

Councillor Briefing Sessions



For Information Only

Biosolids Master Plan Update

Presented To:	Priorities Committee
Presented:	Wednesday, Feb 18, 2009
Report Date	Tuesday, Feb 03, 2009
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Recommendation

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Finance Implications

The funding for the consultants was approved in the 2008 Capital Budget.

Report attached.

Signed By

Report Prepared By

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Director of Water/Wastewater Services
Digitally Signed Feb 12, 09

Division Review

Nick Benkovich
Director of Water/Wastewater Services
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Recommended by the Department

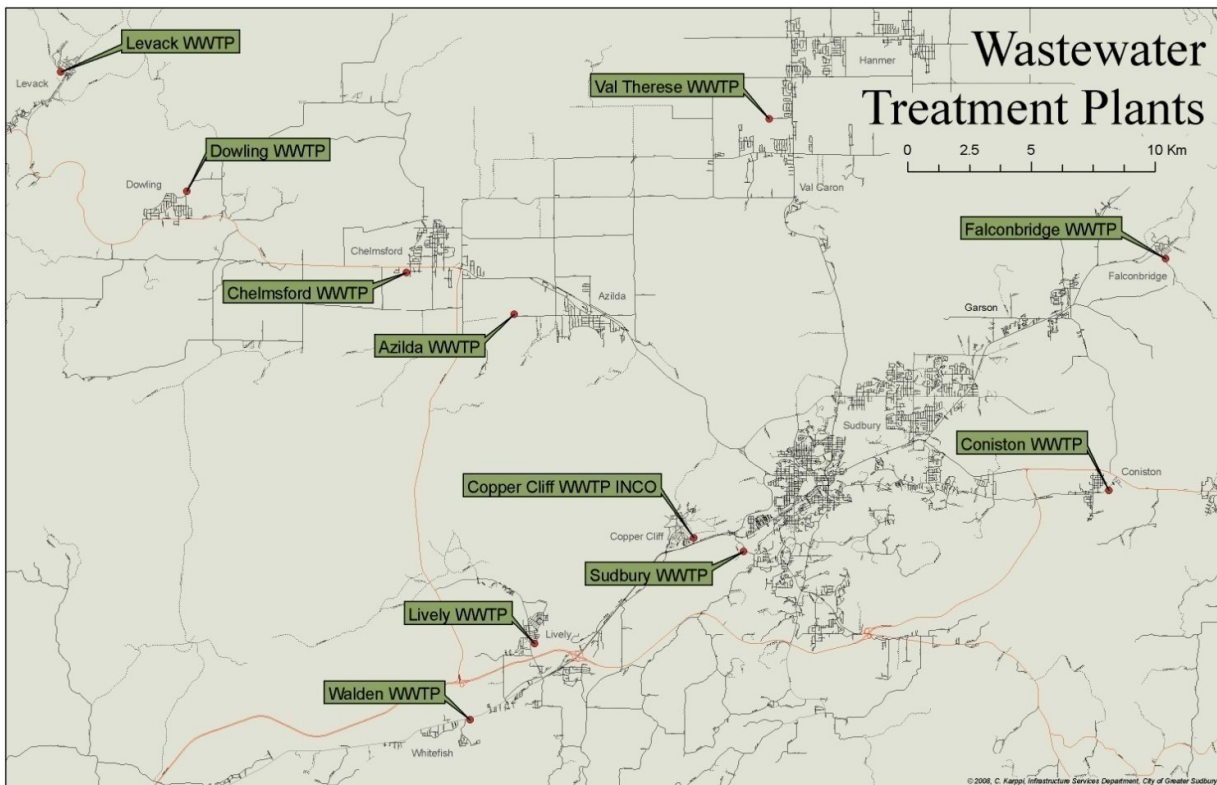
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Recommended by the C.A.O.

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The purpose of this report is to provide an update on the general progress toward the development of a strategy for the long term sustainable disposal solution for waste activated sludge (sludge) generated as a by-product from the City's nine (9) wastewater treatment facilities as shown below.

In addition, nearby wastewater facilities such as the Vale Inco Copper Cliff wastewater plant, Espanola wastewater plant and Blind River wastewater plant also use the Vale Inco tailings pond for their sludge disposal.



Each and every day, as a result of our routine treatment of wastewater, City facilities generate 14 -19 transport tankers of sewage sludge requiring disposal.

For over 30 years, the preferred method for sewage sludge disposal has been to thicken the sludge and incorporate it into the tailings disposal operation at Vale Inco tailings area near Lively. Despite the occasional flare up of odour over the years, this disposal system provided an inexpensive and effective sludge disposal method for the City and several neighbouring municipalities and continued to be the preferred disposal option until recently.

During 2005 and again in 2007, sewage sludge odour episodes related to this method of disposal became more severe and longer in duration and consequently it became apparent to the public, Inco, the MOE and the City that this legacy disposal solution could no longer remain as an acceptable disposal solution.

