

Drinking Water Source Protection Background Document

Subthreat: Waste Disposal Sites

v.3 May 2011

(Amendments included as Tracked Changes)

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NOTE TO THE READER

This document is one of eighteen background reports now under development by staff at various Conservation Authorities and Conservation Ontario in support of Source Protection Plan development. The final set of reports will cover all nineteen prescribed water quality threat types. Each report looks at the nature of one or more types of drinking water threat, describes the local occurrence (“is” and “would be”) of those threats, assesses existing policies/programs, and introduces related ‘policy concepts’ for source protection planning. ***While every effort has been made to ensure the accuracy of the information in this document, it should not be construed as legal advice or relied on as a substitute for the legislation.***

This version is considered to be a ***working draft*** because it will be going through additional review by MOE and subject experts. SPA/SPRs can use these documents with the understanding that additional refinement will occur. Any questions on these reports can be directed to Nicole Barbato, Source Water Protection Liaison (via nbarbato@conservationontario.ca). Thank you!

1. Definition

This paper provides information for prescribed drinking water threat 1C – waste disposal sites.

The main consideration for reducing or eliminating drinking water threats related to waste disposal sites is to make sure that any discharge from the sites does not result in a significant risk to drinking water through appropriate measures to mitigate the threat. Future waste disposal sites must be located in an area which will not create a significant drinking water threat.

The Environmental Protection Act (EPA) provides a definition for a “waste disposal site” (R.S.O. 1990, c. E.19, Part V). In general terms, a waste disposal site is any land, building, structure in connection with the depositing, disposal, handling, storage, transfer, treatment or processing of waste (which includes ashes, garbage, refuse, domestic waste, industrial waste, municipal refuse, etc.). Operational activities associated with these sites are also included in the definition. Generally, waste disposal site Certificates of Approval are issued under the EPA, and are required prior to the establishment, extending, or ongoing operation of a waste disposal site.

The following types of waste disposal sites are indicated in the MOE Tables of Drinking Water Threats (2008, as amended in 2009) and are to be considered for the purposes of the drinking water source protection initiative:

- the application of:
 - hauled sewage (see Hauled Sewage Backgrounder)
- the land disposal of:
 - petroleum refinement waste
 - hazardous waste, liquid industrial waste, or processed liquid industrial waste
 - municipal waste (e.g. landfill, incinerator, and waste transfer and processing facilities where material is accepted from other municipalities)
 - industrial waste or commercial waste
 - liquid industrial waste (discharged into a geological formation by means of a well)
- the storage of:
 - Tailings from mining operations (see Storage of Tailings from Mining Operations Backgrounder)
 - PCB waste
 - hazardous waste or liquid industrial waste

Exemptions are given for domestic waste generation – waste disposal sites do not apply to the storage or disposal on a private property, unless the situation becomes a nuisance (Director’s decision), or where the activity would fall under the Ontario Water Resources Act (e.g. sewage disposal, water quality impacts) (EPA R.S.O. 1990, c. E.19, Part V). As such, activities such as

dumpsters on privately owned property and salvage yards would not generally apply.

Waste related activities and types of waste disposal that do not require Certificates of Approval are outlined in section 6 of the EPA ~~(EPA, Part V, s.27 (1.3) (3))~~, section 3 of Ontario Regulation 347, Ontario Regulation 101/94 (Recycling and Composting of Municipal Waste) s. 16 and Ontario Regulation 362 (Waste Management PCBs).

Finally, the circumstances also include a site that is not approved to accept hazardous waste or liquid industrial waste, but accepts a small amount under a limited quantity exemption. Such is the case for municipal landfills [or transfer stations](#) accepting household hazardous waste.

The primary focus of this backgrounder is on the land disposal of municipal waste since it is the most likely prevalent type of waste disposal site, although references to the other types of waste disposal sites are identified throughout this backgrounder. It should be noted that the content in sections 5 through 9 are heavily weighted towards municipal waste disposal sites.

2. What causes this activity to be a drinking water threat?

There are thirty-five (35) chemicals (circumstances 1533 to 1943) listed in the MOE Tables of Drinking Water Threats and shown in Table 1.1 below (Ontario Ministry of the Environment, 2009). These chemicals have the potential to be introduced into surface and groundwater as a result of the storage and land disposal of a prescribed waste.

