TORONTO

STAFF REPORT
INFORMATION ONLY

Emerald Ash Borer – Quarantine and Control

Date:	June 19, 2008
To:	Parks & Environment Committee
From:	Brenda Librecz, General Manager Parks, Forestry & Recreation Geoff Rathbone, General Manager Solid Waste Management Services
Wards:	All
Reference Number:	

SUMMARY

The purpose of this report is to update Council on the changes to business processes that are being implemented to comply with the Ministerial Order which regulates the treatment and movement of wood from ash trees inside and outside the City of Toronto and to explain the actions that are being taken by the City, the Canadian Forestry Service and the Canadian Food Inspection Agency (CFIA) to contain the spread of emerald ash borer (EAB).

The financial costs associated with additional processes that are required to comply with the order, and of treatments that are being undertaken to slow the spread of EAB in Toronto are discussed.

Financial Impact

Urban Forestry anticipates a cost of approximately $101,600 in 2008 including:

- $30,000 (year to date cost) to double tub grind all stockpiled (pre ministerial order) wood and wood chips in yards;
- $16,600 (year to date cost) for forestry staff to inspect and segregate regulated ash material from non-regulated yard waste material prior to June 2nd;
- $35,000 for a pesticide injection program;
- $20,000 to double tub grind wood waste containing ash. This cost is based on the estimate that ash trees make up about 6% of out total street tree population and on a modest increase in ash removals over time.

In order to comply with the Minister's order, there will be a financial impact of approximately $101,600.00 for this additional work.

Solid Waste Management anticipates an additional year end cost of approximately $1,741,000 for 2008 for the processing and segregating of regulated wood products in the Leaf and Yard Waste Collection program. Costs include the following:

- $326,000 for transfer;
- $690,000 for grinding;
- $280,000 for site and equipment rental;
- $420,000 for urban forestry inspections in the transfer stations;
- $25,000 for required site upgrades and maintenance.

Costs will be a result of the haulage and grinding of the material identified as ash material by urban forestry staff. Unless additional funding is provided, additional costs incurred in 2008 will be charged to the 2008 Solid Waste Management Services operating budget.

Financial impacts of emerald ash borer (EAB) have been outlined in the two previous reports as noted in the Decision History section of this report. However, future financial impacts of EAB are dependent on rate of spread and mortality of ash trees and therefore costs will be variable.

The Deputy City Manager and Chief Financial Officer has reviewed this report and agrees with the financial impact information.

DECISION HISTORY

A June 15, 2006 report titled "Potential Infestation of Ash Trees in the City of Toronto by the Emerald Ash Borer, All Wards", adopted by City Council at its meeting of July 25, 26 and 27, 2006, provided an update on the infestation of the emerald ash borer (EAB) in south western Ontario and the actions being taken by the Federal Government to control the invasive insect spread.
http://www.toronto.ca/legdocs/2006/agendas/committees/edp/edp060706/it017.pdf

A report titled "Forest Health Care – Invasive Exotic Pests", presented to the January 16, 2008 meeting of the Parks and Environment Committee and adopted by City Council at its meeting of January 29 and 30, 2008, provided an update on the known EAB infested areas in Toronto and the response by Urban Forestry and the Canadian Food Inspection Agency (CFIA) with regard to tree removal services and processing of same in regulated zones.
http://www.toronto.ca/legdocs/mmis/2008/pe/bgrd/backgroundfile-9640.pdf

On February 22, 2008, Strategic Communications released a detailed briefing note prepared by Urban Forestry and Solid Waste Management, identifying many of the financial impacts that would result from the Ministerial Order and this was distributed to all members of Council.

ISSUE BACKGROUND

In November of 2007, an infestation of emerald ash borer (EAB) was discovered in the Highway 404 and Sheppard Avenue area. On February 22, 2008, a Ministerial Order was imposed on the City of Toronto, prohibiting the movement of ash trees and firewood from Toronto. In order to comply with this order, City staff were required to revise operating procedures for managing yard waste, collecting private sector wood waste, and for pruning and removing ash trees in parks and on city road allowances.

On March 5, 2008, the Canadian Food Inspection Agency (CFIA), the Canadian Forest Service and the City of Toronto began removal of about 100 trees infested or potentially infested with EAB for research purposes. Information is provided to describe the purpose of this project on page 5 of this report under the heading titled Research.

COMMENTS

Leaf and Yard Waste Collection Program

Toronto collects on average 100,000 tonnes of yard waste per year. In 2008, Toronto collection of yard waste started in the week of April 7th and will continue through to December. Yard waste consists of leaves, tree branches (less than 7.5 cm in diameter), and hedge and plant trimmings. Yard waste materials are collected by compacting trucks without separation systems for wood and leaves and trucks are unloaded at transfer stations. To be compliant with the new federal quarantine regulations, effective April 2008 all woody material from ash trees had to be ground to 2.5 cm before leaving Toronto for composting sites.