In response to these odour events, short term strategies were developed to manage the odours while a permanent disposal solution was being planned and implemented. Despite the best efforts of everyone involved, odour issues were not totally eliminated by these short term strategies. This reinforced the need to move as quickly as possible to implement an effective long term permanent solution.

In 2007, driven by community concerns and Vale Inco's request to relocate the sludge disposal operation off their property, the City committed to develop and implement a permanent solution which would eliminate the current disposal location and methods as quickly as possible and a very ambitious target date of the end of 2010 was established.

In 2008, the City undertook a comprehensive study to determine the preferred direction for the range of acceptable biosolids treatment and disposal solutions. This study, called a Biosolids Master Plan Environmental Assessment (EA) which followed a regulated process designed to promote transparency and public involvement has now been completed. The general direction of the study was to look for technologies which are capable of producing a 'beneficial use' end product.

During the EA Study, available potential technologies were reviewed using key evaluation criteria such as:

1. Protection of the environment, workers, and public health;
2. Public Acceptance;
3. Economic sustainability;
4. Odour control;
5. Operational ease & reliability

The EA Study investigated two (2) main issues:

1. Planning Alternatives

These alternatives would seek to answer the question: What is the preferred location for bio-solids treatment facility?

2. Technical Alternatives

These alternatives would answer the question: What types of technologies will satisfy the evaluation criteria?

The EA Study which was completed in September of 2008 evaluated multiple locations and over twenty (20) alternative technologies to eliminate unsuitable options and ensure treatment technologies were in compliance with the key criteria.

The general conclusion of the study indicates there remains a relatively wide range of possible solutions using various technologies capable of producing a 'beneficial use' and marketable end-product from a new treatment facility built on the site of the Sudbury Wastewater Treatment Plant that would satisfy the key criteria and could be implemented within the time frame available.

The following specific key recommendations resulted from the EA Study include:

1. Construct a centralized Biosolids Treatment facility at the existing Sudbury Kelly Lake WWTP;
2. Incorporate technologies such as ATTAD™, Nviro™, and Shwing Bioset™ or other similar technologies that produce a marketable product as part of the treatment solution;

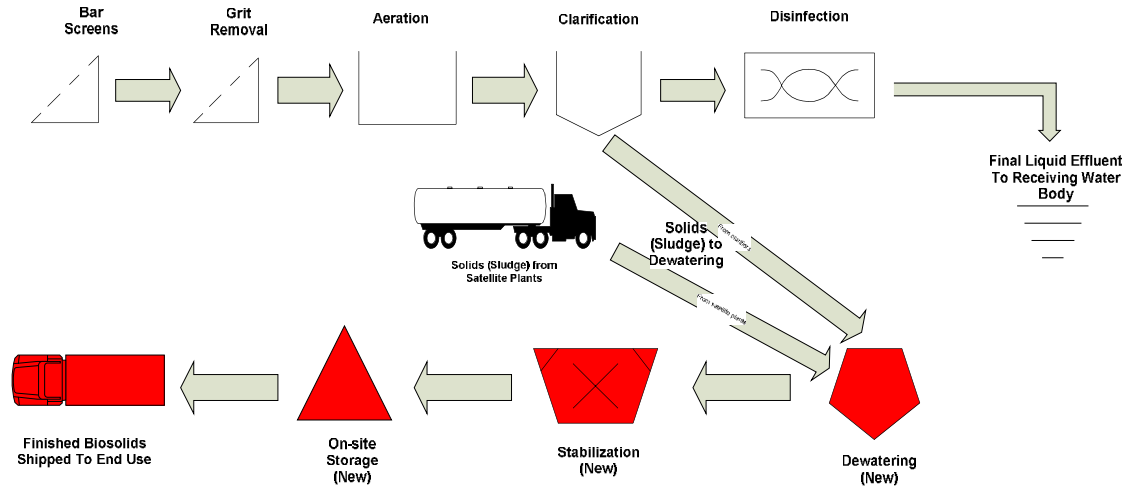
It should be noted at this point that while these three (3) technologies have been evaluated and are capable of meeting the requirements of the City, there are other technologies which may also meet our requirements. The City will actively encourage via public advertisements, any other technical proponents to make submissions to the City at the appropriate stage of the selection process.

3. Develop a Nutrient Management Strategy for the end use strategy as required by Provincial Regulation.

The EA Study sets the stage for the next steps in the process of selecting and implementing the long term solution.

The following schematic diagram represents a typical wastewater treatment flow process including with screening, grit removal, aeration process, clarification and disinfection. The diagram also shows the new components which are needed to dewater and stabilize (or treat) the solids sludge and convert it to biosolids. Other ancillary works to power the new processes and incorporate these systems into the existing plant infrastructure system (such as piping) are also required.

