Ruby Road Waste Disposal Site Capacity Expansion Environmental Screening Process

Public Consultation Event No.3

November 25, 2008

Eagle's Nest, Eganville Arena

Introduction

- Township initiated the Environmental Screening Process in November 2007
- Purpose is to determine whether an expansion at the Ruby Road Waste Disposal Site is technically feasible
- Study project is part of the broader investigation for a long term waste management solution for the Township

Tonight's Meeting

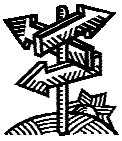
- This meeting has been scheduled in order to:
  - Provide the public with updated information on project work completed
  - Solicit feedback and questions from the public
- Meeting format:
  - Slide presentation
  - Question and answer period
  - Open house session

Presentation Outline

- Summary of the project and objectives
- Review of work completed to this point
- Draft conceptual design
- Results of the additional studies completed
- Outline of remaining tasks to be completed

A Solution to Consider

- Past studies identified practical solutions to the problem of diminishing waste disposal capacity
- Option for Consideration: Ruby Road waste disposal site capacity expansion
- Expanded site is reasonable solution to provide 25-year capacity recognizing that:
  - Waste operations already exist at the site
  - Lands required to expand the capacity are available
  - Favorable surface and subsurface site conditions



Completed Investigations

- Previously discussed:
  - Initial Environmental Impact Study
  - Supplementary Environmental Impact Studies
  - Stage I and II Archaeological Assessment
  - Traffic Impact Study
- Supplementary work to be presented:
  - Hydrogeological Assessment
  - Aesthetics Study
  - Noise Impact Assessment

Previous Findings

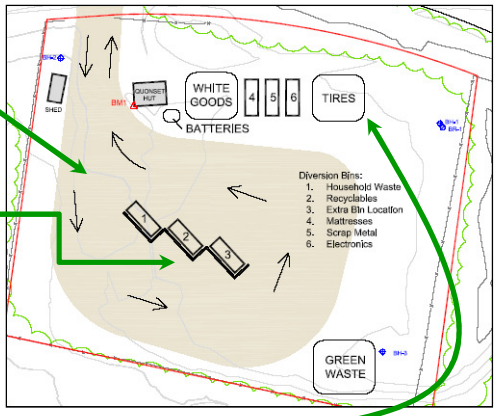
- No significant **biological** features identified
  - Long distance to any watercourse
  - No aquatic vegetation or fish were observed
  - No threatened or endangered species or other significant species were observed
- No impact on **archaeological** aspects associated with this project
- Expected **traffic** calculated to be minimal (2-3 additional trucks per week)

Conceptual Design and Operations

- Overview of Conceptual D&O:
  - Expanded up to **100,000 m³** over 25 years
  - Will accept **non-hazardous solid** waste only
  - **2.5 ha** of waste disposal area within a **6.8 ha** buffered operational area on a **32.8 ha** property
  - Waste will continue to be accepted at the current transfer station (waste receiving area) and transferred to the active face for disposal

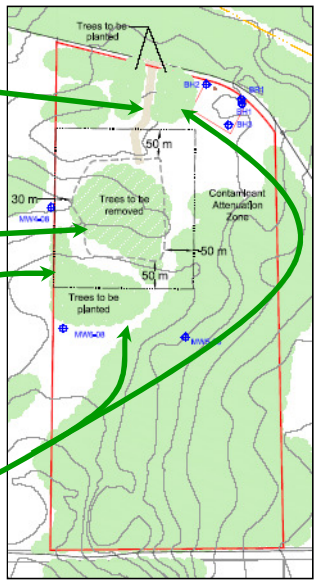
Improvement Concepts for Waste Receiving Area

- Steady vehicle traffic flow
- Household waste and recycle bins easily accessed
- Organized storage of infrequent items



