include a geotechnical investigation as described in our project understanding. Our fee assumes that the services of a backhoe and operator capable of digging a 4.0 meter deep pit at both sites can be made available by the Counties.

DCL Siemens' disbursements will include sub-contracting the services of a specialty geotechnical firm to collect and analyse soil samples.

APPENDIX A

**County of St. Paul and County of Two Hills
Regional Collaboration
Terms of Reference**

County of St. Paul and County of Two Hills Regional Collaboration TERMS OF REFERENCE

Introduction

The County of St. Paul and the County of Two Hills are soliciting a Request for Proposal (RFP) from pre-qualified consulting firms who possess the required personnel, experience, and resources to complete a wastewater treatment facility feasibility study. The following outlines the background, RFP requirements, and scoring method for consultant selection.

Background

The County of St. Paul and the County of Two Hills are interested in conducting a Feasibility Study to develop a new wastewater treatment facility in order to support their respective municipalities. The Counties have applied for and received a \$35,000 regional collaboration grant in order to fund the study.

It is anticipated that the new facility will be a lagoon system to support the regions' trucked waste. There will be no direct connection to any urban or hamlet community within either County. A maximum of two (2) sites will be evaluated for the purposes of this study.

The feasibility study should identify the ideal site based on: current and future projected flows, sewerage characteristics, recommended treatment option(s), site and other boundary conditions, soil and groundwater conditions, regulatory requirements, environmental requirements, and any other relevant information the consultants or Counties project team deem required. Further to a recommended site, the feasibility study should include a conceptual design and provide a Class D cost estimate. In addition, the consultant will review and recommend a governance model by which the facility will be owned and operated.

The successful proponent will also need to meet with the County's project team throughout the project. We anticipate at least a start up meeting with the Counties project team, updates throughout the duration of the project and a presentation to the Counties project team at the project's completion. The Consultant should also recommend next steps for the Counties to undertake.

RFP Requirements

Request for Proposal submissions should be submitted to Sheila Kitz, CAO of the County of St. Paul. Submissions must be bound and not exceed the equivalent of ten (10) single sided pages. It is not required to repeat any of the information submitted in the RFQ.

Four (4) copies in a sealed envelope clearly marked 'Request for Proposal – Wastewater Treatment Facility Feasibility Study' should be delivered to the following address by **2:00pm (local time), March 3, 2014**:

Sheila Kitz, CLGM
Chief Administrative Officer
County of St. Paul No. 19
5015 - 49 Avenue
St. Paul, AB T0A 3A4

RFP Evaluation Criteria

- RFQ Criteria (see RFQ evaluation criteria below) – 60%
- Project Method – 40%
 - The consultant must outline what scope is included in the project budget as well as how the consultant plans to accomplish the feasibility study.
- Fees 0% - The project budget is \$35,000 and proposals must not exceed this value.

RFQ Evaluation Criteria

- Company Experience – relevant expertise in wastewater treatment facility planning and design for rural communities and an understanding of the local and regional context.
- Project Personnel – A summary of project personnel selected for this assignment.
- Innovation – Examples of innovation in similar projects.
- Schedule and Commitment – Demonstrate the proponent has the resources to commence and complete the project upon award.

The County of St. Paul and the County of Two Hills reserve the right not to award this project at their sole discretion.

Schedule

The anticipated schedule for the RFP process is as follows:

RFP

Issue RFP to successful proponents	February 17, 2014
RFP Closing	2:00pm (local time), March 3, 2014
Project award	March 10, 2014