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CITY OF **VANCOUVER**

ADMINISTRATIVE REPORT

Report Date: September 5, 2007
Author: Nicole Steglich
Phone No.: 604.940.3182
RTS No.: 6783
VanRIMS No.:
Meeting Date: September 18, 2007

TO: Vancouver City Council

FROM: General Manager of Engineering Services

SUBJECT: Demonstration Project for Composting Food Waste at the Vancouver Landfill

RECOMMENDATION

A. THAT, subject to the conditions set out in Recommendations B, C, D and E, Council approve a demonstration project to compost food waste with yard trimmings at the Vancouver Landfill Composting Facility.

B. THAT, subject to the conditions set out in Recommendations D and E, the General Manager of Engineering Services be authorized to negotiate an agreement with Metro Vancouver (formerly Greater Vancouver Regional District) to outline the responsibilities of each party for the demonstration project.

C. THAT, the Director of Legal Services be authorized to execute and deliver on behalf of the City all legal documents required to implement Recommendations A and B.

D. THAT, all such legal documents be on terms and conditions satisfactory to the General Manager of Engineering Services, Manager of Materials Management and the Director of Legal Services.

E. THAT, no legal rights or obligations will be created by Council's adoption of Recommendations A and B, above until such legal documents are executed and delivered by the Director of Legal Services.

SUMMARY

Many municipalities in Canada, the United States and Europe have or are considering food waste composting at centralized facilities to divert organic waste from landfills. The City of Vancouver currently composts yard trimmings, comprised of leaves, grass, and branches, at the Vancouver Landfill in Delta using a relatively low technology system involving outdoor static piles or windrows. The City and Metro Vancouver have the opportunity to conduct a trial to compost food waste with yard trimmings at the Landfill using a small scale version of a proven technology for organics composting known as the GORE Cover System. This proprietary technology is in use at more than 150 composting facilities in 25 countries, and produces high quality compost in 8 weeks while minimizing odours generated during composting.

The proposed demonstration project will provide data on the effectiveness and efficiency of the Gore Cover System under Vancouver conditions. This data will be used by City staff to evaluate the feasibility of a full-scale operation for yard trimmings alone or in combination with food waste, and to develop the appropriate procedure for future investigations of this technology and other options, with a subsequent report back to Council. The results will also assist Metro Vancouver in determining whether centralized composting is a technologically and economically feasible alternative for increasing waste diversion from landfills. All costs associated with the demonstration project will be borne by Metro Vancouver.

COUNCIL POLICY

Solid Waste

On December 8, 1992, Council approved the construction and operation of a yard waste composting facility at the Vancouver Landfill.

On May 3, 1994, Council agreed to support the Greater Vancouver Regional Solid Waste Management Plan (SWMP), which was later approved by the Ministry of Environment. The SWMP established Metro Vancouver's commitment to reduce solid waste by 50 percent, in part through reuse and recycling initiatives.

On February 14, 2006, Council approved a motion that staff report back on the process needed to take the next steps in waste reduction. Topics under investigation included organic composting, and the feasibility and cost of a municipal composting program.

On March 14, 2007, Council received "Report Back: The Next Steps in Waste Diversion" for information.

Food Policy

On February 15, 2007, Council unanimously adopted the Vancouver Food Charter. Suggestions in the Charter for creating a just and sustainable food system include being leaders in municipal and regional food-related policies and programs, and promoting composting and the preservation of healthy soil.

Sustainability Policy

On April 23, 2002, the City adopted a formal position, definition and principles on sustainability to guide the City's work considering social, economic and environmental impacts.

PURPOSE

The purpose of this report is to seek Council approval to conduct a demonstration project for composting food waste with yard trimmings at the Vancouver Landfill. This project will be conducted in partnership with Metro Vancouver over a period of approximately six months with the possibility of extension. Metro Vancouver will incur all costs associated with the demonstration project.

BACKGROUND

The City of Vancouver owns and operates the Vancouver Landfill in Delta, BC. In 2006, the Landfill received approximately 610,000 tonnes of municipal solid waste for disposal and 43,000 tonnes of yard trimmings for composting. The Landfill serves a population of approximately 960,000 people, which is roughly 40% of the population in Metro Vancouver.

Current Composting Operations at the Vancouver Landfill

Since 1995, a composting facility has been in operation at the Landfill. Yard trimmings, which include leaves, grass and branches and exclude food waste, are brought to the Landfill by residents or arrive from the Vancouver South Transfer Station via drop off and the curbside collection program in Vancouver. In 2006, the City's composting facility processed approximately 43,000 tonnes of trimmings into 25,000 cubic metres of compost.

