Overview

Integrated Waste Management System

Context

SWMMP Review
- Introduction
- Process
- Public Consultation
- Findings
  - Overview of existing system
  - Facilities
  - Gap Analysis
  - Strategic Directions
  - Systems Analysis
  - Preferred System

Steering Committee Guiding Principles

Steering Committee Recommendations

Overview of Report PW12004a Recommendations
7.1

Integrated Waste Management System

Master Plan

Customers
- Curbside Collection
- Multi-Residential
- Eligible Commercial
- Schools
- Civic Buildings
- Drop-off
- Source Reduction

65% Diversion

Collection System
What:
- Recycling
- Organics
- Garbage

How:
- Public/Private service delivery

Processing Facilities
- Recycling (Materials Recycling Facility)
- Organics (CCF)
- Leaf & Yard Waste
- Community Recycling Centres (CRCs)
- Transfer
- Disposal

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Status of the 2001 SWMMP

Many of the recommendations have been implemented:

- Preservation of landfill capacity, operational improvements
- Improved residential waste diversion from 17% to 49%
- Central Composting Facility
- Materials Recycling Facility upgrades
- Community Recycling Centres
- 3-stream collection system
- Continued promotion and education
- Lobbying of senior governments

What's Remaining?

Outstanding recommendations from the 2001 SWMMP:

- Long term landfill capacity
- 65% waste diversion by 2008 and later 2011
- State-of-the-art Materials Recycling Facility
- Energy from Waste
- User Pay
The SWMMP Review Process

Phase 1
Jul – Oct '10
Design Consultation Process

Phase 2
Oct '10 – Feb '11
Guiding Principles, Goals & Objectives

Phase 3
Jan – Apr '11
Determine & Evaluate Needs

Phase 4(a) & 4(b)
Apr – Sep '11
Identify & Evaluate Options
Prepare Implementation Plan

Phase 5
Oct '11 – Mar '12
Prepare 2012 SWMMP

- 25-year planning period

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Public Consultation – Overview

- Consultation process designed in Phase 1
- Surveys
  - Stakeholder scan, two online surveys
- Project website
  - Project e-mail, library, project updates
- Community Dialogue
  - Engagement of stakeholders
  - Stakeholder list, e-mail updates, meetings with community groups/councils, displays at events
- Workshops
  - Two public workshops, staff workshop

Public Consultation - Surveys

- Stakeholder Scan:
  - Interviews with City staff, Waste Reduction Task Force members
- Online survey on Guiding Principles, Goals and Objectives
  - Completed for Phase 2
  - 49 surveys completed
- Online survey on draft SWMMP
  - February 3 to March 7
  - 138 surveys completed
  - Draft SWMMP and survey promoted with facebook ad
    - February 7 to February 24
    - 2.9 Million impressions, 628 clicks to project website
7.1

Public Consultation – Project Website

- Central site to facilitate engagement
- Included project library, updates, library, hosted online surveys, dedicated e-mail address
- About 60 separate members of public provided feedback through dedicated e-mail address
- Website metrics:
  - 3,933 visits
  - 2,984 unique visitors
  - 11,231 page views


Public Consultation – Community Dialogue

- Community Associations
  - Met with 9 community groups in Phase 2
  - Included direct outreach to approximately 115 individuals

- Stakeholder Contact List
  - 149 individuals, businesses, and community organizations
  - 12 project update e-mails distributed

- Community Groups & Community Councils
  - Presentations delivered to three community groups and to Community Councils of Ancaster, Flamborough, Dundas
  - Met with Environment Hamilton

- Displays at events
  - Fall Garden & Chrysanthemum Show
  - Upwind Downwind Conference
Public Consultation – Workshops

- Public Workshop on Guiding Principles, Goals and Objectives (Jan 2011)
- Public Workshop on Gap Analysis and Options (April 2011)
- Council Committee presentation (July 2011)
- Staff workshop on Possible Options (Aug 2011)