Table 1.1: Chemical Threats associated with the storage and land disposal of a prescribed waste.

Threat Grouping	Chemical Parameter
Land Disposal of Municipal Waste (O. Reg. 347 s. 1 land disposal definition clauses (a) & (b))	Arsenic, Barium, BTEX, Cadmium, Dichlorobenzene-1,4, Lead, Mercury, Nitrogen, Selenium, Trichloroethylene (DNAPL), Uranium, Vinyl chloride (DNAPL)
Land Disposal of Industrial Waste or Commercial Waste (O. Reg. 347 s. 1 land disposal definition clause (c))	
Land Disposal of Municipal Waste (O. Reg. 347 s. 1 land disposal definition clauses (a) & (b))	Arsenic, Barium, BTEX, Cadmium, Dichlorobenzene-1,4, Lead, Mercury, Nitrogen, Selenium, Trichloroethylene (DNAPL), Uranium, Vinyl chloride (DNAPL)
Land Disposal of Petroleum Refining Waste (O. Reg. 347 s. 1 land disposal definition clause (d))	BTEX, PAHs, Petroleum Hydrocarbons (F1-F4)
Land Disposal of Hazardous Waste, Liquid Industrial Waste or Processed Liquid Industrial Waste (O. Reg. 347 s. 1 land disposal definition clauses (a) & (b))	Arsenic, Barium, Cadmium, Chromium VI, D-2,4, Lead, Mercury, PCBs, Selenium, Silver, 2,4,5-T, Uranium
A Site that is Not Approved to Accept, but Does Accept a Hazardous or Industrial Waste (O. Reg. 347 waste description clauses (p), (q), (r), (s), (t) or (u); hazardous waste definition clause (d))	Arsenic, Barium, Cadmium, Chromium VI, D-2,4, Lead, Mercury, Selenium, Silver, 2,4,5-T
Storage of Hazardous Waste at Disposal Sites (as defined in O. Reg. 347 (General – Waste Management), R.R.O. 1990)	
PCB Waste Storage at Disposal Sites (as described in O. Reg. 362 s.3 or in accordance with clause 8(a))	PCBs
Liquid Industrial Waste Injection into a Well (as defined in O. Reg. 347 (General – Waste Management), R.R.O. 1990)	Arsenic, Atrazine, Barium, Bis(2-ethylhexyl) phthalate, BTEX, Cadmium, Carbofuran, Chlorobenzene, Copper, Cyanide (CN-), Dichlorobenzene-1,2 (ortho), Dichlorobenzene 1,4 (para), Hexachlorobenzene, Hexachlorocyclopentadiene, Lead, Mercury, PCBs, Oxamyl, 1,2,4-T, Trichloroethane-1,1,1, Trichloroethylene (DNAPL), Vinyl Chloride (DNAPL), Zinc

Appendix A to this report outlines the possible sources of the contaminants. The Drinking Water Threat Contaminants Summary (see Appendix D) includes details on relevant drinking water standards, guidelines or objectives, the health or aesthetic concerns and other useful information for these parameters.

3. Understanding the nature of the drinking water threats

Existing and historic waste disposal sites may be identified within intake protection zones and wellhead protection areas. A number of sites are more likely to be present within the highly vulnerable aquifers (HVAs) and significant groundwater recharge areas (SGRAs) as they generally cover a greater geographical area. Waste disposal sites may be active, inactive (i.e. is no longer used, but did not ~~follow implement~~ a closure plan) or closed.

~~It is unlikely that future waste disposal sites will be permitted in an IPZ or WHPA, although there is currently no legislation preventing their establishment.~~ There are a number of guidelines identifying setback distances for the establishment of new waste disposal sites, including keeping these sites away from settlement areas. The Ontario Ministry of the Environment Guideline D-4: Land Use On or Near Landfills and Dumps (s. 5.0) makes reference to 500 meter setbacks to identify the study area in the evaluation of a new site to sensitive land uses (e.g. private residence, pasturing land or livestock husbandry, and cemeteries) , but this is not a legal requirement. Ontario Regulation 232/98 (s.7.) states that a 100m buffer is preferred around a landfill site, although an absolute minimum buffer around a landfill site is 30 m, and would require a written report identifying that the buffer area is sufficient to address any impacts of the operation.

