Emerald Ash Borer Update Presentation

General Committee

November 19, 2012

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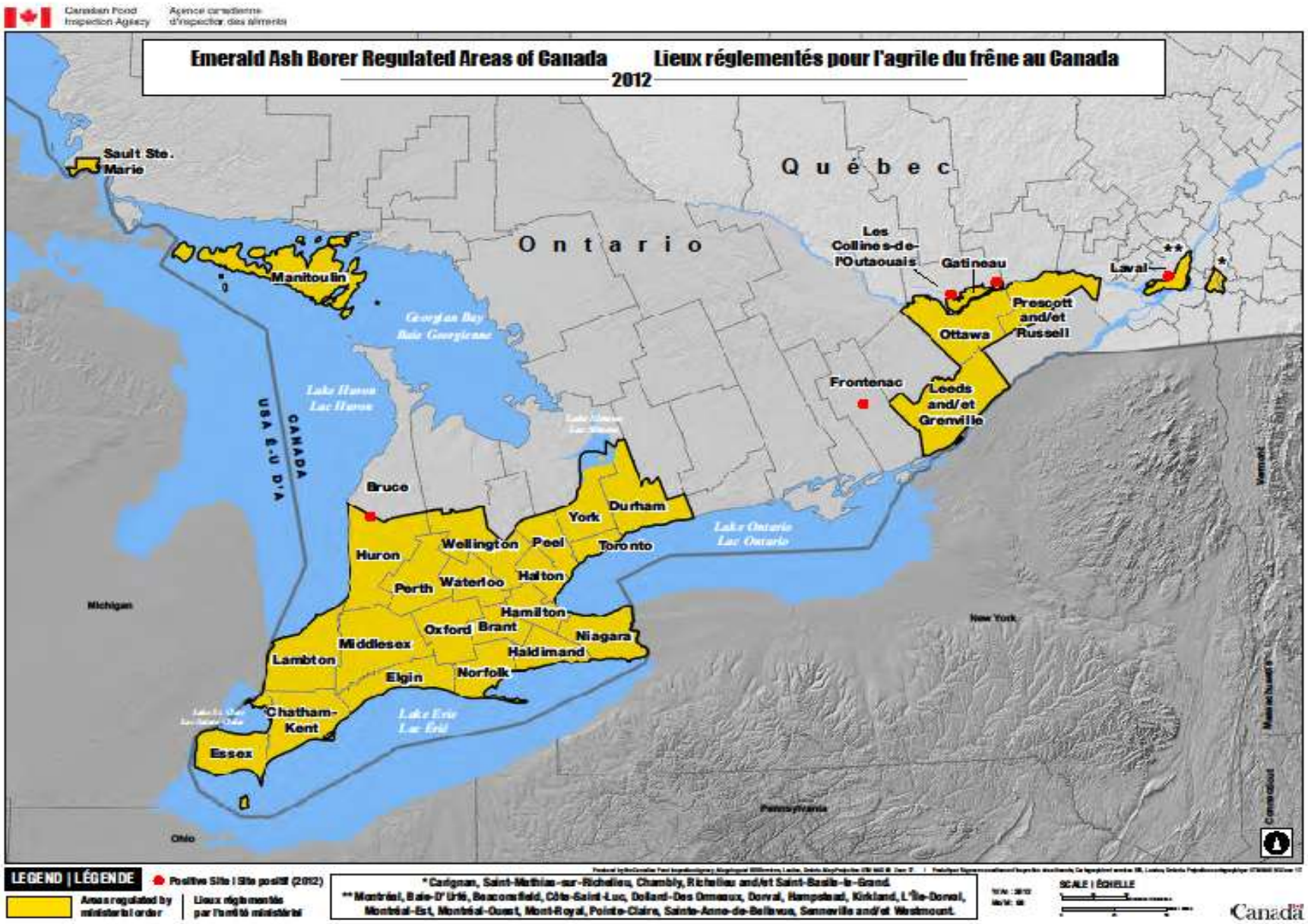
AGENDA

- Background
- Inventory Results
- Management Plan
  - Treatment Program
  - Removal Program
  - Replanting Program
  - Maintenance Program
  - Monitoring Program
- Financial Impacts
- Next Steps

EAB Background

- Early 2008 roughly mapped Ash locations
- 2011 – Joint Technical EAB Work Group (Region and 9 area municipalities)
- Survey undertaken in partnership with York Region

  —Purpose to determine the presence of the EAB
- In early July 2011, the Canadian Food Inspection Agency (CFIA) confirmed the presence of the EAB in Markham.