The SWMMP Review Process

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Prepare Implementation Plan

Phase 5
Oct ’11 – Mar ’12
Prepare 2012 SWMMP
Phase 2 Consultation

- Community input sought on Guiding Principles, Goals and Objectives
- Tools used:
  - Meetings with community groups/residents' associations
  - Public workshop on Guiding Principles, Goals and Objectives
  - Project website
    - Discussion questions
    - Survey form
    - Workshop materials

Guiding Principles

1. The City of Hamilton must lead and encourage the changes necessary to adopt the principle of Waste Minimization. (new)

2. The Glanbrook Landfill is a valuable resource. The City of Hamilton must minimize residual waste and optimize the use of the City's diversion and disposal facilities. (updated)

3. The City of Hamilton must maintain responsibility for the residual wastes generated within its boundaries. Inter-regional facilities will be considered. (updated)
### Goals and Objectives

- Goals and objectives arranged according to three pillars of sustainability

![Diagram showing three pillars of sustainability: Society, Economy, Environment]

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### The SWMMP Review Process

- **Phase 1**
  
  Jul – Oct '10
  
  Design Consultation Process

- **Phase 2**
  
  Oct '10 – Feb '11
  
  Guiding Principles, Goals & Objectives

- **Phase 3**
  
  Jan – Apr '11
  
  Determine & Evaluate Needs (Gap Analysis)

- **Phase 4(a) & 4(b)**
  
  Apr – Sep '11
  
  Identify & Evaluate Options
  Prepare Implementation Plan

- **Phase 5**
  
  Oct ’11 – Mar ’12
  
  Prepare 2012 SWMMP

- 25-year planning period
Gap Analysis

- Used to determine and evaluate Hamilton's waste management needs
- Examined Hamilton's current waste management system
- Reviewed capacity of waste management facilities
- Prepared waste composition model
- Identified potential to increase diversion

Material currently diverted ➔ gap ➔ Material that could potentially be diverted

Gap Analysis – Facility Review

- Leaf and yard waste composting facility – sufficient capacity
- TS/CRC’s - sufficient capacity, although have space limitations from operations perspective (e.g., traffic flow)
Gap Analysis – Facility Review

Estimated Remaining Landfill Capacity

- 65% WD by 2023
- Status Quo

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Current Diversion and Disposal Rates

Residential Diversion Rate: 49%
Tonnes diverted: 106,200
Tonnes disposed: 110,700

Single-Family
- Diversion rate: 55%
- Tonnes diverted: 98,400
- Tonnes disposed: 82,100

Multi-Residential
- Diversion rate: 21%
- Tonnes diverted: 7,700
- Tonnes disposed: 28,600

Reaching 65% diversion = 36,000 additional tonnes out of disposal

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Gap Analysis – Current Diversion

Waste Diversion Rate vs. Tonnes Disposed

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Gap Analysis – Diversion Potential

- Based on existing programs and optimum capture rates (85% for blue box and organics and 75% for other wastes)

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Gap Analysis

Questions?

The SWMMP Review Process

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Phase 5
Oct ’11 – Mar ’12
Prepare 2012 SWMMP

• 25-year planning period
Community People Processes Finance

Identifying Waste Management Options

Guiding Principles

Goals and Objectives

Waste Management Options for Hamilton

Gap Analysis

Phase 4 Consultation

- Community input sought on suitable waste management options for Hamilton
- Tools used:
  - Public workshop on Gap Analysis and Options
  - Project website
    - Workshop materials/background material
    - Discussion questions
  - Workshop with City staff
  - Meetings with community groups to discuss proposed options

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Strategic Directions

SWMMP Directions

<table>
<thead>
<tr>
<th>Education and Enforcement</th>
<th>Waste Minimization and Diversion Opportunities</th>
</tr>
</thead>
<tbody>
<tr>
<td>Service Level Modifications</td>
<td>Multi-Municipal Collaboration</td>
</tr>
</tbody>
</table>

Approaches to Waste Diversion

Status Quo

- Community
- People
- Processes
- Finance

Reduce Reuse

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Approaches to Waste Diversion