Private Sector Wood Waste

As ash are estimated to make up only 6% of Toronto's urban forest, landscapers and arborists may work on many sites where they know that there is no ash wood. In these situations current practices for wood disposal will continue, including transport of wood waste out of Toronto.

Leaf and yard waste can continue to be delivered to city transfer stations, providing it is 7.5 cm diameter in size or less. The regular fee for leaf and yard waste is $75/tonne. Prior to 2008, transfer stations did not accept wood that was greater than 7.5 cm diameter in size, however as a result of the Ministerial Order which prohibits the movement of ash trees and firewood from Toronto, Solid Waste now accepts limited quantities of larger diameter wood products at the Dufferin Transfer Station. All wood waste received at Dufferin will be tub ground.

Where arborists have identified that ash wood is included or is potentially included in the mix of wood, brush or chips on their vehicles, the material is separated and sent for mechanical grinding. Private sector contractors or residents who bring large diameter wood to Dufferin are charged $100/tonne.
See http://www.toronto.ca/garbage/pdf/transfer_information_package.pdf for more information.

Procedures for the Movement of Leaf and Yard Waste out of Toronto

As per the Ministerial Order, regulated materials include all wood and branches from the genus *Fraxinus* (commonly known as ash). Yard waste that may include these regulated materials are delivered by City of Toronto Solid Waste Management (SWM) collection vehicles, contractors and private residents to transfer stations operated by SWM. There are currently five transfer stations that accept yard waste outside of the Asian Long-horned Beetle Regulated Area including Commissioners, Disco, Ingram, Scarborough, and Victoria Park.

Since initial start up of yard waste collection in spring 2008, City staff have worked with the Canadian Food Inspection Agency (CFIA) to establish a process for the inspection and separation of ash material in an effort to fulfill quarantine regulations and minimize grinding costs. The revised Standard Operation Procedures (SOP) approved by CFIA, became effective on May 23, 2008 and will result in a 94% reduction in the amount of yard waste that must be specially ground to meet the requirements of the Ministerial Order. This will result in savings of about $2.5 million in extra processing costs.

All leaf and yard waste collected by SWM will be delivered to one of the designated transfer stations. Residents and private contractors may also deliver leaf and yard waste to these transfer stations. All vehicles must weigh in and out of each transfer station and a record of these transactions is kept in the City's weigh scale transaction database.

All leaf and yard waste at transfer stations or at mechanical grinding sites within the City of Toronto will be inspected by Toronto urban forestry staff specifically trained for this operation. Material that is deemed "non regulated" will be shipped and processed under normal operating procedures with a signed inspection form (clearance certificate) detailing it has been inspected and is free from ash material.

All leaf and yard waste material identified as being "regulated material" will be segregated and subject to mechanical grinding. Grinding locations have been established inside the City of Toronto to mechanically grind leaf and yard waste to 2.5 cm diameter or less. After mechanical grinding, the City of Toronto must obtain movement certificates from the CFIA for the transfer of material outside the Emerald Ash Borer Regulated Area.

The Dufferin Transfer Station, inside of the Asian Long-horned Beetle Regulated Area, has been designated as the preferred site to accept larger diameter material including tree stem wood. All leaf and yard waste received at the Dufferin Transfer Station is subjected to mandatory grinding as required for the Asian Long-horned Beetle Regulated Area.

Solid Waste Management anticipates an additional year end cost of approximately $1,741,000 for 2008 for the processing and segregating of regulated wood products in the Leaf and Yard Waste Collection program.

The future spread of EAB in areas outside of Toronto cannot be predicted; hence SWM cannot say how long additional costs of mechanical grinding, haulage and inspection will

be added to the Transfer program. Even if the area of EAB infestation expands to the Greater Toronto Area and beyond, it is not clear whether Toronto will be subject to nested quarantines that would still require regulated ash wood to be ground prior to transfer from Toronto to processing locations.

Research

In March, the City of Toronto assisted the Canadian Food Inspection Agency (CFIA), and the Canadian Forestry Services with the removal of about 100 trees potentially infested with EAB. The objective of this research project was to determine optimal sampling methods for EAB by comparing intensive and extensive sampling methods and testing predictions regarding within-tree distributions from previous research.

The trees were located in the Highway 404 and Sheppard Avenue area and were predominantly on residential and commercial properties. Tree removal began on March 6, 2008, after *Notices to Dispose* were distributed by the CFIA to affected property owners.

The infested trees had evidence of exit holes and were assessed for evidence of EAB larvae or pupa after removal. Intensive methods of survey involved rigorous debarking of entire trees to confirm the presence or absence of EAB infestation. Adjacent ash trees with unknown infestation status were also removed for inclusion in the sampling. Of the trees removed and evaluated for infestation, most were determined to be infested with EAB.