Private waste disposal sites may accept a variety of municipal, industrial and commercial waste but only in accordance with their Certificate of Approval.

In most instances, any waste disposal site located within a WHPA A or B could constitute a significant threat. In WHPA C and D, there is considerable variability, although a waste disposal site will likely be classified as a moderate or low threat.

In most circumstances, a waste disposal site (particularly medium to large operations) has the potential to be identified as a significant or moderate threat within and IPZ-1 or IPZ-2. Acceptance of hazardous waste or industrial waste in small quantities, if stored above, or partially above grade increases the potential for even small municipal operations to be identified as a significant drinking water threat.

The land disposal or storage of waste (at a waste disposal site) is generally classified as a **low threat** within Highly Vulnerable Aquifers (HVAs) and Significant Groundwater Recharge Areas (SGRAs) where the vulnerability score is 6. The presence of vinyl chloride, a DNAPL, could result in a moderate drinking water threat for large waste disposal sites. This activity cannot be or become a significant threat in these areas.

4. Applicable legislation, policies and programs

a) Provincial

Acts and Regulations

There are numerous permits and approvals under various legislation associated with waste disposal sites. The following permits and approvals can be related to drinking water source protection. Items which are prescribed instruments under the *Clean Water Act* are noted. The following web-site identifies the general mechanisms by which waste disposal sites (landfills) are managed in Ontario: <http://www.ene.gov.on.ca/en/land/limo/regulates.php>

Environmental Protection Act (Part V – Waste Management) (Government of Ontario, 1990) (Prescribed Instrument – Waste Certificate of Approval)

Other than where an exemption applies, a certificate of approval is required from the Ministry of the Environment under Part V of the *Environmental Protection Act* (s. 27). *A certificate of approval (C of A) is required* prior to using, operating, establishing, altering, enlarging or extending a waste management system or a waste disposal site. It is also required for the active operation of a waste disposal site, providing rules to manage and limit potential discharge of contaminants into the natural environment. Detailed operational standards are set out in specific Certificates of Approval for each waste disposal site. (Certificate of Approval information is available from Land Inventory Management Ontario (LIMO) <http://www.ene.gov.on.ca/en/land/limo/index.php>). A certificate of approval may contain conditions around:

- The types of waste to be accepted and applicable service area
- Control measures/inspections to ensure unacceptable waste (as determined in the C of A) does not enter the landfill
- Maximum volume of waste allowed per day and per year
- Any necessary conditions for design and operation of a site
- Environmental monitoring conditions for the site, including leachate, surface water, groundwater, biomonitoring and weather conditions,
- Treatment of contaminated surface water
- Measures to close a site, including ensuring the site is properly maintained and monitored

PCB waste storage/disposal sites are exempt from the requirements of a Certificate of Approval as per O. Reg.362 made under the Act (s. (5)), subject to conditions surrounding reporting, removal of PCB waste and where a certificate of approval has not been issued for a site after January 1, 1981 specifying how PCB waste is to be generally looked after.

Renewable Energy Approvals are not a final disposal (i.e., land filling) but the use of materials that could be considered waste, can be considered inputs to a process that will generate energy (i.e. energy from waste facilities, incinerators, etc). This instrument could apply to the land filling of municipal waste and land disposal of solid, non hazardous industrial or commercial waste threat circumstances, as waste products may be stored at Renewable Energy Act facilities before processing occurs.

Ontario Regulation 347: General Waste Management (Government of Ontario, 1990)

Section 11 of Ontario Regulation 347, made under the *Environmental Protection Act*, specifies the generic standards for waste disposal sites, definitions of waste, and designates, classifies and exempts waste sites. However, the regulation leaves room for professional judgment and interpretation. It includes the following standards that are relevant to drinking water source protection:

- Restricting access to authorized persons
- Treatment of runoff before being discharged into watercourses
- Separation between waste and the maximum water table at the site to ensure that any impacts of leachate to the groundwater are within acceptable limits at the property boundary
- Collection and treatment of leachate impacted groundwater
- The prevention of surface water pollution through appropriate mitigation measures and environmental monitoring in and around the site
- Regular inspection and maintenance of final and daily cover material over fill area

