Workshop #1:
Landfill Footprint Alternatives, Ancillary Facility Locations and Evaluation Criteria, Indicators and Data Sources

February 24, 2011

Topic 1: Landfill Footprint Options and Ancillary Facility Locations

• "Alternative Methods" is the assessment of the different ways of implementing the proposed undertaking. For example, the proposed new landfill footprint for residual waste could be constructed in different locations and configurations (size, height, etc.) at the WCEC.

• The approved Terms of Reference (ToR) identified the study area, within which Alternative Methods will be identified, and is bounded on the southeast and southwest sides by Highway 417; on the northeast by Carp Road; and on the northwest by Richardson Side Road.

• The following items were identified as constraints for consideration when developing potential landfill footprint envelopes:
- Ownership of land by WMCC or the option to purchase land,
- Existing natural environment features,
- Land use designations,
- Perimeter buffer zones

• Two distinct landfill footprint envelopes exist within the study area. These envelopes are referred to by their proximity to the existing Ottawa Waste Management Facility (WMF), namely to the west of William Mooney Road and to the north of the existing Ottawa WMF .

WM have developed preliminary options for landfill footprints within each of the envelopes for discussion (See **Figures 3 West and 4 North**). The footprints were designed with the following design parameters:

- Size – 6.5 million m^3 (as per the approved ToR)
- Height – Approximately 28 m
- Side slopes – 4:1

• For comparison purposes, the existing Ottawa WMF has the following design parameters:
- Size – 8.7 million m^3
- Height – Approximately 47 m
- Side slopes – 3:1

• A comparative evaluation of the alternative landfill footprints will be conducted and a preferred landfill footprint identified. An impact assessment on the preferred landfill footprint will be carried out in subsequent stages of the EA.

• In addition to the alternative landfill footprints, other components of the WCEC including waste diversion facilities, community/recreational facilities, site entrance, and other infrastructure will need to be sited accordingly.