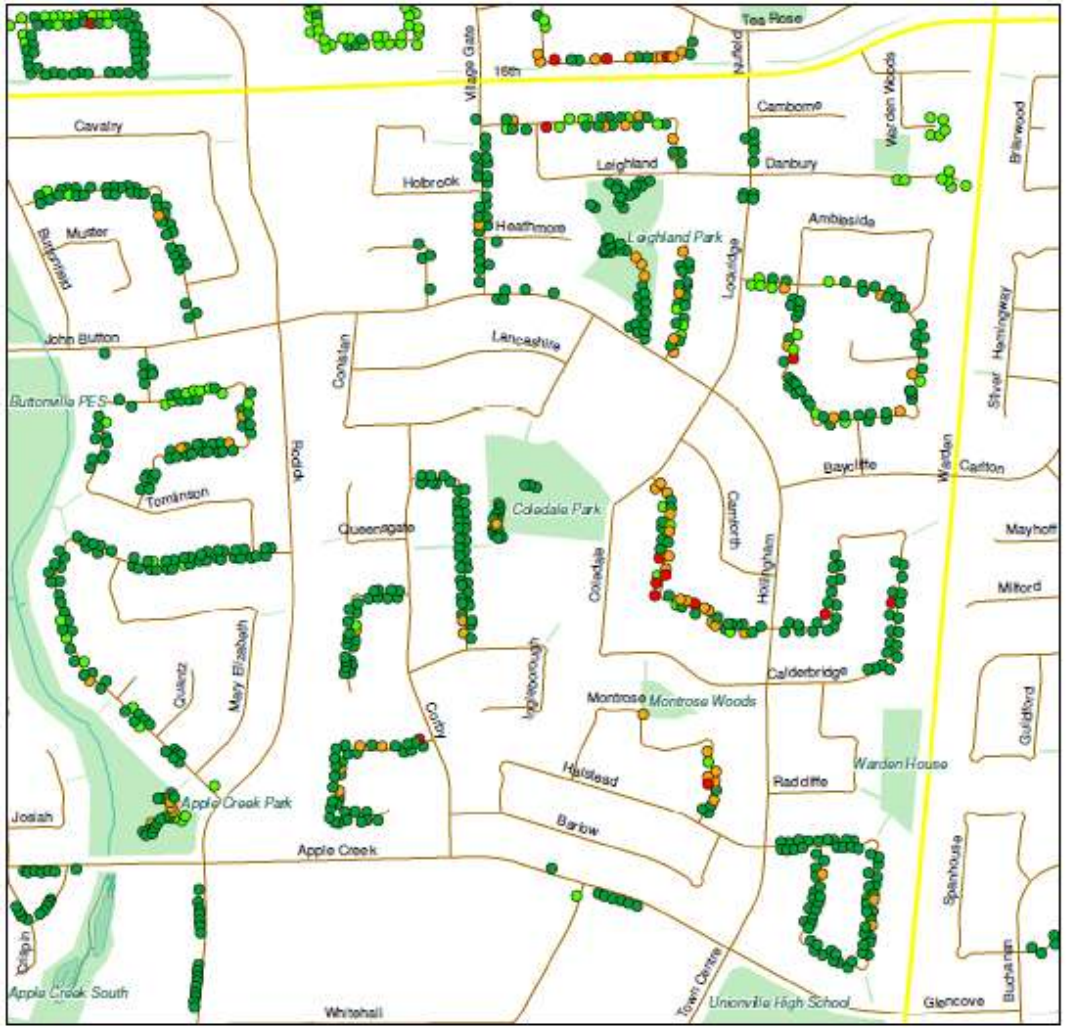

Canadian Food Inspection Agency
Agence canadienne d'inspection des aliments
Emerald Ash Borer Regulated Areas of Canada
Lieux réglementés pour l'agrile du frêne au Canada
2012
Québec
Ontario
Sault Ste. Marie
Manitoulin
Georgian Bay
Baie Georgienne
Lake Huron
Lac Huron
USA E.-U D'A
CANADA
Michigan
Ohio
Pennsylvania
New York
Vermont
Bruce
Huron
Perth
Wellington
Waterloo
York
Peel
Toronto
Durham
Halton
Hamilton
Oxford
Brant
Niagara
Haldimand
Middlesex
Lambton
Elgin
Norfolk
Chatham-Kent
Essex
Lake Ontario
Lac Ontario
Lake Erie
Lac Erie
Les Collines-de-l'Outaouais
Gatineau
Ottawa
Prescott and/et Russell
Frontenac
Leeds and/et Grenville
Laval
LEGEND | LÉGENDE
Positive Site | Site positif (2012)
Areas regulated by ministerial order
Lieux réglementés par l'arrêté ministériel
* Cardinal, Saint-Mathias-sur-Richelieu, Chambly, Richelieu and/et Saint-Basile-le-Grand.
** Montréal, Baie-D'Urfé, Beaconsfield, Côte-Saint-Luc, Dollard-Des Ormeaux, Dorval, Hampstead, Kirkland, L'Île-Dorval, Montréal-Est, Montréal-Ouest, Mont-Royal, Pointe-Claire, Sainte-Anne-de-Bellevue, Senneville and/et Westmount.
SCALE | ÉCHELLE
Canada