Proposed Waste Disposal Area

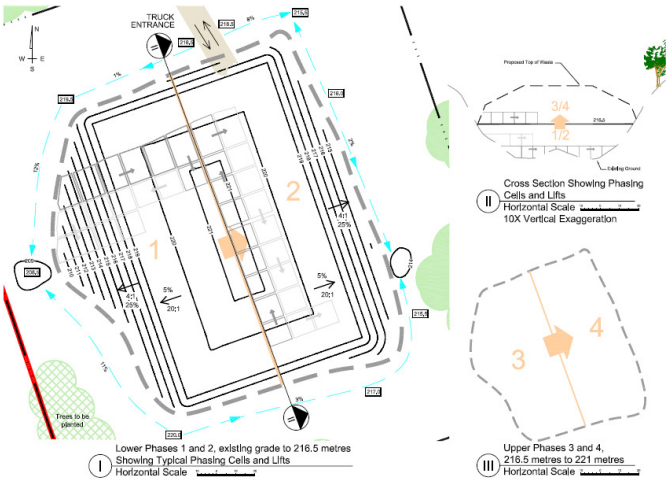
- Landfill access separate from waste receiving area
- 2.5 ha waste footprint in north west portion of property
- Total operational area estimated to be 6.8 ha
- Additional tree cover planned



Necessary Activities Prior to Acceptance of Waste

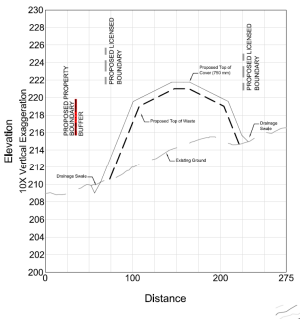
- Clear the vegetation in the area in which the waste emplacement area is proposed to be located
- Build an access road from Ruby Road to the proposed waste disposal area
- Preparatory grading in the initial waste emplacement areas
- Construct the perimeter road and internal ditching
- Construct berms to divert surface water from the expanded disposal area
- Establish new surface water and groundwater monitoring stations, as required

Conceptual Area Fill Phasing Plan



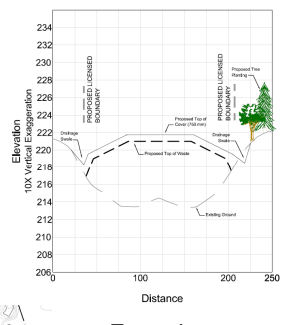
Profile Views of Waste Mound

Cross Section A

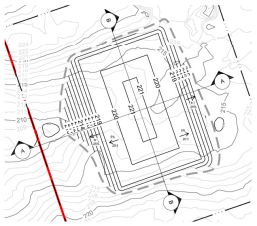


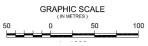
From the south

Cross Section B



From the west





Expected Flow of Waste

- Site will begin to accept waste from Ruby Road WDS receiving area once waste emplacement area expansion has been prepared
- Following the Sand Road WDS and Eganville (Snodrifters) WDS respective closures:
  - residual waste from Sand Road, Hwy 41, and curbside village of Eganville collection will be disposed at Ruby Road WDS
  - residual waste from Eganville WDS to be disposed at Ruby Road WDS
- As necessary:
  - McGrath Road and Lake Clear sites waste will have the option to send waste to Ruby Road WDS

Waste Disposal Activities

- Waste is proposed be delivered to the active face **one time per week**
- Waste emplacement influenced by factors such as:
  - ability to transfer waste from curbside collection and other WTS
  - weather conditions
  - vermin or wildlife
  - odour

Waste Emplacement Mitigation Measures

- Bear fence
- Drainage swales around the waste mound with low lying surface water collection areas on site
- Portable litter control fences
- Maintenance of working face to practical minimal area
- Immediate cover of lightweight waste
- Control of admission to authorized vehicles only with acceptable wastes

What is Leachate?