Ontario Regulation 232/98: Landfilling Sites (Government of Ontario, 1998)

This regulation applies to new or expanded landfill sites (as of August 1, 1998) that receive municipal waste (i.e. non-hazardous) and have a final capacity greater than 40,000 cubic metres. It details the requirements for design, operation, closure, post-closure care and financial assurance of new municipal landfill sites and the preparation of certificates of approval. Parts III and V outline specific design and construction specifications, as well as operational standards for landfilling sites

Ontario Water Resources Act (Government of Ontario, 1990)
(Prescribed Instrument – Sewage Works Certificates of Approval – OWRA, s. 53)

For a landfill discharging to a [sanitary](#) sewer, the quality and quantity of the discharge is controlled by local sewer use bylaws, and the requirements or limitations of the receiving wastewater treatment plant.

Leachate Collection systems that discharges to surface water also require approval under the Ontario Water Resources Act (OWRA). Provincial water quality objectives have been established by the Ministry of the Environment and any surface water discharges from a landfill site must meet these criteria [or more stringent criteria if set out in the Certificate of Approval](#).

Environmental Assessment Act (EAA) (Government of Ontario, 1990)

Many landfill proposals, particularly larger sites, may require approval under the Environmental Assessment Act (EAA). Under the EAA, a broader view of the environment is taken and issues beyond the effects on the natural environment must be addressed. An Environmental Assessment is triggered by the proposed capacity of the landfill [or by a request from the pulice to have an individual EA completed at a smaller site](#).

Once a landfill is subject to EAA approval, the decision to hold a public hearing and give approval for the undertaking rests with the Minister

Guidelines and Procedures

Guidelines and procedures do not have the same legal status as requirements set out in acts and regulations. The only instance where they become legally binding is when they are imposed through reference in a certificate of approval.

Guidelines B-7: Reasonable Use (Ontario Ministry of the Environment, 1994) and B-7-1: Determination of Contaminant Limits and Attenuation Zone (Ontario Ministry of the Environment, 2008)

These MOE guidelines acknowledge that leachate may cause some contamination to the local groundwater underlying the waste material. The overall objective of the reasonable use guideline is to ensure a waste disposal facility's impact on local groundwater is "reasonable" and will not result in unacceptable impairment to the groundwater quality of neighboring

properties.

Guideline B-7 includes criteria where the MOE may not support waste disposal facilities including:

- Sites where no appreciable attenuation can be provided (i.e. the subsurface environment does not improve the quality of leachate);
- Sites where natural attenuation is weak (e.g. fractured rocks); and
- Sites where the consequences of failure are unacceptable (e.g. a failure may contaminate the only drinking water source for a community)

Guideline B-7-1 sets out an approach to determine impact limits for the groundwater at the down gradient property boundary in an area referred to as a “contaminant attenuation zone”. It essentially allows limited impairment of use of off-site properties. The level of impairment depends on the current use of groundwater. For example, where groundwater is used for drinking and the quality of the water is better than the Ontario Drinking Water Standards it is permitted to allow off-site migration of contaminants that would result in a reduction of water quality as follows:

- Up to 50% of the difference between background conditions and the ODWO for non-health-related parameters; and
- Up to 25% of the difference between background conditions and the ODWO for health-related parameters.

Guideline D-4: Land Use On or Near Landfills and Dumps (Ontario Ministry of the Environment, 1994)

The MOE has prepared a number of guidelines on land use compatibility between waste disposal sites and sensitive land uses. Guideline D-4 provides guidelines on land uses (either existing or proposed) that are sensitive to landfills include:

- permanent structures used in animal husbandry (such as a barn),
- agricultural land used for pasturing livestock,
- residences,
- other permanent structures where a person is present on a full time basis (but not including food or motor vehicle service facilities adjacent to a highway, utility

operations, scrap yards, heavy industrial uses, gravel pits, quarries, mining or forestry activities), and cemeteries.

Areas of potential influence and separation distances vary depending on the type of adjacent land use, the nature of the landfill and known contaminant migration. The most significant contaminant, discharges and visual problems are generally anticipated within 500 m of a landfill; therefore a minimum 500 m setback in the evaluations of new sites is required. Sensitive land uses are generally not permitted adjacent to or on closed landfills. However, it is expected that municipalities will deal with this issue through their official plans and in conjunction with the provincial landfill development process (i.e. MOE Guideline D-4).