Ash Tree Inventory

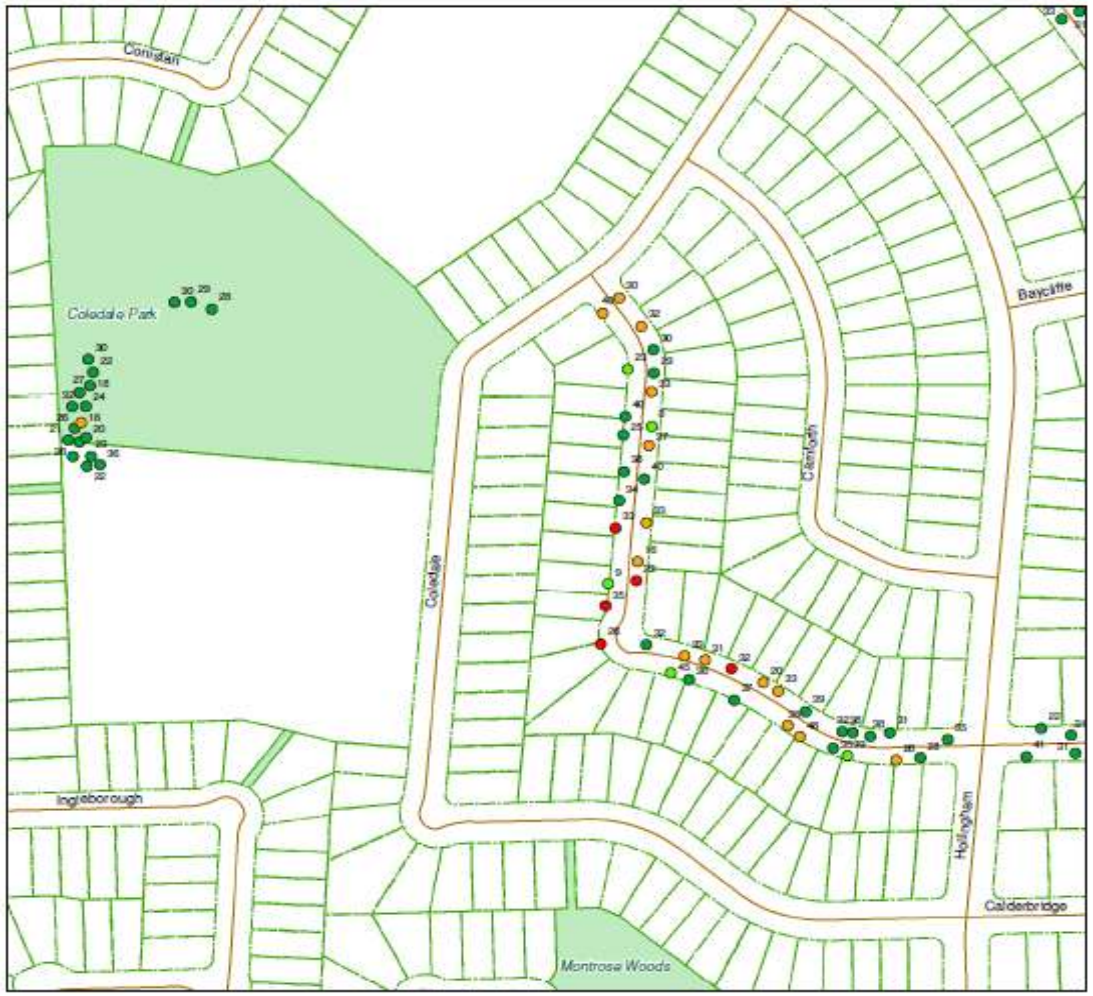
- **Completed primary inventory and preliminary health assessment – end of July 2012**
  - **Inventory included all Ash street trees and manicured park areas**
  - **Did not include valley lands and woodlots.**
- **Completed Secondary health assessment – end of August 2012**