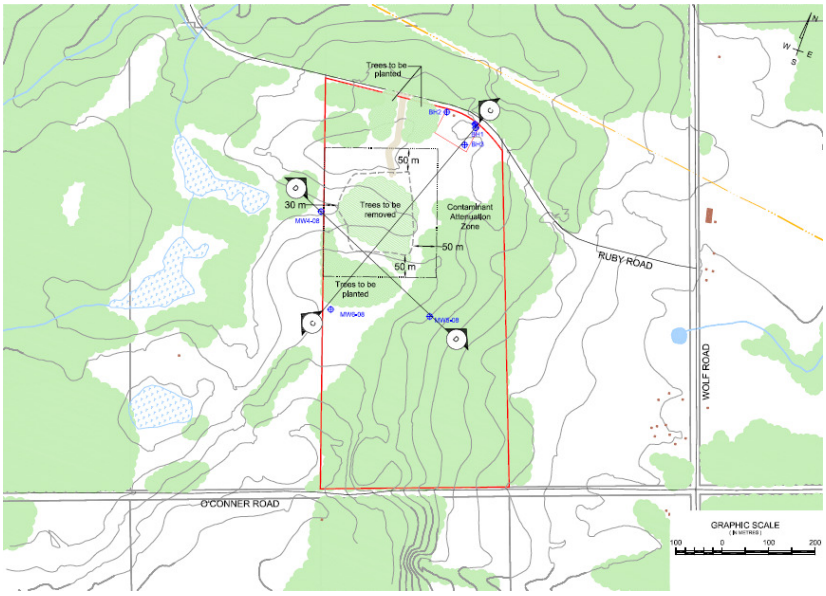
- Leachate is the liquid that drains or 'leaches' from a landfill and varies in composition depending on:
  - Age of landfill
  - Composition of waste
  - Infiltration of precipitation
- Typical constituents of leachate from municipal waste sites include: aluminum, ammonia, chloride, sulphate, iron, zinc, and some lesser concentrations of heavy metals such as lead, chromium, and mercury

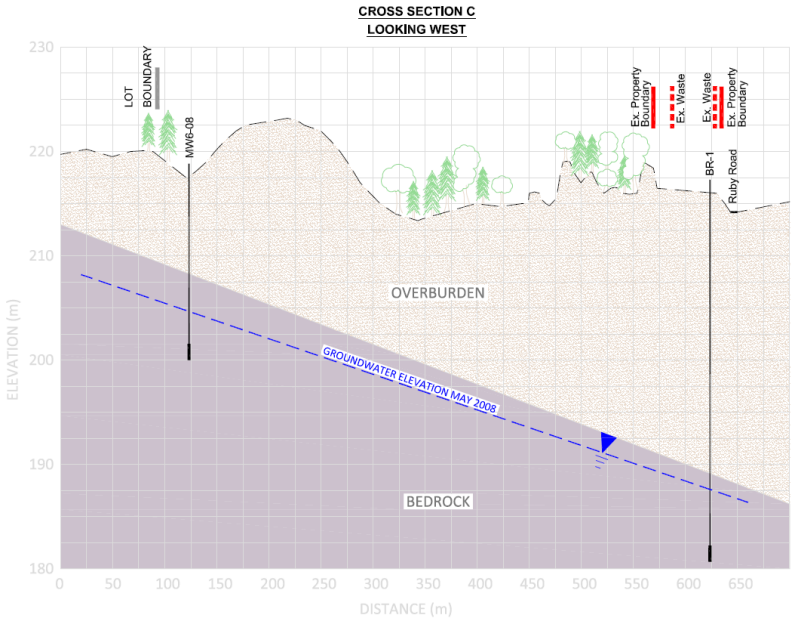
What are the Regulations Regarding Leachate?

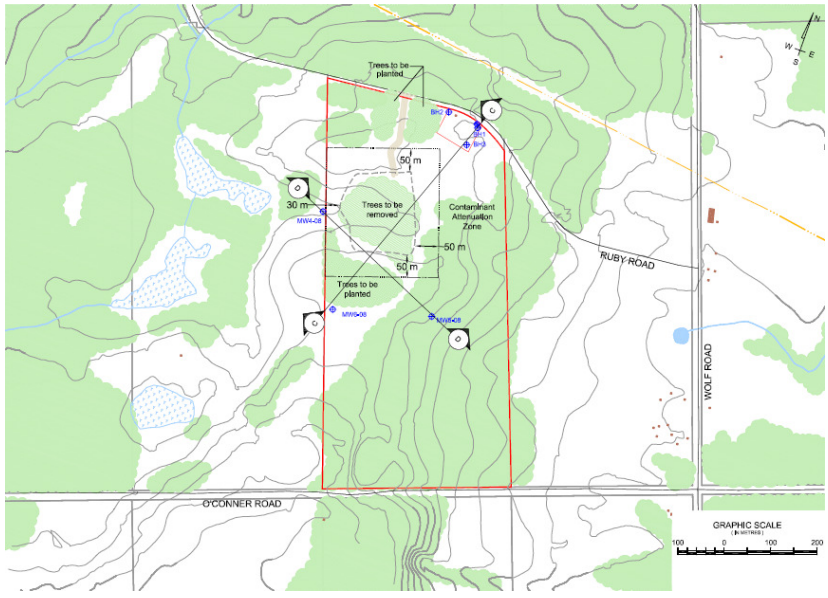
- Any operating waste disposal site cannot impact groundwater quality on neighboring properties at a concentration that is greater than the Reasonable Use Concept (RUC).
  - The RUC limit for a particular parameter in GW will be between the **background** concentration and the **Ontario Drinking Water Standard** limit for that parameter.