Procedure C-13-1: Engineered Facilities (Ontario Ministry of the Environment, 2008)

The MOE indicates in this procedure that there are limitations for engineered waste disposal sites and that any site should be located in an area with a high degree of natural protection and where groundwater is not and would not be used.

Guidelines for Environmental Protection Measures at Chemical and Waste Storage Facilities (Ontario Ministry of the Environment, 2007)

This guideline identifies environmental protection measures for chemical and waste storage areas and protection measures for human health and is identified as a resource during the planning of upgrades to existing storage areas and for the design and operation of new facilities. MOE abatement staff, owners, operators and designers of chemical and waste storage facilities may utilize this document, which indicates best practices, and spill containment provisions. Also recognized is the fact that the information contained within the guidelines is a point of reference, but other viable alternatives exist which may be equivalent or exceed the guidelines presented in the report.

b) Municipal

Land Use Planning

Many municipalities have policies regarding waste disposal sites in their official plans. In general, these policies recognize existing sites and indicate the need for an official plan and/or zoning by-law amendment in order to establish a new site. Many official plans recognize that new sites may not be possible within their boundaries based on legislative requirements.

Municipalities that have waste disposal site policies may also explicitly prohibit the storage or

disposal of nuclear and toxic (hazardous) waste:

Waste Management Practices

The Government of Ontario gave waste managers in Ontario the goal of diverting 60% of waste from disposal by the end of 2008, which represents an increase of 32% from 2004 (Ontario Ministry of the Environment, 2004).

This goal indirectly supports the drinking water source protection initiative through the implementation of policies and programs that increase the lifespan of the site (i.e. fewer new waste disposal sites are required), and keep certain materials out of landfills, thereby improving the quality of runoff from the site that enters surface water and groundwater.

Many municipalities have or are implementing programs and projects to reduce the amount of waste that requires disposal. As an example, recycling programs are common, although the specific criteria for accepted products vary between programs (i.e. some recycle more plastics, wax coated box board and Styrofoam than others). Rural municipalities may subsidize backyard composters, or offer a compost drop off at waste disposal sites. Larger municipalities may have a green bin program (organic waste collection for composting). Electronics recycling is available at most municipalities. Household hazardous waste collection days and depots vary greatly between municipalities. A barrier to collecting household hazardous waste has been the cost associated with this activity, although recently introduced programs under Stewardship Ontario offer municipalities a way to significantly recover costs.

Anticipated Legislation

- New sites established on agricultural land for the application of processed organic waste (i.e., NASM) will be regulated under O. Reg. 267 under the Nutrient Management Act. MOE ceased to issuing Certificates of Approval (C of A) for land application of processed organic waste to agricultural land as of January 1, 2011. EPA waste approvals issued between 2006 and 2010 will remain in effect until the C of A expires (these approvals typically are issued for 5 years) or 2016 at which time all Part V approvals for NASM applications to farm land [will expire](#).
- Also note, in some cases the storage of NASM materials will remain regulated under an Environmental Protection Act Part V waste approval (e.g. storage tank constructed prior to 2003 or the NASM is stored on one parcel of agricultural land, but is being land applied on another parcel of agricultural land).
- Historically the application of processed organic waste materials (NASM generated from off-

farm sources) to farm land has been approved under a Part V EPA, Section 39 waste approval. As of January 1, 2011 these types of approvals will be issued under the Nutrient Management Act. The land application of processed organic waste to lands other than farm land will continue to be approved under Part V of the EPA.

Also note that approval for an organic soil conditioning site can be issued using a stand alone waste disposal site Certificate of Approval (i.e., "Organic Soil Conditioning Site") or using a Processed Organic Waste Hauler's approval (i.e., a Waste Management System Certificate of Approval)

