



The Corporation of the Town of Parry Sound

Council Report and Recommendation

Open or Closed Agenda:

Open

Section 239 (2), Municipal Act, Subsection:

n/a

Council Meeting Date:

September 1, 2015

Subject:

Fluoride system upgrades for the Tony Agnello Water Treatment Plant

TOMRMS File Number:

E05 - Fluoride

Spokesperson(s) Name and Title:

Peter Brown, Director of Public Works

Department:

Public Works

Report Recommendation

By-Law:

Resolution:

That Council accepts the proposal from ch2m HILL for engineering, design, construction contract administration and commissioning support services to the fluoride system upgrade project in the estimated amount of \$49,975; and further

That Council authorizes the Director of Public Works to authorize ch2M Hill to proceed with the project; and

Further that Council authorizes the total estimated cost of \$250,000 for the fluoride system upgrades, including ch2m HILLS engineering services, be funded from Waterworks Reserves.

Direction (For Direct Staff Follow-Up):

Direction (For Open Council Resolution):

Direction (For Open Council By-law):

Purpose:

To accept ch2m HILLS proposal and authorize them to proceed with the fluoride system upgrade project and to authorize use of the Waterworks Reserves to fund the project.

Identify Relationship to Strategic Priorities:

Core Service	Yes
Key Performance Objectives (KPOs)	No
New Service, Project or Program	Yes
Does This Item Relate to Council’s Strategic Priorities?	Yes

Background/Report:

At a previous Council meeting, Council endorsed the continued use of fluoride in the Town's municipal water system.

In order for the Town to continue fluoridation of the water system in a manner that is safe and secure for Waterworks staff, I had ch2m HILL undertake an extensive review of the existing fluoridation system and provide a proposal outlining the necessary upgrades and modifications. Because Ch2m HILL was the engineering firm retained during the construction and commissioning of the Tony Agnello Water Filtration Plant clearly they are familiar with the plant and they also have extensive experience with fluoride systems throughout Ontario.

The decision to continue fluoridation safely will be costly. The engineer has estimated the "capital" work to be in the range of \$150,000. Engineering cost is estimated to be in the range of \$50,000. Considering the amount of work required and timeframes, I would estimate the cost of the entire work to be closer to \$250,000. And to be quite frank, the Town of Parry Sound has no choice but to proceed with this plan. The report is extensive and precise in its explanation. Staff members have read the report and are confident in its direction.

Since Council has endorsed the continued use of fluoride and because the modification project will take an estimated 5 months to complete, I ask that Council approve this expenditure as soon as possible. Doing so will assure Waterworks staff that the Town is committed to providing the safe and secure handling of this chemical in the workplace.

Advantages of Recommendation:

- Will provide safe and secure handling of fluoride in the workplace.
- The current fluoridation system will receive much needed upgrades and modifications
- ch2M HILL is familiar with the plant

Disadvantages of Recommendation:

- funding for the project is not budgeted and will have to come out of reserves.

Alternatives:

- do not complete upgrades and modifications, thereby continuing to place staff at a significant risk in the workplace.

Cost/Financial Impact:

\$250,000 approximately

Included in Current Budget:

No

Attachments:

Attachment #1 - ch2M HILL's proposal

(Accessible format available upon request)

CAO's Comments

Recommends Council Approval:

Yes

Recommends Council consider staff recommendation with the following comments:

The safe handling of fluoride is a necessity and the recommendation addresses this obligation. The price tag is perhaps more than anyone anticipated but there we have it. Weighing the cost against the value of treating Town water with fluoride would restart the debate wide open.

A question may be whether the project couldn't wait until going through the 2016 Budget process but know that we have ascertained the risks to staff, this does not seem prudent.

PB Attachment #1 - ch2m HILL Proposal - Fluoride System Upgrades

09.4.1-ATT#1



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July 28, 2015

Mr. Peter Brown, C.E.T.
Director of Public Works
Town of Parry Sound
52 Seguin St.
Parry Sound Ontario P2A 1B4

Subject: Tony Agnello Water Filtration Plant
Request for Proposal - Fluoride System Upgrades

Dear Mr. Brown:

To meet best practices for health and safety in the use of hydrofluosilicic acid (fluoride), and to provide the community of Parry Sound with a fluoride system that is operable and maintainable, the Town of Parry Sound (Town) has committed to investigating potential upgrades to the current fluoride system at the Tony Agnello Water Filtration Plant (Facility) in Parry Sound, Ontario.