The results of the research helped to define the spread of EAB in Toronto and provided critical information to determine the best protocol for early detection survey methods. This project has informed future survey protocols for Toronto and surrounding areas, improving the opportunity for monitoring the spread of EAB.

The CFIA funded the research program and reimbursed the City of Toronto on a full cost-recovery basis. The CFIA continues to offer compensation to replace trees which are ordered to be removed and/or destroyed. The maximum amounts are $300 for each tree removed and replaced on private property; $150 for each tree removed and replaced on public property; and $40 per tree in woodlot/ ravines. Although the CFIA ordered trees to be removed to facilitate the research project, it is highly unlikely that they will order any more infested trees in Toronto to be removed, and they do not provide compensation for replacement of trees that are removed without such an order.

Urban Forestry Survey

Subsequent to the completion of the research project, urban forestry staff have continued to survey for EAB in the surrounding area. As of June 11th, staff identified approximately 200 city-owned trees and 100 privately-owned trees that are infested or potentially infested. Given the significance of these trees to the community, and the fact that the beetles are no longer contained within the tree stems (flight began with the onset of warm

weather), Urban Forestry have proposed that the city-owned trees be injected with TreeAzin pesticide to control the spread of the insect. Privately owned trees will not be treated by the City of Toronto, but owners of these trees may wish to hire qualified arborists to treat their trees with pesticide as well. The plan to notify residents is described under Communications on page 8 of this report.

Pesticide Use

The Pest Management Regulatory Agency has recently granted an emergency registration for tree injection application of TreeAzin for use against EAB. Urban Forestry has decided to test this product on approximately 200 city-owned trees in 2008. The success of this injection program will be evaluated by staff with a view to possible development of an expanded program to treat and attempt to protect city trees.

Toronto Public Health was asked to comment on available environmental and health information on TreeAzin to determine whether its use may be appropriate against the EAB infestation in Toronto. TreeAzin contains azadirachtin, a naturally occurring substance found in the Neem tree. The pesticide is formulated to be injected into tree trunks and blocks the insect's production and release of hormones involved in metamorphosis. Azadirachtin is an eye irritant and potential skin sensitizer, meaning that it may cause an allergic response when in direct contact with skin. Large concentrations of azadirachtin may cause fish mortality if it reaches waterways. However, tree injection minimizes the likelihood of any adverse effects on applicators, the general public, or non-target organisms.

The Canadian Forestry Service (CFS) has determined that the number of exit holes made by EAB is significantly reduced in treated large trees. For research purposes, the CFS has injected Neem formulation (TreeAzin) into ash trees using the Ecojet System from BioForest. Well mulched and watered trees take up the chemical injection readily, within minutes, but drought stressed trees and those scarred by mechanical damage may take several hours to receive the chemical making the application of this pesticide more expensive.

The following criteria for treatment as suggested by the University of Wisconsin will be adhered to by Urban Forestry:

- Use within 16-33 km from a confirmed EAB infestation.
- Use on trees with a trunk diameter of less than 25 cm.
- Do not use if numerous untreated and infested trees are nearby. Insecticides and other controls are less likely to protect trees due to the pressure of a large population of EAB beetles.
- If trees are showing EAB symptoms, insecticides will be less effective and removal is a better option for control.

Insecticides may serve to delay tree death, but it is not yet clear whether they ensure tree survival in the long term. Some studies conducted over multiple years revealed that EAB infestations continued to increase despite ongoing treatment programs. Insecticides are

not effective in eradicating EAB infestations, which is why they have not been used as an eradication tool in Canada or the United States. Research suggests that the best control can be achieved when insecticide treatments are started in the earliest stages of infestation before visible symptoms are present or possibly the year before trees are infested. Insecticide treatments must be repeated every second year, causing injuries from injection sites that may not be sustainable in small trees. For small trees, it is more cost-effective to remove and replace a tree rather than treating it.

TreeAzin may offer a means to protect high value trees from attack and to slow the spread of infestation in the early stages. Given the limited data demonstrating successful long term protection, the limitations of application to unhealthy trees or to large diameter trees, and the cost, urban forestry staff do not recommend treatment of large numbers of street trees. Using TreeAzin on a trial basis will give city staff an opportunity to evaluate effectiveness first hand. Urban forestry staff recognize the value of continuing the research that has been initiated by others for TreeAzin.

Urban Forestry has purchased one Ecoject injection kit at a cost of $3,000. The TreeAzin product required to treat 200 trees is $27,000. The labour cost to do the injections is approximately $5,000, for a total cost of $35,000, which will be charged to the 2008 forestry maintenance operating budget.