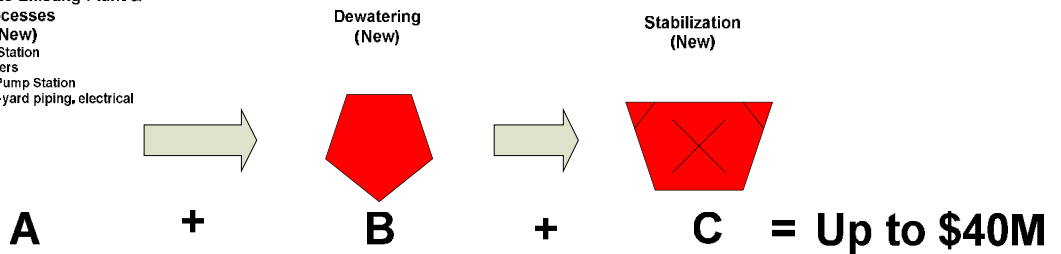
Wastewater Process Elements Including Bio-solids Treatment



This second diagram takes a closer look at the new components and some of the major plant retrofits needed to move to biosolids treatment.

Wastewater Process Elements Including Bio-solids Treatment

- Modifications to Existing Plant & Processes (New)**
- Sludge Transfer Station
 - Sludge Tank Covers
 - Recycle Stream Pump Station
 - Plant Upgrades – yard piping, electrical etc



Also included is the preliminary cost estimate to design, purchase, and implement these new processes which could total about \$40 million (in 2008 dollars) as determined in the recently completed EA Study. Although the study report has provided a very preliminary cost estimate of the value of the new components, the financial exposure or expected contribution from the City is difficult to determine at this time as City staff are still exploring several options to limit the City's financial exposure.

In recognition of these potentially large capital implications for the City, staff will examine the following cost containment measures.

Firstly, we will determine if this project qualifies for federal and/or provincial funding programs. Full biosolids treatment is most certainly an environmentally friendly initiative which represents an environmental improvement that should qualify the project for such funding. It is our anticipation that funding support from both the federal and provincial governments will lessen the impact on our residents.

This project is unique in that the new facility may produce a 'beneficial use' marketable end-product. This will provide an opportunity for the City to explore alternative construction models that make use of private sector partners to further minimize the City's capital contribution.

Through the use of alternative construction methodologies such as Design/Build or Design/Build/Operate (DBO) or even Design/Build/Operate and Finance (DBOF), private sector partners interested in acquiring the rights to market the end product for profit may wish to enter into a partnership with the City to construct the facility and operate it for a defined period of time. This would put the City in a position to negotiate an agreement with the proponent to minimize the City's capital contribution.

We are interested in exploring several potential advantages for the City in using the DBO or other similar models for this project. Proponents of this model indicate that better construction quality is achieved under the DBO model because the constructor of the facility will also be operating what they have built. Further, since consistent operation of the new facility is critical to successfully meet environmental, regulatory, and community objectives, operational expertise with these new processes from an experienced private sector partner is critical in achieving our goals.

Exploring the possibility of obtaining federal/provincial funding and examining the potential for a private sector partnership may compromise the City's ability to meet the original timelines for project completion of 2010. Despite the advantages of the Design/Build/Operate construction model, the additional preliminary planning and negotiation associated with the model is likely to involve extra lead time. City staff has made arrangements for approvals from Vale Inco to extend the project completion date if necessary to allow for a full examination of these complex financial issues.

The next steps toward the implementation of full biosolids treatment include finalizing arrangements for the administration of the project. The City intends to utilize the services of both a technical (Engineering) consultant as well as a financial consultant. Both of these firms will be hired by issuing a Request for Proposal through a competitive process as per the City's Purchasing By-law.

Under the direction of City staff, the role of the technical consultant will be to:

- 1) Develop and issue an expression of interest to solicit interest from technology providers and to short list the potential solutions; including those considered as part of the EA Study.
- 2) Develop and issue the technical Request for Proposals for a design / build / operate model solution;
- 3) Facilitate the final technical evaluations of the proposals by teams of City staff.

In addition to retaining a Technical Consultant, because of the potential for a private sector partnership requiring negotiations and for an in-depth financial analysis of the business case, City staff plan to hire a Financial Project Consultant through a competitive process as per the City's Purchasing By-law.

Under the direction of City staff, the role of the Financial Project Consultant will be to:

- 1) Confirm the financial assumptions and analysis undertaken in the initial EA Study;
- 2) Facilitate final financial evaluations of the proposals by City staff;
- 3) Confirm the business case for the design/build/operate model and counsel City staff with respect to potential negotiations with the DBO proponent.

Council can expect to see staff recommendations for awards of the Request for Proposals for both the technical and financial consultants in the near future.

To thoroughly review all of the various technical and financial alternatives, staff is proposing the creation of a Technical Steering Committee (TSC) to develop, review, and recommend the preferred alternative to Council. The TSC would include representation from members of Council and would act oversee all phases of the project and could continue into the operational phase, if necessary. The TSC would also participate in regular Council and public updates.

Once the technical and financial evaluations of the proposals are completed, and the results of efforts to qualify for federal/provincial funding are known, the extent of the City's financial contribution will be defined more clearly. At this point the recommended funding strategy will be defined and a staff recommendation brought forward for the consideration of Council.

Following Council authorization of the final selection of the project proponent, a detailed design and project execution plan will then be developed and made available.

City Staff will be available at the Council meeting to answer any questions.