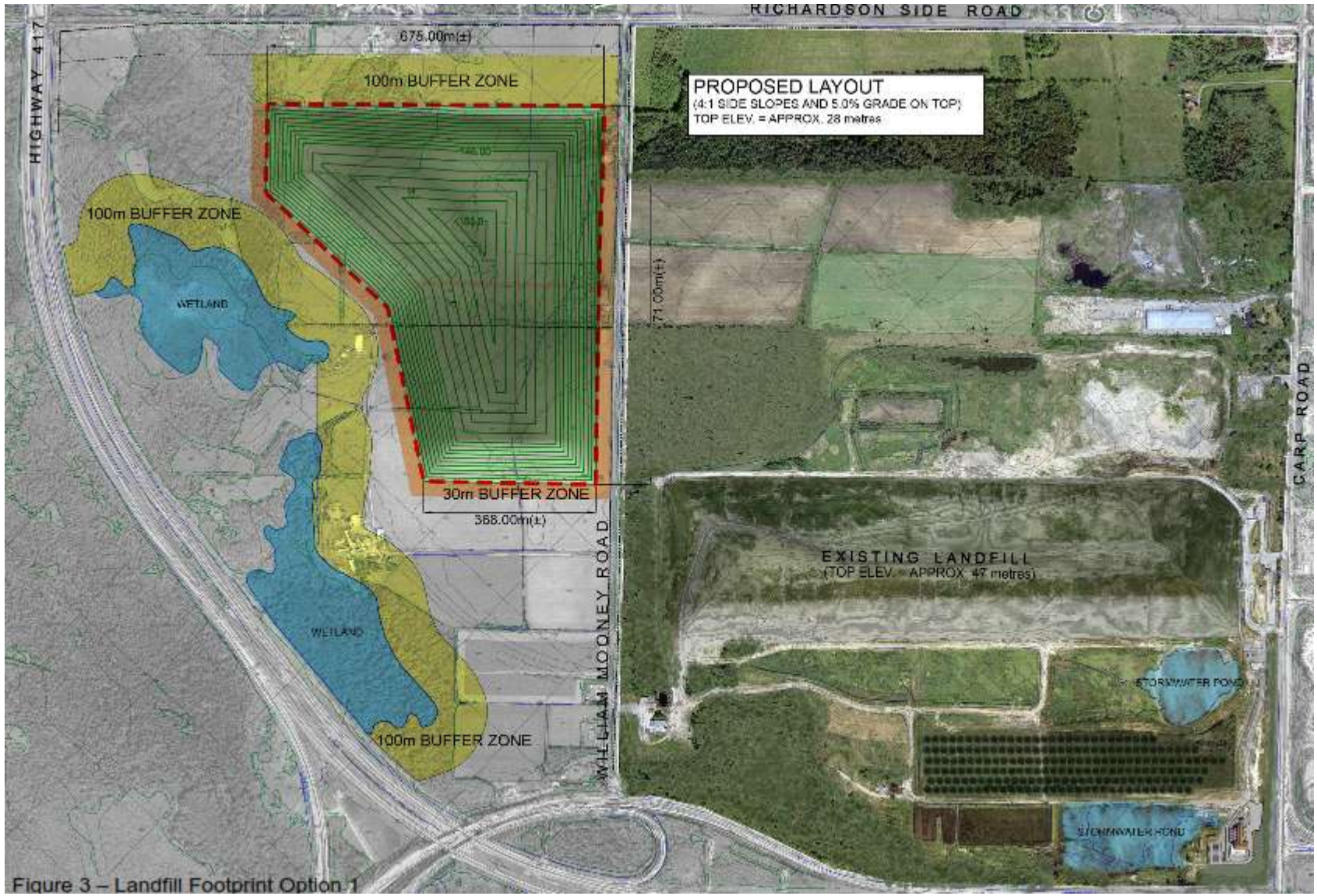

Figure 3 – Landfill Footprint Option 1


RICHARDSON SIDE ROAD
HIGHWAY 417
WILLIAM MOONEY ROAD
CARP ROAD
PROPOSED LAYOUT
(4:1 SIDE SLOPES AND 5.0% GRADE ON TOP)
TOP ELEV. = APPROX. 78 metres
216.00m(±)
100m BUFFER ZONE
328.00m(±)
455.00m(±)
30m BUFFER ZONE
800.00m(±)
EXISTING LANDFILL
(TOP ELEV. = APPROX. 47 metres)
STORMWATER POND
STORMWATER POND

QUESTION	COMMENT
1. Do you understand the analysis that WM undertook to determine general areas (envelopes) for developing new landfill footprint alternatives and other components of the WCEC?	
2. Recognizing that only on-site locations will be considered, are you in agreement with the potential development areas (envelopes)?	
3. Do you have any comments on the potential landfill footprint option #1 and the proposed design parameters? Do you have any suggested changes?	
4. Do you have any comments on the potential landfill footprint option #2 and the proposed design parameters? Do you have any suggested changes?	
5. Are there any potential new on-site footprint locations that you feel should be considered in the EA and why?	
6. Do you have any comments on the proposed ancillary facilities including their location at the WCEC?	

Topic 2: Evaluation Criteria, Indicators and Data Sources

• Preliminary Evaluation Criteria and Indicators were outlined in the Approved ToR and may be broadly grouped into Environmental, Technical and Socio- Economic categories. A commitment was made in the approved ToR that the criteria, indicators and data sources would be reviewed and modified through consultation with the public and other agencies as appropriate during the EA.

• These criteria form the basis for characterizing existing environmental conditions, for assessing potential adverse effects of the Undertaking, comparing Alternative Methods, and help to identify a preferred alternative.

• A comprehensive list of “criteria” that cover all aspects of the environment are used to assist in the decision-making process at the Alternative Methods stage. Analyzing each of these criteria not only ensures a systematic and logical approach to decision-making, but documenting the results criterion-by-criterion is a means by which others can follow the evaluation and understand the reasons for the decisions.

• The following criteria were presented in the approved ToR:

Environmental Criteria
Atmospheric Environment Air quality, Noise, Odour
Geology & Hydrogeology Groundwater quality
Surface Water Resources Surface water quality, Surface water quantity
Terrestrial & Aquatic Environment
Terrestrial ecosystems, Aquatic ecosystems
Archaeology and Cultural Heritage
Cultural and heritage resources
Archaeological resources
Transportation Effects on airport operations
Effects from truck transportation along access roads
Land Use Effects on current and planned future land uses,
Displacement of Agricultural Land

Technical Criteria
Site Design and Operation Site Design and operational characteristics

Socio-Economic Criteria
Economic Effects on cost of service to customers/neighbours
Continued service to customers
Effects on/benefits to local community
Social Visual impact of facility, Local residents,
Recreational facilities
Aboriginal Potential effects on Aboriginal communities

• In addition to the Criteria proposed, another task that must be completed before carrying out further work on the Alternative Methods is the development of indicators for each criteria. As the criteria tend to be fairly general, indicators are much more specific that can be measured or determined in some way. For example:

- Criteria = Odour
- Indicator = Predicted odour emissions and Number of off-site receptors potentially affected (residential properties, public facilities, businesses and institutions).

• In the above example, identification of off-site receptors by type in conjunction with the predicted odour emissions as the measure would provide the potential effect for this particular criterion.

• During the EA each technical discipline leader (e.g., atmospheric environment leader) will compare and rank alternatives for each of their environmental criteria. This will come in the form of a ranking for each environmental criteria from “least preferred” to “most preferred.”