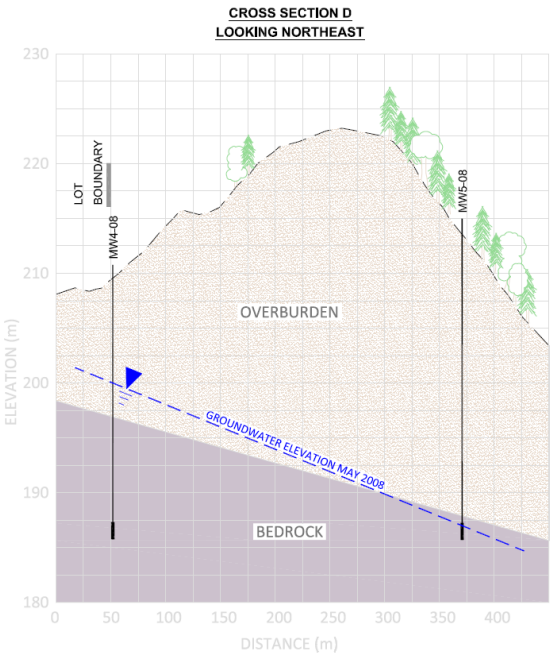
Hydrogeological Assessment

- 3 additional monitoring wells installed in May 2008 to better understand groundwater dynamics at the subject property
  - In-situ tests were performed to collect site-specific information with respect to subsurface characteristics (soil types, groundwater flow direction, hydraulic conductivity, quality, etc.)
- Completed preliminary mass balance calculations to identify which parameters have the greatest potential to migrate off-site; these were used in groundwater modeling.




CROSS SECTION C
LOOKING WEST
LOT BOUNDARY
MW6-08
Ex. Property Boundary
Ex. Waste
Ex. Waste
Ex. Property Boundary
BR-1
Ruby Road
OVERBURDEN
GROUNDWATER ELEVATION MAY 2008
BEDROCK
ELEVATION (m)
DISTANCE (m)
230
220
210
200
190
180
0
50
100
150
200
250
300
350
400
450
500
550
600
650


Trees to be planted
50 m
30 m
Trees to be removed
Contaminant Attenuation Zone
50 m
50 m
Trees to be planted
RUBY ROAD
WOLF ROAD
O'CONNER ROAD
GRAPHIC SCALE
100
0
100
200



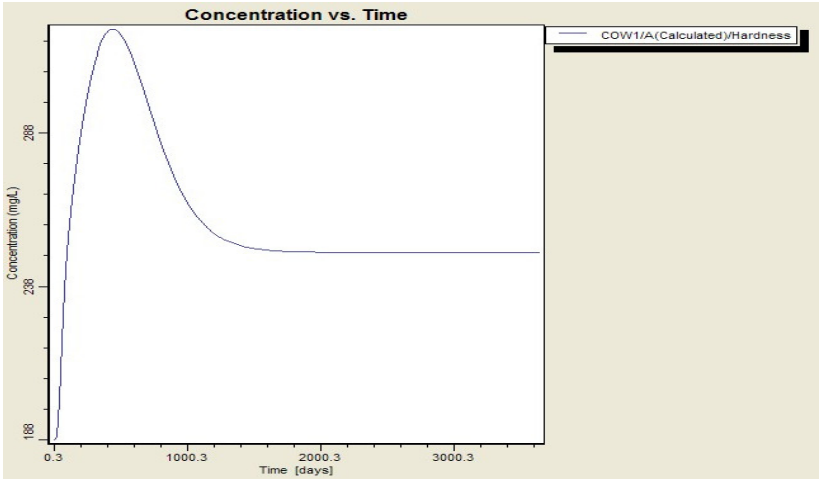
Groundwater Modeling - Flow -

- Visual Modflow software was used to theoretically define the extent of the leachate plume at the proposed Ruby Road site
- Information collected at the site was used to calibrate the flow model
- Sensitivity analysis performed to determine for which parameters the flow model was most sensitive
  - Results indicated only *hydraulic conductivity* could appreciably influence the flow model