To meet these commitments, the Town requires the services of a consultant team familiar with the technical and physical aspects of the facility, and with the resources and technical excellence to successfully deliver the project on time and on budget. This familiarity is a key strength of CH2M HILL Canada Limited (CH2M), designers of the original Facility and who have maintained a strong continuing relationship with the Town's management, technical, and operations staff.

The team CH2M commits to this project is dedicated and capable, with extensive career experience in upgrades, retrofits, and expansions to existing water facilities of varying sizes in the near north regions of Ontario and across North America. Our track record of successful projects consistently incorporates established and innovative practices to provide the best value possible to our clients and their customers.

CH2M welcomes the opportunity to work with the Town on this important project. Should you have any questions or if you require additional information please do not hesitate to contact Norm Huggins or Natalie Paradis at 416-499-9000.

Sincerely,

CH2M HILL Canada Limited

A handwritten signature in black ink, appearing to read 'Norm Huggins'.

Norm Huggins, P. Eng.
Vice President

A handwritten signature in black ink, appearing to read 'Natalie Paradis'.

Natalie Paradis, P. Eng.
Project Manager

1. Project Understanding

1.1. Background

The Tony Agnello Water Filtration Plant (Plant) located in Parry Sound, Ontario treats surface water from Big Sound of Georgian Bay and provides potable water to the town of approximately 6500 people. The treatment process includes raw water screening, low lift pumping, membrane filtration, chemical feed systems (coagulant, fluoride, sodium hypochlorite, sodium bisulphite, and polymer), a chlorine contact tank and reservoir/clearwell.

1.2. Scope of Work

Recently, the issue of aging equipment, facility needs, and health and safety concerns with the existing installed fluoride system were brought before Council for discussion. As a result of that discussion and a presentation to Council on the merits of fluoridation Council unanimously endorsed the continued application of Fluoride in the Parry Sound drinking water and directed that the installed system be assessed against current good practice in the industry and that a report be brought back to council with recommendations for changes to address health and safety concerns raised by plant operations. Some of the areas of concern are evidenced by:

- The existing pump and dosing panel are etched and corroded due to vapours from the fluoride system, limiting the degree of maintenance that can be provided to the equipment.
- The current fluoride system is located in the common chemical room exposing other chemical equipment to vapours in the area.
- The current method of receiving fluoride solution in drums and manually transferring to storage tanks (typically performed monthly) presents a risk to operations staff due to the toxic and corrosive nature of hydrofluosilicic acid.

The risks and challenges of the existing system require a revisit of the fluoride receiving, handling, and dosing operation. Systems to be considered must address:

- The impacts and risks to operators, system components, other operating systems in the same space, and the materials and finishes of the chemical room at the WTP.
- The isolation of the fluoride handling system, providing separate ventilation, and
- Additional safety measures for storage and dosing.

The initial analyses of the problem will be a review of the requirements for receiving, storing and transferring the fluoride to the plant dosing system. As a step in developing this work plan we have researched removing the need to manually transfer the fluoride solution. As a result of this research we have identified two chemical suppliers able to provide the fluoride solution in chemical totes which can be drawn from directly. Further investigation will be undertaken, however if following a review of options the process of manual transfer is preferred, the scope will include preparation of a detailed safety protocol to manage risk. Due to the age and condition of the current pump and dosing panel, a new pump and panel will be designed with additional safety features including splash shields.