Inventory Map

Inventory


Tea Rose
Village Gate
16th
Nuffield
Camborne
Warden Woods
Briarwood
Cavalry
Leighland
Danbury
Holbrook
Heathmore
Leighland Park
Ambleside
Muster
Burkeyfield
John Button
Lancashire
Longridge
Silver Hemingway
Buttonville PES
Tomlinson
Bayliffe
Carlton
Coledale Park
Queensgate
Mayhoff
Milford
Calderbridge
Montrose
Montrose Woods
Warden House
Raddiffe
Halstead
Barlow
Josiah
Apple Creek Park
Apple Creek
Apple Creek South
Whitehall
Unionville High School
Glencove
Guildford
Spainhouse
Buchanan
Legend
Town Trees
Condition
Good
Some Decline
Significant Decline
Dead
Parks
Notes:
Primary conditions survey:
May 9, 2012 to July 27, 2012
Secondary conditions survey:
July 31, 2012 to August 23, 2012
N
0 50 100 200 300
Meters
Ash Tree
Conditions Survey
Plot Date:October 11, 2012

Detailed Inventory - Street Level



MARKHAM Operations

Legend

Town Trees

Condition

- Good
- Some Decline
- Significant Decline
- Dead

Parks

Notes:
Tree diameter (DBH) shown.

Primary conditions survey:
May 9, 2012 to July 27, 2012
Secondary conditions survey:
July 31, 2012 to August 23, 2012

N

0 50 100
Meters

Ash Tree Conditions Survey

Plot Date:October 11, 2012

MARKHAM

Inventory Condition Assessment Ratings

- **Total Ash Trees Located on Boulevards and Park Open Spaces – 16,738**
- **Health Condition Assessment based on a the following criteria**

Rating Scale	Condition	Criteria
1	Good	More than 80% foliage
2	Some Decline	Between 50% and 80% foliage
3	Significant Decline	Less than 50% foliage
4	Dead	

Ash Tree Health Assessment

Health Rating	Primary	Secondary
1: Good	3753	1560
2: Some Decline	11285	13434
3: Significant Decline	1527	1581
4: Dead	159	163

Size (DBH) and Health Assessment of all Ash Trees

DBH (cm)	Health Assessment Condition Rating				Total # of Trees
	Good	Some Decline	Significant Decline	Dead	
< 20	1030	5097	610	108	6845
20 to 29	380	3825	467	29	4701
30 to 39	114	3083	363	19	3579
40 to 49	32	1161	110	5	1308
50 to 59	4	207	25	1	237
> 60	0	61	6	1	68
Total # of Trees	1560	13434	1581	163	16738

Tree Structure

Tree Structure

Tree Structure

EAB Management Plan

Objectives of the Management Plan:

- Addresses only City owned trees
- Tree removal on private property is the responsibility of property owners
- Support residents by providing information and educational materials
- Protects and restores public realm in neighbourhoods
- Preserve healthy trees
- Maintains and manages tree canopy
- Trees are replaced on a 1 to 1 basis
- Immediately address any hazards and/or safety issues

EAB Management Plan

Elements of the Management Plan:

- **The Plan will make recommendations for:**
  - **Treatment Program**
  - **Removal Program**
  - **Replanting Program**
  - **Maintenance Program**
  - **Monitoring Program**
- **Davey Resource Group retained to assist in preparing the EAB Management Plan.**

Treatment Program

- **Trees rated as "Good Health" and greater than 20 cm Diameter at Breast Height (DBH) will be treated (based on industry standards)**

DBH (cm)	# Trees
20-29	380
30-39	114
40-49	32
50-59	4
Total	530

Treatment Costs

- **Based on the DBH of the treatable Candidates:**

# Trees Treated	Total DBH (cm)	Treatment Cost/cm	Total Cost per Treatment
530	17270	$7.00	$120,890*

*** recommended every two years – 3 treatments**

2012 Ash Tree Treatment Pilot Program

- **More than half of the 35 ash trees in Ashton Meadows Park were treated with a product called Tree-Azin.**
- **Tree-Azin may help to control EAB and must be injected into the tree every two years.**
- **Other approved products for EAB control:**
  - **Confidor 200 SL**
  - **ACECAP 97**