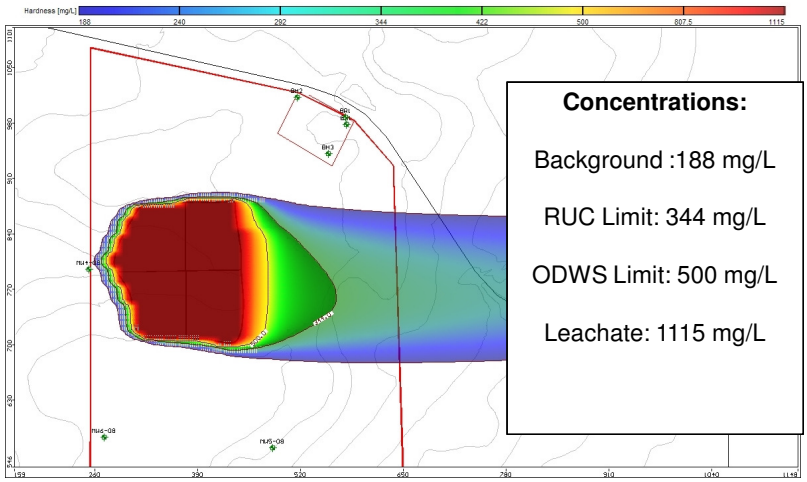
Groundwater Modeling - Transport -

- Transport model was used to determine the concentration profile expected for parameters in relation to distance from the waste disposal area
- Initial leachate concentrations (i.e. directly beneath the waste disposal area) were used that based on the observed concentrations at other existing Township waste disposal sites

Groundwater Modeling Transport Breakthrough



Groundwater Modeling Leachate Impact (Hardness)



Concentrations:

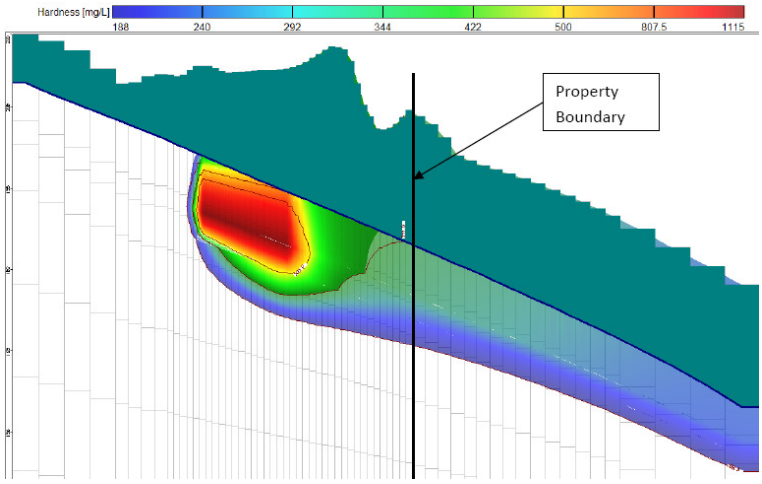
Background :188 mg/L

RUC Limit: 344 mg/L

ODWS Limit: 500 mg/L

Leachate: 1115 mg/L

Groundwater Modeling Leachate Impact (Hardness)



Groundwater Modeling - Results

- Confidence in model is based on a precautionary approach and safety factors
  - Hydraulic conductivity used was one order of magnitude greater (~10x faster) than measured by in-situ tests.
  - Model assumes all waste emplaced at Day 1 vs. over 25yrs
  - Initial leachate concentrations were set to be 25% greater than the highest average values of upper quartile observed at exiting sites receiving waste in the Township
  - Initial leachate concentrations in model were applied directly to the water table; no account for natural attenuation by the overlying sand material included.
  - Composition of waste in existing sites assumed to be more detrimental than future waste emplaced in expanded site (i.e. enhanced diversion = more benign residual wastes).