We understand that this project is to provide engineering, design, construction contract administration and commissioning support services to the fluoride system upgrade:

1. Fluoride System Enclosure and Ventilation. Vapours are corroding materials in chemical area and pose a health and safety risk. Enhanced separation of spill containment.
2. New fluoride system storage and dosing equipment. Age and condition of equipment is such that upgrades/replacements are required. Additional design features promoting health and safety will be incorporated. Note the limit of the scope is within the chemical room; existing piping to the dosing point, injection and monitoring equipment (fluoride residual) are reported to be in relatively good operating condition and will not be modified under this assignment.
3. HVAC upgrades in Chemical Area: Separate ventilation of fluoride enclosure, changes to existing HVAC as required to complete the scope of work.
4. Decommissioning of existing fluoride storage and dosing equipment.
5. Instrumentation, controls, structural, architectural, and process mechanical changes: as required to complete the above scope items.
6. Document updates including drawings, operation manual and control narratives as pertains to the above scope items. Coordination with local regulator for temporary discontinuation of dosing of fluoride during start-up.

2. Work Plan and Deliverables

This section outlines our proposed methodology and approach to completing the design and construction of upgrades to the Tony Agnello Water Filtration Plant.

2.1. Approach and Methodology

We anticipate that the fluoride system upgrades will be completed over a period of up to 8 months, with the following assumptions:

- Project initiation and design basis: 4 weeks;
- Design to tender documents: 4 weeks;
- Tendering: assume 4 weeks;
- Services during construction: 4 weeks shop drawing submittal and approval; 3 month lead time for delivery of equipment; 4 weeks construction and commissioning.

We will deliver the project using CH2M HILL's proprietary Project Delivery System (PDS), which is used on all CH2M HILL projects to manage budget and schedule. The CH2M HILL QA/QC process will be used on this project. This process commits senior technical staff to QA/QC with respect to project planning and process development, as well as internal technical review.

A detailed Time Task Matrix is included in Appendix A and shows the allocation of staff to project tasks.

2.2. Project Management

Effective project control, a high level of communication between the Town and the CH2M team, and quality reviews for submissions are integral to our proposed management approach to this project. CH2M is committed to achieving positive results for our clients by setting high standards for service, performance, reliability and quality. Our project and quality management approach includes:

- Monthly status reports presenting budget/schedule updates, progress, and other status information.
- We will advise you of any scope changes and provide a rationale in written scope change requests, in advance of initiating the work.
- Using a Risk Register to record risks and develop mitigation measures throughout the project.

- Quality control reviews of all submissions by QA/QC leads and final review and sign-off by the Project Manager. All deliverables will be stamped using CH2M's QA/QC stamp.
- Prepare meeting agendas, presentation materials for meetings, meeting notes and updated tracking logs as required.

2.3. Design Services

The design phase is expected to take place over approximately 2 months, followed by up to 1 month of tendering, and will include the following activities:

- Fluoride system upgrades Design Basis memorandum (Draft (1) and Final)
- Updated Operations Manual and fluoride transfer protocol as required (Draft (1) and Final)
- Updated fluoride Control Narrative (Draft (1) and Tender)
- Coordination of discussions with MOECC (local inspector)
- Contract specifications (Draft (1) and Tender)
- Contract drawings (Draft (1) and Tender)
- Capital cost estimate
- Assistance during the contractor pricing process by answering technical queries from the contractor and providing an evaluation and tender award recommendation.

Design Services - Assumptions

- Scheduled monthly project progress conference calls
- One meeting with management and operations staff to review the design basis and assumptions, and form agreement on the design approach. Review of draft updates to operations manual and control narrative.
- One design review meeting with management and operations staff to review the draft specifications and drawings.
- One meeting to address review comments on all project documents.
- It is assumed that this will be an invited tender, the Town can supply the list of invitees (CH2M can provide recommendations as required)
- The Town will provide CH2M with a copy of each submitted tender package after opening
- Potential for building permit requirement.

2.4. Contract Administration & Services During Construction

The purpose of this task is to provide general engineering services for administering the construction contract and site inspection of the work during construction to assess whether the construction is performed as designed, and confirm that the ultimate facility operates and performs as intended.

The overall services during construction phase is estimated at 5 months, including up to 3 months lead time for delivery of equipment and up to 4 weeks of on-site construction including commissioning. The existing fluoride system will be maintained in operation as long as possible while the work is being completed.