Enhanced

Status Quo +

Maximized

Status Quo +
7.1

Approaches to Waste Disposal

- Continue with Glanbrook Landfill
- Examine Alternative Disposal Technologies (ADT)
  - Waste Conversion (e.g., incineration, gasification, pyrolysis, etc)
  - Mechanical/Biological Treatment (e.g., waste stabilization, front-end processing/sorting)

System Performance – Waste Diversion

<table>
<thead>
<tr>
<th>Waste Diversion Scenario</th>
<th>Estimated Diversion Rate by 2021/ Landfill Closure Date</th>
<th>2012 – 2036 Estimated Total Cost for Diversion</th>
</tr>
</thead>
<tbody>
<tr>
<td>Status Quo</td>
<td>55% 2040</td>
<td>$642 M</td>
</tr>
<tr>
<td>Enhanced</td>
<td>65% 2044</td>
<td>$710 M – $733 M</td>
</tr>
<tr>
<td>Maximized</td>
<td>75% 2048</td>
<td>$723 M – $750 M</td>
</tr>
</tbody>
</table>

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### System Performance – Waste Disposal

<table>
<thead>
<tr>
<th>Waste Disposal Scenario</th>
<th>Estimated Glanbrook Closure Date</th>
<th>2012 – 2036 estimated total cost (Disposal)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Glanbrook</td>
<td>2044</td>
<td>$501 M</td>
</tr>
<tr>
<td>ADT</td>
<td>2053</td>
<td>$583 M</td>
</tr>
</tbody>
</table>

**Assumptions**

- 65% waste diversion by 2021
- ADT would take until at least 2027 to be operational (7 year planning process, 3 year construction)

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### Summary of System Costs

<table>
<thead>
<tr>
<th>Scenario</th>
<th>Diversion Component Cost</th>
<th>Disposal Component Cost</th>
<th>2012-2036 Total System Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Status Quo + Landfill (Glanbrook Landfill)</td>
<td>$642M</td>
<td>$592M</td>
<td>$1,234M</td>
</tr>
<tr>
<td>Enhanced + Landfill</td>
<td>$710M</td>
<td>$501M</td>
<td>$1,211M</td>
</tr>
<tr>
<td>Enhanced + ADT by 2027</td>
<td>$710M</td>
<td>$583M</td>
<td>$1,293M</td>
</tr>
<tr>
<td>Maximized + Landfill</td>
<td>$750M</td>
<td>$455M</td>
<td>$1,206M</td>
</tr>
<tr>
<td>Maximized + ADT</td>
<td>$750M</td>
<td>$539M</td>
<td>$1,289M</td>
</tr>
</tbody>
</table>

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The SWMMP Review Process

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Design Consultation Process

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Prepare Implementation Plan

**Phase 5**
Oct '11 – Mar '12
Prepare 2012 SWMMP

- 25-year planning period

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### Phase 5 Consultation

- Community input sought on draft SWMMP
- Tools used:
  - Project website
    - Draft SWMMP and staff report posted
    - Online survey
  - Facebook ad promoting draft SWMMP and opportunity for feedback
  - Meeting with community/environmental groups
- SWMMP updated based on feedback

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*Sponsored by Hamilton’s Waste Review*

Check out the new plan to deal with Hamilton’s waste. Have your say about the changes being considered. Click to visit site.
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Preferred Waste Management System

- Enhanced approach to waste diversion
- Continued disposal at Glanbrook Landfill
- Estimated total cost (2012 – 2036): $1.21 billion
- Estimated cost change compared to Status Quo: savings of $23M (or 2%) over 25-year period, depending on options implemented
- Glanbrook capacity extended from 2040 to 2044
- Future Reviews:
  - Recycling facility (expansion, single stream recycling)
  - Composting Facilities (expansion)
  - Transfer Station/CRC's (expansion of services, optimum locations)
  - Alternative disposal capacity

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Study Recommendations

1. Implement "enhanced approach" to waste diversion:
   - Targeted education;
   - Focusing on the multi-residential and commercial sectors;
   - Managing construction and renovation materials;
   - Adding materials to the recycling programs where feasible;
   - Continued lobbying for Extended Producer Responsibility;
   - Municipal processing partnerships; and
   - Reduced garbage collection frequency in 2020.