Groundwater Mitigation

- New monitoring wells will be installed between the waste disposal area and the downgradient property boundary for on-going monitoring purposes.
- Site-specific trigger mechanisms and contingency plans/mitigation measures established prior to any waste being placed at the site.

Surface Water

- Supplemental aquatic habitat studies revealed:
  - Previously identified possible wetland habitats to the west of the proposed site were observed to be a shrub swamp with no flooded open water during any of the 4 observation time periods during April through July
- No other permanent watercourses or fish populations were identified in the vicinity of the area

Surface Water Mitigation

- Minimization of runoff with proper slope and construction of waste mound
- Diversion of runoff to low lying catchment areas strategically placed in the buffer zone
- Storm drainage system around the disposal area to avert runoff to areas for infiltration into the ground adjacent the waste mound
- No surface water is anticipated to be contained on the site due to the semi-pervious hydraulic conductivity (10^{-2} to 10^{-4} cm/s) of the soil

Biological Findings

- Further studies did not identify any:
  - threatened or endangered species
  - species of special concern
  - provincially significant species
- Watercourses next to the proposed site were determined to be intermittent seasonal and did not contain any fish
- No natural heritage features were found

Mitigation for Biological Factors

- Bear fence will be placed around the area in which waste will be disposed of over the next 25 years
- Cover material placed over waste in a timely fashion to minimize the possibility of vermin and vectors
- Additional trees to be planted for those proposed to be removed

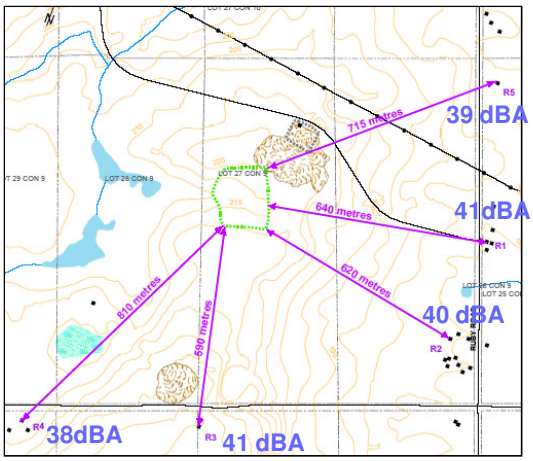
Noise Assessment

- Worst case scenario taken into account
- Noise readings measured from the units currently operated at the Sand Road WDS
- Calculations assumed:
  - All possible machines operating at the outermost perimeter of the waste disposal area closest to the receptor
  - No tree cover or topography variations

Noise Limits

- Limits have been prescribed by the MOE
  - **55 dBA** is the allowed limit that can be heard at a receptor due to a landfilling site during the day (0700-1900) (*Landfill Standards Guideline, 1998*)
  - **45 dBA** is permissible sound in general rural areas *(NPC-232, 1995)*

Worst Case Noise Levels



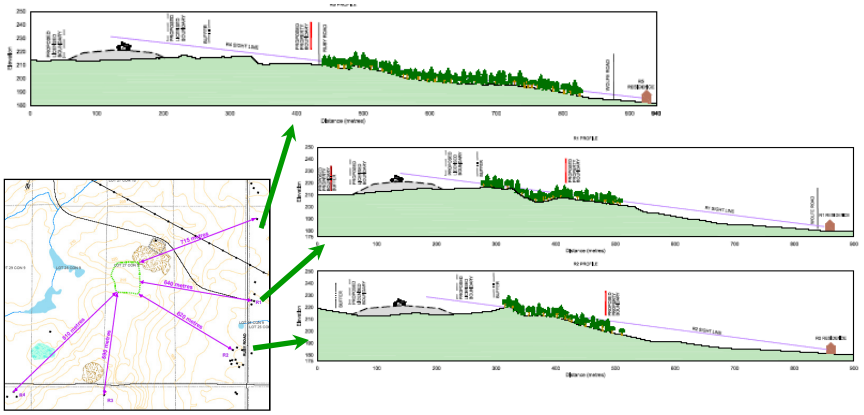
- Calculated between 38 to 41 dBA would be heard at the locations shown
- Corresponds to ~25-30% below the allowable limits

Aesthetics

- Mound expected to be:
  - 8 metres above the original ground surface when complete
  - Contained between natural topographic peaks on the north and the south sides
  - In an area that offers extensive coniferous tree cover on the east and south
  - Built up gradually over time (>25 years)