The scope of work will include: site inspection summary reports (weekly during construction and commissioning), and preparation of meeting notes or minutes as required. Also included in this task are the commissioning and testing of the completed works. Deliverables include:

- Construction site inspection summary reports (weekly site visits during on-site construction period)
- Monthly contractor payment recommendations (progress draws)
- Shop drawing review comments
- RFI Responses

- Commissioning support services and process training for operations staff during facility start-up (assumes 2 training sessions of 2 hours on same day)
- Final updated narrative and operations manual (as-built)
- Coordination of supplier training
- Post-Construction support (provisional) – time and materials as required to an upset limit of \$3,000 (not included in base scope and fees)

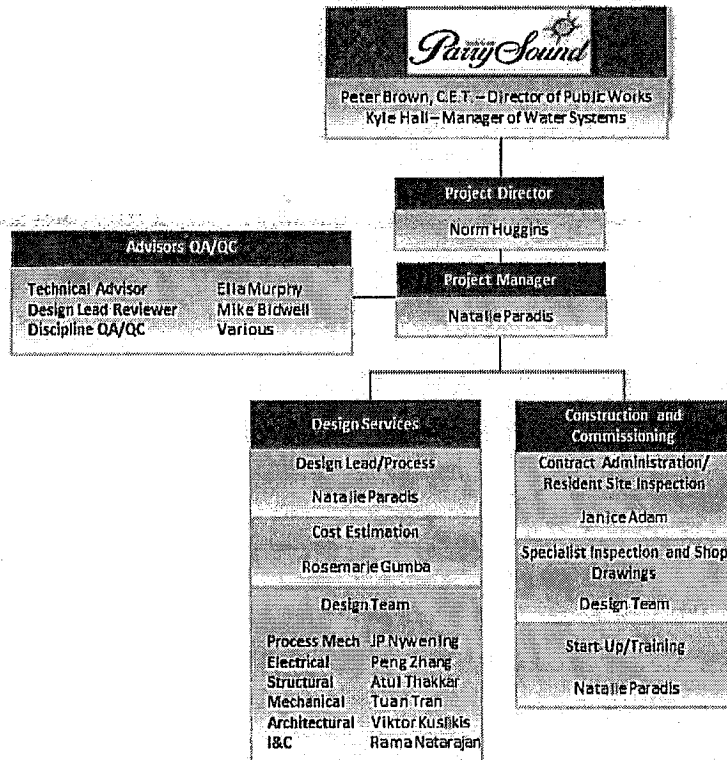
Services During Construction - Assumptions

- One pre-construction meeting and summary
- Weekly conference calls during construction to review construction progress
- Four to six week construction period on site
- Permits: Potential for Building permit and ESA Application
- Training provided in up to 2 sessions of 2 hours on same day, between 10 AM and 4 PM during commissioning.
- We have allowed for a total of 5 half day inspection visits and up to 3 full days on-site commissioning
- System Integration by others, to be coordinated by the Contractor

Project Team

We offer a strong team of dedicated and capable staff with extensive career experience in upgrades, retrofits, and expansions to existing water facilities of varying sizes in the near north regions of Ontario as well as across North America. The organization and reporting structure of our proposed team is illustrated in Exhibit 1. The qualifications and role of each key member is summarized below. Detailed resumes of key team members are provided in Appendix B.

EXHIBIT 1
 ORGANIZATIONAL AND REPORTING STRUCTURE OF OUR PROPOSED TEAM



Norm Huggins – Project Director

As the CH2M HILL Client Account Manager for the Town of Parry Sound, Norm Huggins has the overall responsibility for client deliverables, including the quality and appropriateness of the deliverable compared to the requirements of the project terms of reference. Norm's extensive project experience and cradle-to-grave record allows a comprehensive overview of the entire project. Norm has an established respect for the Town's needs, the site constraints, and the Town's commitment to be a responsible steward of the environment. Norm has more than 40 years of relevant experience in the pre-design, design, and contract administration of municipal and industrial water and wastewater projects across Canada.

Natalie Paradis – Project Manager, Design/Process Lead, Start-Up and Training Lead

Natalie has over 10 years of experience working on water treatment process improvements across Canada and brings project management, design management, process engineering, and on-site commissioning experience to the core team. Natalie has delivered projects from conceptual design and treatability testing through design and construction to final commissioning. As a team, Natalie and Norm combine to bring a strong front line to execute a successful project.