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7.1

Study Recommendations

2. Feasibility study in 2013 of expanding CCF capacity.

3. Feasibility study in 2017 of Single Stream processing, expansion of MRF capacity.

4. TS/CRC operational review and needs analysis in 2017.


6. Use the Glanbrook Landfill for disposal for 5 years, consider alternative disposal capacity in next SWMMP review.

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Study Recommendations

7. Merge advisory roles of SWMMP Steering Committee and Waste Reduction Task Force.

8. When implementing recommendations, consideration to be given to potential impacts on illegal dumping.

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Questions?

As recommended by the Steering Committee,

1. The City of Hamilton must lead and encourage the changes necessary to adopt the principle of Waste Reduction. (new)

2. The Glanbrook landfill is a valuable resource. The City of Hamilton must minimize residual waste and optimize the use of the City's diversion and disposal facilities.

3. The City of Hamilton must maintain responsibility for the residual wastes generated within its boundaries. Inter-regional opportunities will be considered.
As recommended by the Steering Committee,

R1. A waste diversion target of 65% will be maintained

R2. Implement Enhanced Waste Diversion – this may include targeted education, focusing on multi-residential and the commercial sectors, managing construction and renovation materials, adding materials to the blue box where feasible, continued lobbying for Extended Producer Responsibility (EPR), municipal and corporate opportunities and partnerships, and pursue current and pending opportunities for collection efficiencies in 2020

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R3. Undertake a feasibility study in 2013 of expanding capacity and opportunities at the Central Composting Facility

R4. Undertake a feasibility study in 2015 of Single Stream processing and expansion of capacity at the Municipal Recycling Facility (MRF)

R5. Undertake an operational review and needs analysis in 2017 of the Transfer Stations and Community Recycling Centres

R6. Optimize the capacity of the Glanbrook Landfill site which may include consideration of alternative disposal technologies no later than the next five (5) year review
SWMMP Recommendations (cont’d)

R7. Undertake a Five (5) Year Review of the SWMMP in 2017

R8. The advisory roles of the SWMMP Steering Committee and the Waste Reduction Task Force be merged when appropriate.

R9. On the implementation of Recommendations 1 to 7 consideration will be given to the potential impacts on illegal dumping.

R10. Staff will report to Council on the progress of implementing the SWMMP recommendations on an annual or as needed basis.

R11. The 2001 SWMMP be rescinded and replaced with the 2012 SWMMP.

System Recommended by Steering Committee

Status Quo +

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## Diversion Rate, Landfill Life & Cost of Systems

<table>
<thead>
<tr>
<th>Scenario</th>
<th>Diversion Rate (by 2021)</th>
<th>Expected Life of the Glanbrook Landfill</th>
<th>2012-2036 Total System Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Status Quo + Landfill (Glanbrook Landfill)</td>
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<td>$1,206M</td>
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<td>Maximized + ADT</td>
<td>75%</td>
<td>2060</td>
<td>$1,289M</td>
</tr>
<tr>
<td>Recommended from Steering Committee</td>
<td>65%</td>
<td>2044</td>
<td>$1,235M</td>
</tr>
</tbody>
</table>

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## Capital Budget

**Solid Waste Management Master Plan Review - Capital Comparison**

- **10 Year Forecast 2012 (Initial Recommendations)**
- **10 Year Forecast 2012 Approved & Forecasted Capital Budget**

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## Operating Budget

### Operating Budget Impacts 2012-2020

<table>
<thead>
<tr>
<th>Description</th>
<th>Implementation Year</th>
<th>Annualized Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Commercial Green Cart Program</td>
<td>2012-2013</td>
<td>$140,000</td>
</tr>
<tr>
<td>Festivals &amp; Special Events Diversion (PW08057a)</td>
<td>2013</td>
<td>$40,000</td>
</tr>
<tr>
<td>Construction &amp; Renovation Materials Recycling Program</td>
<td>2014-2015</td>
<td>$350,000</td>
</tr>
<tr>
<td>Multi-Residential Targeted Education</td>
<td>2013-2014</td>
<td>$85,000</td>
</tr>
<tr>
<td><strong>Total Annualized Impact of Recommended System</strong></td>
<td></td>
<td><strong>$615,000</strong></td>
</tr>
</tbody>
</table>