5. Gaps in existing legislation, policies and programs

- Although the Ontario Ministry of the Environment Guidelines and Procedures note specific consideration for water quality protection, they are not legally binding unless included in Certificates of Approval.
- Historical landfill locations are not necessarily recorded or monitored. Although unlikely, these could be impacting drinking water sources. These would be considered "conditions" under the DWSP Program.
- Landfills approved prior to August 1, 1998 did not require the same level of consideration for design and construction specifications or operational standards (i.e. Parts III and V of Ontario Regulation 232/98).
- Waste disposal sites are not explicitly prohibited within vulnerable areas in municipal official plans and zoning by-laws.
- Exemptions in the definitions of a "waste disposal site" may have a bearing on whether an activity is captured by a prescribed instrument (i.e. certain sites may not be captured under a certificate of approval)
- Waste disposal sites do not generally apply to waste generated on one's own property (e.g. dumpsters), although there is onus on the receiver of the waste (e.g. a municipality) to ensure the waste meets their certificate of approval, if they are to collect the waste material off-site, or if they receive materials at a landfill.
- Exemptions in the definitions of "waste" may have an impact on authority of policies or applicability of prescribed instruments
- Certificates of approval are not generally required for PCB waste disposal sites
- The frequency of household hazardous waste collection opportunities (e.g. collection days)

is not sufficient to accommodate the needs of the community; therefore, household hazardous wastes may still be illegally disposed with household garbage.

- Residents may not know the impact waste disposal might have on drinking water sources, particularly in the HVAs and SGRAs.
- Stormwater management at waste disposal sites may not be sufficient to address the threat.

6. Policy considerations

- REMINDER: The main consideration for reducing or eliminating drinking water threats related to waste disposal sites is to make sure that any discharge from the sites does not result in a significant risk to drinking water through appropriate measures to mitigate the threat, such that discharge from the sites do not threaten the quality of surface or groundwater sources, or are adequately mitigated. This could be accomplished by:
 - Complete or improved diversion of household hazardous waste, electronics, compost and recyclables for current and future use will reduce contamination from harmful waste and the overall footprint/area of impact
 - Capture and treatment of surface water runoff and prevention of run-off by using proper operating techniques and enforcement of C of A conditions.
 - Capture and treatment of leachate (to reduce impacts on groundwater). Prevention of leachate from entering groundwater/surface water by using proper design and/or rehabilitation
- *Clean Water Act* Part IV tools interim risk management plans, risk management plans, prohibition, and restricted land uses cannot be used for waste disposal sites.
- Prescribed Instruments may be used to address concerns for waste disposal sites, but identified risk management measures are only mandatory for significant drinking water threats. However, this does not prevent their voluntary incorporation.
- The source protection plan will need to address all “would be” situations related to waste disposal sites, even those instances where we believe they are unlikely to occur. Those situations can be covered by a high-level policy approach (“a catch-all policy”).

Examples of risk management measures and policy ideas

For discussion purposes, this section of the report provides examples of risk management measures and policy ideas that could be applicable to waste disposal sites. It is not an exhaustive list.

The examples are categorized by the types of policy tools that can be used to meet the source protection plan objectives. The MOE Risk Management Measures Catalogue (see Appendix D

for a weblink) was reviewed as part of this exercise and measures were incorporated where appropriate; many of the measures in the catalogue are already required by applicable provincial instruments.

Table 7.1 – Risk Management Measures for Waste Disposal Sites

Policy Tool	Example
Education and Outreach	<ul style="list-style-type: none"> Provide education materials and information sessions about proper disposal of waste materials and what can be done to reduce the volume of waste
Incentive Program	<ul style="list-style-type: none"> Subsidize backyard composters. Provincial funding for municipalities to create household hazardous waste collection opportunities. Stewardship Ontario and the Province provide funding to municipalities for proper disposal of household hazardous waste
Land Use Planning	<ul style="list-style-type: none"> Prohibit waste disposal sites in areas where they would be a significant drinking water threat.
Prescribed Provincial Instruments	<ul style="list-style-type: none"> Require Encourage the MOE to take extra care in include <u>vulnerable areas in</u> its review of applications for waste disposal sites for potential impacts to surface water and groundwater quality since most of the area is sensitive. Note that if a significant drinking water threat is identified the provincial instrument must conform to the policy.
Municipal Operations / Infrastructure	<ul style="list-style-type: none"> “Pay as you throw” program to encourage waste diversion (fee per bag of garbage, bag limits, bi-weekly pickup), along with other waste diversion strategies. Require the use of clear garbage bags to help identify household hazardous waste or other materials that should be diverted from a landfill. Random garbage bag audits. This can help target future diversion initiatives, including household hazardous waste and electronics. Electronics recycling collection – Stewardship Ontario has initiated programs to assist municipalities and business to divert electronics from the waste stream. Ontario Tire Stewardship – Although tires are banned from landfills, they have been historically been illegally dumped/stored. Programs have been put into place to reduce this behaviour.