• In the final stages of the detailed comparative evaluation of alternatives, the rankings will be combined (aggregated) for each environmental criteria into a single preference rating for each alternative in order to rank the alternatives and identify a preferred alternative.

• Once a preferred alternative has been identified, a detailed impact assessment will be completed to determine the net effects that will be caused, or might reasonably be caused, on the environment.

• **Table 1** describes the assessment criteria, indicators and data sources that are proposed to evaluate the different Alternative Methods of carrying out the project. The assessment criteria are grouped into three categories: environmental, socio-economic and technical (site operation and design). Each criterion includes a statement of rationale, indicators that will be used for measurement, and data sources. The outcome of the Environmental Assessment will include the identification of a Preferred Alternative Method of carrying out the project.

• During the ToR phase, we asked the community to provide their input on the criteria and provide a rating (Very Important, Important, Less Important, Not Important), however we received minor feedback. We are therefore requesting participants to provide input on the proposed Criteria, Indicators and Data Sources

• On **Table 1**, please write the level of importance for each criteria (very important, important, less important, not important), relative to each other and considering any tradeoffs, and add any additional comments.

Environmental Component	Criteria	Rationale	Indicators	Data Sources	Criteria Rating	Your Comments
Atmospheric Environment	Air quality	Waste disposal facilities and associated operations can produce gases containing contaminants that degrade air quality if they are emitted to the atmosphere. Construction and operation activities at a waste disposal facility can lead to increased levels of particulates (dust) in the air. Changes in air quality may affect human health.	• Modelled air concentrations of indicator compounds (organics, particulates) • Number of off-site receptors potentially affected (residential properties, public facilities, businesses, and institutions)	• Environment Canada or the Ministry hourly meteorological data and climate normals • Site studies, reports and air quality monitoring data • Aerial photographic mapping and field reconnaissance • Air quality assessment		
	Noise	Construction and operation activities at the facility may result in increased noise levels resulting from the site.	• Predicted site-related noise • Number of off-site receptors potentially affected (residential properties, public	• Site equipment noise measurements • Aerial photographic mapping and field reconnaissance • Noise prediction		

			facilities, businesses, and institutions)	assessment		
	Odour	Continued operation of the waste disposal facility may result in changes in the degree and frequency of odours from the site.	• Predicted odour emissions • Number of off-site receptors potentially affected (residential properties, public facilities, businesses and institutions).	• Published and odour source data • Environment Canada or the Ministry hourly meteorological data • Odour complaints history • Aerial photographic mapping and field reconnaissance • Odour assessment		
Geology & Hydrogeology	Ground-water quality	Contaminants associated with waste disposal sites have the potential to enter the groundwater and impact off-site groundwater or surface water.	• Predicted effects to groundwater quality at property boundaries and off-site.	• Hydrogeological & geotechnical studies • Water well records • Determination of water well users in the area • Annual Site Monitoring Reports • Proposed leachate control concept designs • Environment Canada Canadian Climate Normals • Leachate generation assessment		
	Surface water quality	Contaminants associated with waste disposal sites have the potential to seep or runoff into surface water.	• Predicted effects on surface water quality onsite and off-site.	Topographic maps • Air photos • Facility layout and drainage maps and figures • Proposed on-site stormwater		

Surface Water Resources	Surface water quantity	The construction of physical works may disrupt natural surface drainage patterns and may alter runoff and peak flows. The presence of the facility may also affect base flow to surface water.	• Change in drainage areas; • Predicted occurrence and degree of off-site effects	management concept designs for new landfill footprint alternatives • Proposed leachate control concept designs for new landfill footprint alternatives • Annual monitoring reports • Interviews and discussions with WM staff, the Ministry, Conservation Authorities, & Environment Canada • Published water quality and flow information from the Ministry, Environment Canada and conservation authorities • Site reconnaissance • On-site and off-site surface water & leachate monitoring programs		
Terrestrial Environment	Terrestrial ecosystems	Waste disposal facility construction and operations may remove or disturb the functioning of natural terrestrial habitats and vegetation, including rare, threatened or endangered species.	• Predicted impact on vegetation communities due to project; • Predicted impact on wildlife habitat due to project; and • Predicted impact of project on vegetation and wildlife including rare, threatened or endangered species.	• Site surveys • Published data sources		