The composting facility diverts yard trimmings from the Landfill, conserving airspace, while at the same time producing a useable and marketable end product. Finished compost is sold to residential gardeners, commercial landscapers, and organic farmers, as well as the City of Vancouver Parks Board and Engineering Services Greenways Branch. The City also donates compost to various organizations for community projects and gardens. Composting costs include capital, operating and transportation costs, and are comparable with those of existing commercial operations.

Yard trimmings are processed outdoors using a standard, low technology process known as static pile composting. Following receipt, yard trimmings are fed into a linear feed grinder. Ground material is placed into long piles, called windrows. A front end loader is used to turn the windrows periodically to maintain optimum temperature, and oxygen and moisture levels. After composting, the material is screened to 1.25 cm and sold.

Although the material currently composted at the Landfill consists of only yard trimmings, the Landfill's Operational Certificate issued by the Ministry of Environment authorizes the composting of other organic materials such as fruit and vegetable waste.

Food Waste Composting Using GORE Cover System Technology

Recently, Landfill staff visited the Cedar Grove Composting Facility in Everett, Washington. Cedar Grove utilizes the GORE Cover System to compost food waste with yard trimmings from the Seattle area and is one of the largest facilities in North America. By using the GORE Cover System, Cedar Grove processes approximately four times the amount of material as Vancouver's facility on the same size footprint.

The GORE Cover System technology has been in use for the past 15 years with 150 GORE Cover Systems currently installed in more than 25 countries. The first system in North America was purchased by the City of Edmonton in 2002 to increase the flexibility of their facility in processing biosolids and other select materials. There are currently seven GORE Cover Systems in use in North America, two of which are in Canada with Moncton, New Brunswick being the second.

The GORE Cover System utilizes several features that decrease processing time and reduce odours compared to static pile composting. Ground material is placed in windrows on top of forced air pipes, then covered with patented GORE covers. Monitoring equipment, located under the cover, is connected to a central control system. Parameters in each pile are monitored electronically, and the air flow is automatically adjusted to maintain optimal conditions. The air pipes, covers and control system balance heat and moisture levels in the piles while minimizing the generation and release of odourous compounds. Finished compost is produced within 8 weeks.

Organic Waste Diversion in Metro Vancouver

In 1994, Council agreed to support Metro Vancouver's Solid Waste Management Plan (SWMP) to reduce the amount of garbage sent to landfill by 50 percent. This region is currently achieving this goal with a waste diversion rate of 52 percent. As a result, Metro Vancouver is in the process of developing an updated plan, and the City has agreed to participate in the planning for and implementation process of said plan.

In 2006, the Metro Vancouver Board approved the 'Zero Waste Challenge', which encompasses the goals within the SWMP. Food waste has been identified as the next component of municipal solid waste for diversion. Food waste represents approximately 17 percent by weight of municipal solid waste disposed of as garbage each year[1]. This category is made up of approximately 8 percent 'backyard compostable' food (fruits and vegetables) and 9 percent 'non-backyard compostable' food (meats, breads, dairy, fats). The latter group of material is not commonly accepted for centralized food waste composting due to the greater potential for odour and vector attraction.

DISCUSSION

On January 8, 2007, an unsolicited proposal was submitted to the City and Metro Vancouver by Net Zero, a certified GORE Cover System supplier and operator, for a food waste composting demonstration project. The associated cost is a lump sum fee of $131,000 plus

[1] Technology Resources Inc. (2005). Solid Waste Composition Study. Available online: http://www.gvrd.bc.ca/recycling-and-garbage/pdfs/2004CompositionExecSummary.pdf

disbursements for the rental and operation of the GORE Cover System, and will be solely incurred by Metro Vancouver.

The proposed demonstration project minimizes risks and potential long-term operational challenges associated with centralized food waste composting by first evaluating the technology on a demonstration scale. The cost to purchase a full-scale food composting system, including construction and installation, is in the order of 5 to 10 million dollars.

An agreement with Metro Vancouver will outline the responsibilities of each party during the demonstration project. Metro Vancouver will contract with Net Zero and the City will provide staff time and equipment to grind and move food waste during the project.