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### Implementation Schedule

<table>
<thead>
<tr>
<th>Description</th>
<th>Completion Year</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>1. Additional Diversion</strong></td>
<td></td>
</tr>
<tr>
<td>a) Targeted Education</td>
<td>Ongoing</td>
</tr>
<tr>
<td>b) Incentives</td>
<td>Ongoing</td>
</tr>
<tr>
<td>c) Focus on commercial sector</td>
<td>Ongoing</td>
</tr>
<tr>
<td>d) Residential C&amp;R materials</td>
<td>Ongoing</td>
</tr>
<tr>
<td>e) Focus on multi-residential</td>
<td>Ongoing</td>
</tr>
<tr>
<td>f) New materials to programs</td>
<td>Ongoing as markets develop</td>
</tr>
<tr>
<td>g) Continued EPR</td>
<td>Ongoing</td>
</tr>
<tr>
<td>h) Single Stream Recycling</td>
<td>Ongoing</td>
</tr>
<tr>
<td>Feasibility Review</td>
<td>X</td>
</tr>
<tr>
<td>Implementation</td>
<td>X X X</td>
</tr>
<tr>
<td><strong>2. MRF Lifecycle Replacement</strong></td>
<td>X X X</td>
</tr>
<tr>
<td><strong>3. CCE Expansion</strong></td>
<td></td>
</tr>
<tr>
<td>a) Feasibility Study</td>
<td>X</td>
</tr>
<tr>
<td>b) Implementation</td>
<td>X X</td>
</tr>
</tbody>
</table>

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Operations & Waste Management Division
### Implementation Schedule

<table>
<thead>
<tr>
<th>Description</th>
<th>Completion Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>4. Collection System Review</td>
<td></td>
</tr>
<tr>
<td>5. Transfer Stations &amp; CRCs</td>
<td></td>
</tr>
<tr>
<td>a) Capacity/Location needs analysis</td>
<td>X X X</td>
</tr>
<tr>
<td>b) Updates/additions</td>
<td></td>
</tr>
<tr>
<td>6. Continued use of Glanbrook Landfill</td>
<td>Ongoing during planning period</td>
</tr>
<tr>
<td>LANDFILL SITE SELECTION</td>
<td></td>
</tr>
<tr>
<td>7. Alternative Disposal Technologies</td>
<td></td>
</tr>
<tr>
<td>a) Review</td>
<td>No later than 2017</td>
</tr>
<tr>
<td>b) Implementation</td>
<td>X X X X X X X X X X X X X X</td>
</tr>
<tr>
<td>8. SWMMP Maintenance</td>
<td></td>
</tr>
<tr>
<td>a) Establish updated advisory committee</td>
<td>X</td>
</tr>
<tr>
<td>b) Annual Progress Report on Implementation</td>
<td>X X X X X X X X X X X X X X X</td>
</tr>
<tr>
<td>c) Five Year Review of SWMMP</td>
<td>X X X X X X X X X X X X X X X</td>
</tr>
</tbody>
</table>

Operations & Waste Management Division

### Overview of PW12004a Recommendations

(a) Receive report PW12004a;

(b) Approve 2012 SWMMP Guiding Principles and Recommendations from the Steering Committee;

(c) & (d) Disband the SWMMP Steering Committee and the Waste Reduction Task Force and replace with a Waste Management Advisory Committee in accordance with the Terms of Reference in Appendix G;

(e) The General Manager of Public Works bring forward recommended projects in future capital and operating budgets at appropriate times;

(f) The General Manager of Public Works is directed to discuss and negotiate inter-municipal opportunities and report back; and

(g) Appropriate amendments be undertaken to the Solid Waste Management By-law 09-067 to implement recommendations (commercial green cart program).
Questions?