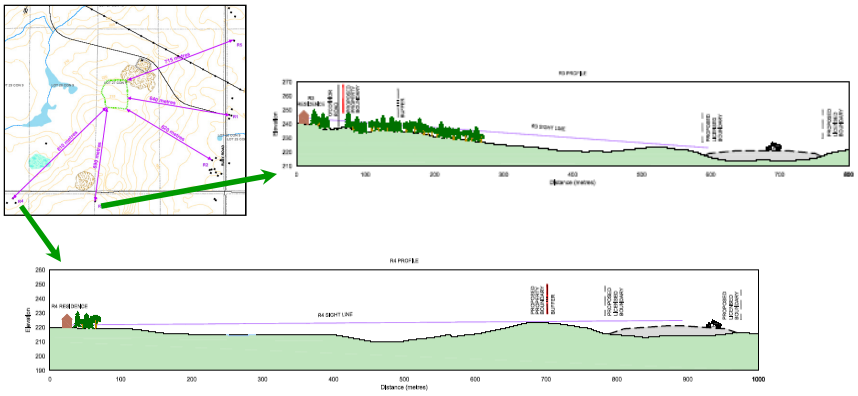
Aesthetics

- Anticipated profile views from residences to the east in 25 yrs



Aesthetics

- Anticipated profile views from residences to the south in 25 yrs



Aesthetic Mitigation

- Improvements will include:
  - Transfer station renovations
  - Additional tree cover to the north (near the road) and on the peak to the south (immediately adjacent to the mound)
- Housekeeping will incorporate:
  - Litter collection on and around the site

Summary of Findings

- All the studies and assessments of the Environmental Screening Process have determined that:
  - There is no impact that cannot be mitigated to an acceptable level
  - The proposed expansion of this site will continue to be regarded as a feasible option for the Township's waste management needs for the next 25 years

If Determined Feasible….

- Designed to protect **surface water and groundwater** resources as well as other components of the environment
- Prescribed designs implemented to achieve Ontario's **environmental protection standards**
- Formally **engineered** and developed using information such as **hydrogeological and geological data**

The Investigation Continues

- Winter 2009
  - Preparation of Environmental Screening Report (ESR) and supporting documents
- Spring 2009
  - Notice of Completion of ESR published for a 60 day review period
- Statement of Completion to the Ministry can then be submitted if the Township determines the expansion it is the preferred viable option

Project Activities

- Prepare and Publish Notice of Commencement of Environmental Screening Project
- Working Group Meetings and Progress Reports, Public Liaison Committee Liaison, Aboriginal Liaison
- Identify Problem or Opportunity & Provide Project Description
- Apply screening criteria checklist to identify potential environmental effects
- Describe the potential environmental effects, concerns and issues to be addressed
- 2007 Working Group Meetings and Progress Reports, Public Liaison Committee Liaison, Aboriginal Liaison
- Consult with interested persons, Aboriginal peoples and government agencies to identify any issues or concerns
- Public Consultation Event No. 1
- Conduct studies and assessment of potential environmental effects
- **Public Consultation Event No.2**
- Develop impact management measures
- Consult with interested persons and government agencies to identify any issues or concerns
- Confirm no significant net effects and all concerns resolved
- Conduct additional studies and assessment of effects and impact management measures (if required)
- Public Consultation Event No.3
- Prepare Environmental Screening Report - DRAFT
- 2009 Working Group Meetings and Progress Reports, Public Liaison Committee Liaison, Aboriginal Liaison
- Completion of Environmental Screening Report
- Notice of Completion of Environmental Screening Report
- Environmental Screening Report Review Posting (60 days)

Get the Facts

- More detailed information can be obtained at:
  - Township of Bonnechere Valley office
  - www.bonnecherevalleytwp.com
  - Contact Cambium Environmental Inc.
    - john.desbiens@cambium-env.com
    - 1.866.217.7900

Comments and Questions

Open House Session

- Please help yourself to refreshments
- Please take a moment to complete a questionnaire (or take one home)
- Please ask questions or provide your comments to meeting organizers

Thank you for attending and participating in the Ruby Road Waste Disposal Site Capacity Expansion Public Consultation Event No.3