Urban Forestry Ash Tree Pruning and Removal Operations

Starting December, 2007, Urban Forestry assigned dedicated crews to complete outstanding work orders for any ash tree pruning or removal. This enabled the separation of all wood waste materials containing ash wood from other types of wood in order to keep tub grinding processing costs as low as possible.

Prior to EAB being identified within Toronto's borders, urban forestry staff conducted limited surveys for signs of EAB when pruning or removing ash trees. Now that EAB is known to be in Toronto and with the results of the research study, staff that prune or remove ash trees have been directed to collect 3 samples, 5-15 cm diameter, from the middle upper crown, on the south side of the tree. These samples are taken to a laboratory at Emery Yard where they are debarked to look for signs of EAB presence.

When Urban Forestry learned of the EAB infestation within City of Toronto borders, there were stockpiles of wood waste in several yards including Beare Road, Centennial Park, Unwin, Rockcliffe and Toronto Island. It was not possible to separate the ash wood from other wood in these piles. The added cost to double tub grind all stockpiled wood and wood chips in those yards was approximately $30,000. The estimated annual impact of double tub grinding all separately piled ash wood waste (wood and chips) is $20,000 per year, based on the estimate that ash make up about 6% of our total street tree population, and on a modest increase in ash removals over time.

The requirement to stock pile and grind all wood chips resulting from dedicated ash maintenance and emergency storm cleanup, combined with the need to segregate ash

waste from other wood waste, may result in a shortage of space in existing compounds. For a compound to be effectively used for wood grinding, it needs to be 2.5 ha in size. Some of the existing yards used by Urban Forestry at Nashdene, Beare Road, Unwin, Centennial Park and Emery are smaller than 2.5 ha, and possible expansion or relocation of operations may have to be considered. Urban Forestry staff have recently been working with Waterfront Toronto to find a new site to replace yards at Unwin Avenue (used for wood processing and storage) and Garrison Road (a nursery stock staging site for seasonal planting) given that new uses are planned for these sites.

Communications

Public information has been posted to the Urban Forestry and Solid Waste Management websites. Changes to the websites are being made as new information is made available.

Two information meetings have been held with the local tree care industry ensuring that they are aware of the need to separate and process ash materials from other tree maintenance or removal generated wood.

City of Toronto Urban Forestry staff attended a meeting held by the Ontario Commercial Arborist Association on March 28th, and presented information about emerald ash borer biology, spread, regulation and Toronto based research. Approximately 50 people were in attendance at this meeting. Joe Meating from Bioforest Technologies also presented information about TreeAzin and Ecoject at the same meeting.

Toronto Parks, Forestry and Recreation organized a second meeting, titled "Emerald Ash Borer Management Issues in the City of Toronto", held at the Northwood Community Centre Tuesday, May 13th. Speakers included Ken Marchant, Canadian Food Inspection Agency; Jozef Ric, City of Toronto Urban Forestry; Derek Angrove, City of Toronto Solid Waste Management; and Joe Meating, Bioforest Technologies. Approximately 30 people, mainly from the private arboriculture industry, attended this meeting.

Urban Forestry held training sessions with staff in forestry operations yards, and with private companies. Urban forestry staff also attended a meeting of the North York Horticultural Society to present information about EAB. Stakeholders continue to be updated as new information becomes available.

Toronto Parks, Forestry and Recreation plan to hold a public meeting in late June, in the known infested area of Toronto to present plans to slow-the-spread of EAB using pesticide injection and tree removal. Staff will help residents to identify which trees are ash trees and to understand what they can do as property owners to assist in efforts to control the spread of EAB.

Urban Forestry, together with Solid Waste, will implement a city-wide communications plan to inform the public about the impact of EAB on Toronto's ash trees and how to respond to this pest. The communications plan will identify measures that the public can undertake to more effectively contain the movement of EAB (e.g. avoid firewood transfer

and planting of ash) and will promote tree planting as a means of replacing trees that are lost to this invasive pest.

Conclusions

Urban Forestry and Solid Waste Management support the slow-the-spread program of control for EAB, and will promote effective survey, pesticide treatment, removal of known infested trees and appropriate treatment of ash wood as part of our EAB management program. Infested trees harbour the bulk of the beetle population that will emerge to infest new trees. As EAB spreads, it is expected that the numbers of dead trees to be removed and replaced will exceed existing resources within Urban Forestry, and additional funds will be required, however at this time there is no model to predict the mortality and subsequent removal rates of ash trees.

Similarly, Solid Waste Management cannot predict the spread of EAB in areas outside of Toronto, and therefore they cannot project the length of time that additional costs will be incurred to comply with the Ministerial Order.

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SIGNATURE

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LIST OF ATTACHMENTS

Attachment 1. Map of area where ash will be treated with pesticide for control of EAB

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