

4

NEW SUTTON WATER POLLUTION CONTROL PLANT AWARDED PROJECT OF THE YEAR BY OPWA

The Transportation and Works Committee recommends:

- 1. The recommendation contained in the following report, January 21, 2005, from the Commissioner of Transportation and Works be adopted; and**
- 2. Congratulations be extended to the Region of York project team as the recipient of the Ontario Public Works Association project of the year for the New Sutton Water Pollution Control Plant:**

1. RECOMMENDATION

It is recommended that:

1. This report be received for the information of the Transportation and Works Committee.

2. PURPOSE

This report is intended to notify Regional Council that the newly constructed Sutton Water Pollution Control Plant (WPCP) in the Town of Georgina has recently received the Project of the Year Award in the Environment category by the Ontario Public Works Association (OPWA). The Ontario Public Works Association Project of the Year Awards was established to promote excellence in the management and administration of public works projects.

The Award was officially presented at the OPWA Awards Luncheon on Thursday, January 27, 2005 at the Mississauga Grand Banquet Hall and Convention Centre.

3. BACKGROUND

York Region had contemplated the construction of the new wastewater treatment plant in the community of Sutton since the early 1990s. In 1997, York Region approved a Secondary Plan for the Community of Sutton for an ultimate design population of 16,500 by the year 2016. This represented an increase of 12,000 people. At the time of the secondary plan approval, these works were not included in the Region's 10-year capital program. A developer group in the Sutton area approached the Region and indicated an interest in accelerating the construction timing of the Sutton STP works, as well as pursuing design/build options.

On November 25, 1999, Regional Council authorized staff to continue discussions with the Sutton Landowner Development Group regarding the accelerated construction timing

and provision of prepaid development charges for the Sutton WPCP. Staff was also authorized to issue an Expression of Interest (EOI) and Request for Proposal (RFP) regarding the design/build options for the Sutton STP.

The Region retained R.V. Anderson Associates Limited (RVA) to assist in the preparation of the RFP for the selection of a design/build contractor, as well as to provide the process consultant services, throughout all phases of the project and contract administration and site inspection services.

The Region secured design/build proposals to construct a new expanded plant that would accommodate 7,500 persons equivalent. Following an extensive technical and cost evaluation process, Azurix North America (now AWS Engineers and Planners Corp.) was subsequently awarded the design/build contract as per Council authorization (Clause 3, Report 1, January 18, 2001).

The key milestones achieved during this project are summarized as follows:

- | | |
|--|--------------------|
| • Construction Commenced | Spring 2002 |
| • Construction Completed | Spring 2003 |
| • Plant Commissioned | Summer 2003 |
| • Substantial Performance Achieved | Fall 2003 |
| • One Year Operations Contract Commenced | Fall 2003 |
| • Training of York Regional Operations Staff | Spring/Summer 2004 |
| • Operations of Plant Transferred from AWS to Region | Fall 2004 |

4. ANALYSIS AND OPTIONS

4.1 Who is OPWA

The Ontario Public Works Association (OPWA) represents the Ontario Chapter of the Canadian Public Works Association (CPWA) which is affiliated with the American Public Works Association (APWA). The Canadian Public Works Association (CPWA) was founded in 1986 to enhance the services of the American Public Works Association to the Canadian public works community and to improve the quality of public works products and services to Canadian citizens. Since 1986, CPWA has become “the voice of public works in Canada”. CPWA is an organization of public works professionals in Canada who are members of APWA; any individual, agency or corporation in Canada with an interest in public works and infrastructure issues can become a member of CPWA by simply joining APWA.

Originally chartered in 1937, APWA is the largest and oldest organization of its kind in the world. With headquarters in Kansas City, Missouri, an office in Washington, D.C., and 67 chapters, including 8 in Canada, APWA provides a forum in which public works professionals can exchange ideas, improve professional competency, increase the performance of their agencies and companies, and bring important public works-related topics to public attention in local, state/provincial, and federal arenas.

4.1.1 2004 OPWA Project of the Year Submission

In October 2004, Regional Staff decided that the new Sutton WPCP Project was an excellent candidate for consideration by the OPWA for Project of the Year in the \$2 million to \$10 million dollar environmental category. This decision was based on the unique approach to this project and its ultimate success in delivering a state of the art facility capable of meeting stringent effluent requirements. A copy of the formal submission to OPWA is attached for information (*see Attachment 1*). The Letter of Award from OPWA is attached (*see Attachment 3*). Criteria that was used in the selection process to judge the submissions included:

- Use of good construction management techniques and completion of the project on schedule.
- Safety performance.
- Community relations.
- Demonstrated awareness for the need to protect the environment during the project.
- Unusual accomplishments under adverse conditions.
- Additional conditions deemed of importance to the public works agency.

The following highlights some of the unique features of the Sutton WPCP project.