Ella Murphy – Technical Advisor

Based in CH2M HILL's Toronto office, Ella Murphy is a chemical engineer with 15 years of relevant experience as a process engineer and project manager. Her experience includes project management, design and coordination for large and small drinking water treatment upgrade and expansion projects. Ella is well versed in all aspects of design, construction, and commissioning of municipal water treatment facilities, and will provide technical guidance to the team.

Mike Bidwell – Design Lead Reviewer

Michael has over 10 years of experience in facility design, contract administration, site inspection services, and project management. He has relevant expertise in hydraulic modeling, wastewater and water treatment, constructability management, multi-discipline design team coordination and leadership, and capital cost management.

QA/QC Team

Our team is supported by a panel of QA/QC experts who have worked on numerous water and/or wastewater treatment projects. Mike Bidwell will lead all QA/QC activities based on similar roles on other projects. He will be supported by senior discipline reviewers who have significant experience on comparable facilities.

Janice Adam – Contract Administration/Resident Site Inspection

Janice is an Engineering Technologist (Level 1) working remotely out of CH2M HILL's Toronto office. Janice has over 10 years of experience in the areas of civil and environmental engineering and construction inspections. She has served in construction management positions as contract administrator, and site inspector for water and wastewater treatment facilities and environmental projects.

Project Schedule and Budget

Based on an assumed start by September 2015, it is estimated that Design would be complete by the end of 2015. Tendering would occur in November 2015, with the contract awarded in December. Equipment delivery is estimated to be two to three months after approved shop drawings; therefore, it is assumed on-site construction would take place in March-April 2016. Commissioning is anticipated to occur in April 2016.

Exhibit 2 below provides a summary of the estimated engineering effort, including expenses.

It is assumed that installation will be performed by a contractor who is contracted using invited formal tenders. A wider based public tendering process would require increased engineering and administrative costs. Some

savings may be obtained through alternative means of awards such as quotations leading to purchase orders issued by Parry Sound.

Note that the order of magnitude capital estimate for the fluoride system upgrades is \$150,000.

**EXHIBIT 2
BREAKDOWN OF SCOPE OF WORK FEE ESTIMATE BY TASK (EXCLUDING HST)**

Task	Engineering Fee Estimate (Including Expenses)
1. Project Initiation and Design Basis	\$5,330
2. Tender Documents - Detailed Design	\$22,200
3. Tendering Period	\$3,310
3. Services During Construction	\$12,270
4. Startup and Commissioning	\$4,865
5. Post Construction Support (Provisional – not included in total)	\$3,000
Total	\$47,975

Monthly invoices will be submitted to the Town identifying the breakdown of fees. The billing rates for the staff expected to work on these tasks are presented in the attached Time Task Matrix. Our fee estimate presented in Table 1 is based upon the estimated effort and anticipated schedules. We estimate that in total ten to twelve (10-12) drawings will be required.

Exclusions

The following are excluded from each of the above estimates:

- Applicable taxes, HST
- Any building permit or other permitting fees

Terms and Conditions

Services covered in this Proposal shall be performed in accordance with the provisions of CH2M standard terms and conditions for professional services attached in Appendix C. Additional work that is requested by the Town of Parry Sound, but not included in this Proposal, would (if acceptable to CH2M) be completed following submission by CH2M of an updated work plan, cost estimate and subsequent receipt of a change order or written approval from the Town to proceed. Additional services may require additional terms and conditions.

Closure

If you are in agreement with the scope of work, the budget and the attached terms and conditions, kindly acknowledge your acceptance by signing in the space provided below and emailing this letter back to Natalie Paradis' attention, which will then authorize CH2M to proceed with the Services. Issuance of a purchase order or other form of notice to proceed shall indicate your acceptance to this proposal in full.

Acknowledgement and Authorization

I / we have reviewed the attached proposal on behalf of the Town of Parry Sound including the scope of work, the budget and CH2M HILL's terms and conditions (Form 124) and hereby accept it and hereby authorize CH2M HILL to proceed.

Signed: _____

Date: _____