One of the common concerns associated with large scale, centralized food waste composting facilities is odour. A number of facilities in the province, utilizing various different technologies for composting, have been closed due to odour complaints. The manufacturer of the GORE Cover System claims to manage odours during composting by trapping and reducing odourous emissions by up to 97% above the cover, compared to static pile composting. CH2M Hill conducted a source emissions evaluation of the Cedar Grove GORE Cover System and found that the covers reduced odour emissions by an average of 92% compared to emissions with no covers present.[2]

There is the potential for odour generation if there is a delay between when the food waste is received at the composting facility and when it is ground, placed in windrows and covered. For the demonstration project, food waste will be ground on receipt, then placed in a windrow and covered immediately to minimize odours at the front end of the process.

As part of the evaluation of this technology, the City and Metro Vancouver will conduct an odour study, a finished product analysis, and a project assessment report.

Delta municipal staff has been apprised of the demonstration project arrangements and have expressed an interest in the opportunity to explore alternatives for organics diversion from the municipal solid waste stream. To address any potential concerns that Delta may have regarding odour, Metro Vancouver will be required to terminate the project should this become a concern to the municipality or nearby residents.

A third party consultant will be retained by Metro Vancouver to assess odours generated during the demonstration project. Levels will be compared to those generated by the existing static pile composting process. Measurements will be taken above and below the GORE cover, at various distances around the site, as well as around ongoing operations such as grinding, windrow construction, cover removal, windrow relocation and screening.

Finished compost will be sampled and analyzed in accordance with the Ministry of Environment's *Organic Matter Recycling Regulation* to ensure product quality requirements are met.

A report assessing the performance of the GORE Cover System at the Vancouver Landfill will be completed by a third party consultant. The report will address odour generation and

[2] CH2M Hill. *Cedar Grove Composting GORE™ Cover System Testing Compost Pile No. 7 Days 7, 14, 21 and 28 Ammonia and VOC Testing Everett, Washington July,2005.* February 15, 2006.

mitigation, compliance with applicable regulations, operational issues, and final product quality. A subsequent staff report to Council will provide recommendations for future activities in food composting.

Advantages of the demonstration project for the City include the following:

- Diversion of approximately 750 tonnes of food waste from the Landfill resulting in airspace conservation.
- Investigation of a specific composting technology using Vancouver-specific conditions that may enable efficient processing of larger volumes of yard trimmings with or without food waste on the existing facility footprint. This data can be used to develop a generic plan of action for further food waste composting opportunities.

Depending on economic factors food waste composting may be aligned with the City's adopted definition of sustainability because it has the potential to increase the lifespan of the Vancouver Landfill. Utilizing finished compost for gardening, landscaping and agricultural activities in the region promotes a closed-loop process.

Following the completion of the demonstration project, staff will report back to Council with a summary of the contents of the project report findings and recommend alternative options and impacts.

FINANCIAL IMPLICATIONS

The costs associated with the Demonstration Project will be incurred by Metro Vancouver. Metro Vancouver's Waste Management Committee approved the food waste composting demonstration at their meeting on April 11, 2007 (Item 4.3) and committed to provide funding.

Application for a grant has been made by the City to the Federation of Canadian Municipalities (FCM). If successful, the grant will be used to offset the project costs to a maximum of 50% of the total project costs or approximately $65,000. Metro Vancouver has indicated that consideration would be given to utilize the grant to extend the demonstration project beyond 6 months to fully investigate seasonal impacts.

PERSONNEL IMPLICATIONS

Operation of the GORE Cover System will be conducted and monitored by certified staff from Net Zero. Incoming food waste will be ground using existing equipment at the Landfill and then placed into piles and covered. Finished compost will be screened at the end of the eighth week. Processing the materials in this manner occurs as part of regular operations at the Composting Facility conducted by City staff. The quantity of material processed for the demonstration project is insignificant compared to that routinely processed; therefore the labour required will not significantly increase working hours.

ENVIRONMENTAL IMPLICATIONS

No environmental impacts are anticipated to result from the demonstration project. The Composting Facility is contained within the Landfill's leachate collection and containment system.

The odour study will identify any potential sources of odours in a timely manner.

IMPLEMENTATION PLAN

An agreement is required with Metro Vancouver. Following Council approval, the equipment will take approximately two months to mobilize. The demonstration project is proposed to last for approximately six months (with the possibility of extension) followed by a project assessment report.

COMMUNICATIONS PLAN

The project assessment report will be made available to Delta and other interested parties. The demonstration project will also be highlighted during site tours, on the website and in the annual report.

CONCLUSION

The General Manager of Engineering Services recommends proceeding with the demonstration project for the GORE Cover System for composting food waste with yard trimmings at the Vancouver Landfill.

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