Aquatic Environment	Aquatic ecosystems	Waste disposal facility construction and operations may remove or disturb the functioning of natural aquatic habitats and species, including rare, threatened or endangered species.	• Predicted changes in water quality; • Predicted impact on aquatic habitat due to project; and • Predicted impact on aquatic biota due to project.	• Site surveys • Published data sources		
Archaeology & Cultural Heritage	Cultural and heritage resources	Cultural/heritage resources could be displaced by the construction of waste disposal facility components. The use and enjoyment of cultural resources may also be disturbed by the ongoing operation.	• Cultural and heritage resources on-site and in vicinity • Predicted impacts to cultural and heritage resources on-site and in vicinity.	• Published data sources • Stage 1 and Stage 2 (possibly Stage 3 and 4) archaeological and cultural/heritage assessments • Commemorative statements		
	Archaeological resources	Archaeological resources are non-renewable cultural resources that can be destroyed by the construction and operation of a waste disposal facility.	• Presence of archaeological resources on-site; & • Significance of on-site archaeology resources potentially displaced/disturbed.			
Transportation	Effects on airport operations	There is the potential for bird strikes for aircraft using Carp Airport.	• Bird strike hazard to aircraft in Local Study Area.	• Transport Canada data sources • Traffic study		
	Effects from truck transport along access roads	Truck traffic associated with the landfill footprint may adversely affect residents, business, institutions & movement of farm vehicles in the site vicinity.	• Potential for traffic collisions; • Disturbance to traffic operations; and • Proposed road improvement requirements.			

Land Use	Effects on current and planned future land uses	The facilities may not be fully compatible with certain current and/or planned future land uses.Current land uses (e.g., agriculture) may be displaced by facility development. Waste disposal facilities can potentially affect the use and enjoyment of recreational resources in the vicinity of the site.	• Current land use; • Planned future land use; • Type(s) and proximity of off-site recreational resources within 500 m of landfill footprint potentially affected • Type(s) and proximity of off-site sensitive land uses (i.e., dwellings, churches, cemeteries, parks) within 500 m of landfill footprint potentially affected.	• Official Plans for the City of Ottawa • Aerial photographic mapping and field reconnaissance • Published data on public recreational facilities/ activities • City of Ottawa Zoning • Provincial Policy Statement, 2005		
	Displacement of agricultural land	Agricultural land will be displaced by the development of the facility if the facility is located away from the lands currently designated to accommodate waste management facilities.	• Current land use • Predicted impacts on surrounding agricultural operations; • Type(s) and proximity of agricultural operations (i.e., organic, cash crop, livestock).	• Provincial Policy Statement, 2005 • Official Plans for the City of Ottawa • Aerial photographic mapping and field reconnaissance • City of Ottawa Zoning • Canadian Lands Inventory (CLI) mapping		
Economic	Effects on the cost of services to customers	The costs of continued operation of a waste disposal facility will affect the price of tipping fees, subsequently affecting the cost of service to customers. The greater the air space achieved for a lower capital cost will enable a lower	• Ratio of air space achieved to volume of soil to be excavated and area of cell base and leachate collection system to be constructed	• New landfill footprint alternatives		

		cost of services to be provided.				
	Continued service to customers	The Ottawa WMF provides an important and affordable service to its users, particularly in the east end of Ottawa.	• Total optimized site capacity and site life	• New landfill footprint alternatives		
	Economic benefit to local municipality	The continued use of the facility will provide economic benefits to the local community in the form of new employment opportunities in both the construction and day-to-day operation. This also has the potential for increased employment opportunities in local firms.	• Employment at site (number and duration) • Opportunities to provide products or services	• New landfill footprint alternatives		
Social	Local Residents	Waste disposal facilities can potentially affect local residents in the vicinity of the site	• Number of residents	• Aerial mapping • Field reconnaissance		
	Recreational Facilities	Waste disposal facilities can potentially affect the use and enjoyment of recreational resources in the vicinity of the site.	• Type(s) and proximity of off-site recreational resources within 500 m of landfill footprint potentially affected	• Official Plans for the City of Ottawa • Aerial photographic mapping and field reconnaissance • Published data on public recreational facilities/ activities • City of Ottawa Zoning • Provincial Policy Statement, 2005		

Aboriginal	Potential effects on Aboriginal communities	The facility construction and operations may adversely affect local aboriginal communities.	• Potential effects on use of lands for traditional purposes	• Discussions with local Aboriginal communities		
Site Design & Operations	Site design and operations characteristics	The characteristics of the existing and proposed site design and engineered system requirements, will affect site activities and operational and maintenance requirements.	• Complexity of site infrastructure • Operational flexibility	• Existing and proposed site environmental control system designs and operational requirements • New landfill footprint alternatives and associated phasing of operations • Potential daily cover and soil/aggregate quantities		

QUESTION	COMMENT
1. Do you understand the need for developing Criteria and Indicators ?	
2. In relation to the Criteria areas, what do you value most and why?	
3. Are you in agreement with the proposed Evaluation Criteria, Indicators and Data Sources? If not, what would you change? Please provide additional comments and ratings on the attached tables	