4.2 Environmental Improvement

4.2.1 Effluent Quality

The new facility was designed to achieve objectives even more stringent than the effluent criteria. The basis for setting objectives was that it provides a level of contingency between meeting objectives and meeting effluent requirements as per the Certificate of Approval issued by the Ministry of the Environment.

The plant capacity has increased from 2,046 m³/day (4,500 people) to 3,412 m³/day (7,500 people). The old plant was an activated sludge plant complete with aeration basin, final clarifier and effluent polishing lagoon. An aerial look of the old facility is attached (*see Attachment 2*). The new facility is a state of the art fully automated sequencing batch reactor plant. This highly sophisticated treatment process is controlled by a computerized Supervisory Control and Data Acquisition System (SCADA).

Table 1 presents a comparison of the effluent criteria for the old plant versus the new plant.

Table 1
Improvement in Technology and Effluent Criteria

Parameter	Old WPCP Effluent Criteria	New WPCP Effluent Criteria
Total Phosphorus	0.3 mg/L	0.18 mg/L
Ammonia - Winter	No Criteria	3.0 mg/L as N
Ammonia - Summer	No Criteria	1.0 mg/L as N
Total Suspended Solids	25 mg/L	15 mg/L
Total BOD	25 mg/L	15 mg/L
Fecal (E-Coli) Coli forms	No Criteria, no disinfection required	< 100 per ml

Although the MOE gives 90 days grace to achieve the effluent criteria stipulated in the Certificate of Approval, the new plant has continued to meet or exceed the effluent requirements since the fifth week of operation.

4.2.2 Innovation - Sewage Lagoon

Innovative use of the old sewage lagoon at the plant site provided environmental benefits during and after construction. The sewage lagoon provided a catchment area for groundwater from site dewatering activities, in order to minimize general discharge to the environment.

After construction of the new Sutton WPCP, the lagoon was kept in service as a safety feature to be utilized as a contingency in the event of sewage spill. A connection from the plant to the lagoon was provided to allow for the addition of treated plant effluent to maintain lagoon levels during the hot summer months. This has enhanced the lagoon as a habitat for wildlife, as many waterfowl have been regularly observed at the lagoon.

4.2.3 Replacement of the Existing Outfall

A video inspection of the existing plant effluent outfall revealed a deteriorated and partially blocked pipe that had the potential for plant effluent to leak into the soils and environment. A replacement outfall pipe was required, and within two months, the pipe was designed, permitted by the Ontario Ministry of the Environment and constructed without delaying the project schedule. Because the outfall was located in the flood plain of the Black River, sediment control measures including siltation barriers and rock check dams were constructed to minimize impact to the environment.

4.3 Technical Approach

4.3.1 Design/Build Delivery Approach

In order to expedite this project, a design/build delivery approach was chosen as opposed to the conventional design, tender construct. The challenge in proceeding with any design/build project is the uncertainty of the product in the end. Therefore a defined concept design/build approach was selected for this project. The RFP contained information about capacities and performance requirements, equipment specifications, redundancy provisions and process narrative, which allowed the Region to establish

minimum design requirements, but left the selection of the specific equipment and conceptualization of the design to the proponents.

4.3.2 One Year Operations Contract

In order to ensure a quality product in the end, the Region decided to include a one year operations contract in the project. This provision put responsibility on the design builder to demonstrate continued compliance with all effluent criteria. Operational parameters of various treatment processes were optimized, and training was provided to York Region's operations staff, including a period of shadowing for about four weeks.

4.3.3 Expansion Capabilities

The benefit of constructing this Package Plant is that future expansions can be easily accommodated, by constructing additional cells to the north of the existing Sequencing Batch Reactor Cells. Throwaway costs were minimized by sizing where appropriate some of the process equipment/structures to accommodate ultimate flows including the influent channel, grit vortex units, diesel generator, sludge handling equipment, septage unit and outfall pipe

5. FINANCIAL IMPLICATIONS

This report is for information only and therefore there are no direct financial implications at this time.

6. LOCAL MUNICIPAL IMPACT

The construction of this facility was a crucial step in implementing the necessary Regional infrastructure prior to the Town of Georgina's local infrastructure program. Together the Region infrastructure and Town of Georgina infrastructure scheduled to be completed this year will ultimately allow for approved development as per the Sutton Secondary Plan. Environmental improvement is achieved by the new Sutton WPCP's capacity to treat wastewater through a more advanced technology ultimately achieves a higher quality effluent for discharge to the Black River.

7. CONCLUSION

The recognition of the Sutton WPCP Project by the Ontario Public Works Association is further support to the Region's commitment to protect and enhance the natural environment.

The success of the project is directly attributable to the continued support by the Sutton Landowners Group and the alliance between the Region, R.V Anderson and AWS Engineers and Planners.

The Senior Management Group has reviewed this report

(The attachments referred to in this clause were included in the agenda for the February Committee meeting.)