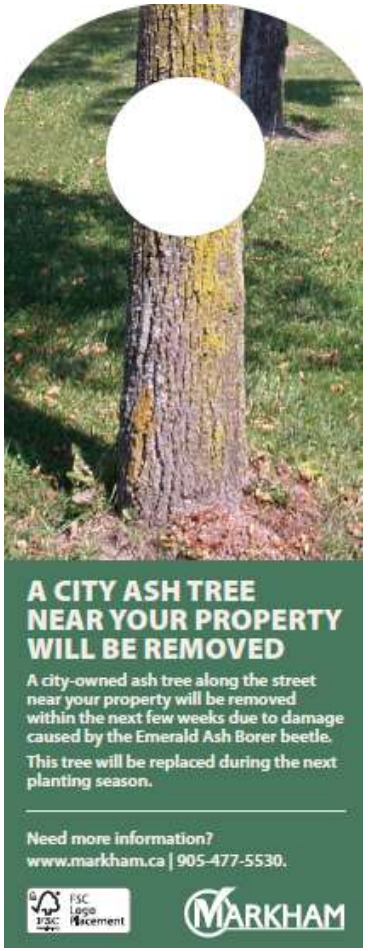
Removal Program

Remove trees that are inventoried as dead* or significant decline, leave trees with greater than 50% foliage standing

- **Based on most current inventory and condition assessment:**
  - **163 trees were inventoried as dead (Removals have begun)**
  - **1581 trees showed significant decline and will likely be removal candidates for 2013**
- **Additional trees may need to be removed, based on results of Annual Monitoring Program**
- **Trees are living organisms, rates of decline vary significantly**

***Note: Any trees that are hazardous will be removed immediately**

Door Hanger – Removal Notice for Residents



MARKHAM

Forecasted Removal Costs

DBH (cm)	# of Trees	Total Removal Cost (including stumping and disposal)
< 20	6845*	$ 1,484,600
20 to 29	4321	$ 1,894,000
30 to 39	3465	$ 2,006,500
40 to 49	1276	$ 935,700
> 50	301	$ 284,700
Totals	16208	$ 6,605,500

*** As these trees grow to exceed 20 cm DBH, they may become candidates for treatment pending results of the annual monitoring program.**

Wood Disposal and Utilization

Where will the wood go?

How will the wood be used?

Wood Re-use and Recycling

- All removals to be chipped and ground to eliminate EAB larva and reduce risk of further spread
- Requires a central disposal site with a tub-grinding operation within the quarantine area (York Region)
- Recycle Mulch – pathways, shrub beds, tree plantings, and mulch give away
- Anticipated length of program – 5 years to meet storage needs
- Currently storage capacity is a concern
- Recommend temporary storage/tub grinding site be established on City owned lands located near Warden and Elgin Mills

Planting Program

- Replacement program based on a 1 to 1 basis – one new tree planted for every tree removed
- City standard for new tree planting will be 60 mm DBH stock
- Tree species to be determined by Forestry staff based on diversity/inventory within planting area

- 2013 Planting Program
  - Spring planting 163 trees
  - Fall planting to be determined

- Estimated Costs:
  - Tree purchases – 60 mm City Standard $200/unit
  - Planting cost - $100/tree (based on current contract price)

Maintenance Program

- **Watering 3 to 5 times per year – Minimum 3 year program**
- **Remove tree stakes (after 1 year), inspect and mulch**
- **Structural Pruning – within initial 3 to 5 year growth**

Annual Monitoring Program

Required to re-assess the health of the ash trees as performed in 2012:

- **Assess treated trees**
- **Assess decline from previous year**
- **Catalogue removals/replacements for the year**
- **Document results**

Continue with completion of inventory capture for all remaining tree species, other than Ash, in parks and boulevards areas

Projected 2013 Costs

- **Treatment Program: $120,000**
- **Removal to Replacement: Estimated removals for the 2013 season (1744 to 2500 trees) based on estimated $700/unit for an estimated – $1.22 to $1.75M**
- **Maintenance Program – in house for 2013**
- **Monitoring and Inventory Program: $122,000**

2013 estimated total projected cost: $1.5 to 2.0M

Anticipated Total Program Cost

- **Treatment Program: $360,000 (3 treatments)**
- **Removal to Replacement: Total cost for removal, stumping and disposal for all ash trees (16208) based on estimated $700/unit – $11,350,000**
- **Multi-year maintenance program including watering, mulching and pruning – $700,000**
- **Five year monitoring and inventory program – $600,000**

Total anticipated cost of EAB Management Program	**$13,100,000**
Previous 2011 estimated for boulevard trees only – 14,000 @ $700/tree re and re	**$9,800,000**

Next Steps

- Implementation of EAB Management Plan
- Continue implementation of communication strategy
- Ongoing Monitoring – Health Assessment
- Annual Update Reports to Council
- Finalize Wood Re-cycling Management Process
- Review and Update EAB Management Plan as Required

QUESTIONS ?