	<ul style="list-style-type: none"> • Direct municipality(ies) to establish Local By-laws – local by-laws to control non-collectible materials (enforcement of by-law is required) • Green Bin program for collection (diversion) of organic material
Risk Management Plans	<ul style="list-style-type: none"> • n/a
Prohibition	<ul style="list-style-type: none"> • n/a
Restricted Land Uses	<ul style="list-style-type: none"> • n/a

Appendix A – Contaminant Sources at Waste Disposal Sites for Municipal Waste

Arsenic – Arsenic was used as a wood preservative for many years. It can be found in pharmaceuticals, pigments, plumbing, and pesticides among other products.

Atrazine – Used as an herbicide to control broadleaf and grassy weeds in agricultural crops and general weed control.

Barium – a metallic earth metal not found as a mineral. Barium is used primarily to remove gases in electronic vacuum tubes (e.g. TV cathode ray tubes). Other uses include: an alloy in spark plug wires, petroleum drilling mud, rubber filler, x-ray radiocontrast agent, rat poison, a coating for fluorescent lamps, and flame colour (green) for fireworks.

Bis(2-ethylhexyl) adipate- used primarily as a plasticizer in flexible vinyl products and is widely used in flexible food film. It is commonly blended with di(2-ethylhexyl) phthalate and di(isooctyl) phthalate in PVC and other polymers. It is used as a solvent and as a component of aircraft lubricants. It is important in the processing of nitrocellulose and synthetic rubber, in plasticizing polyvinyl butyral, cellulose acetate butyrate, polystyrene and dammar wax and in cosmetics

Bis(2-ethylhexyl) phthalate – used primarily as a plasticizer in flexible vinyl products and products made of PVC. It is also used as hydraulic fluid, dielectric fluid in capacitors, solvent in lightsticks, imitation leather, rainwear, footwear, upholstery, flooring, wire and cable, tablecloths, shower curtains, food packaging materials and children's toys.

BTEX – This acronym stands for Benzene, Toluene, Ethylbenzene and Xylenes. They are volatile organic compounds (VOC) found in petroleum products such as gasoline, diesel fuel, and heating oil.

Cadmium – a soft ductile metal, associated with zinc extraction. Cadmium is used primarily for electroplating other metals or alloys to protect them against corrosion, and is used extensively in the production of low-melting-point alloys, solders, and low-cadmium copper.

Chlorobenzene - used as a solvent (grease and paint), and in the production of pesticides, rubber polymers, and textile dyes.

Carbofuran – used as an insecticide/nematicide in agricultural crops (Health Canada's Pest Management Regulatory Agency (PMRA), is proposing phase out of carbofuran products in Canada (under the Pest Control Products Act,).

Chromium VI – infrequently occurs in nature and is generally the result of industrial and domestic emissions. Chromium VI is used in the metallurgical industry for chrome alloy and chromium metal production and chrome plating. It is also used in the chemical industry as oxidizing agents and in the production of other chromium compounds.

Copper – a malleable ductile metal, sometimes occurring in its natural state. Copper ore is mined and processed to be used most commonly in electrical systems, plumbing systems, castings, and heat exchangers. Historically copper has been used in a wide variety of domestic, commercial, and industrial applications.

Cyanide (CN⁻) – used in electroplating, extraction of ores (gold, silver), metal processing, photographic processes, production of synthetic rubber, chemical synthesis, manufacture of plastics, pesticide/rodenticide control, dehairing of hides, laboratory processes and the manufacture of dyes and pigments.

Dichlorobenzene-1,2 (ortho) – primarily used as a base material for several herbicides. Additional uses include: a solvent for waxes, gums, resins, tars, rubbers, oils and asphalts; as an insecticide for termites and locust borers; as a degreasing agent for metals, leather, paper, dry-cleaning, bricks, upholstery and wool; as an ingredient of metal polishes; in motor oil additive formulations; and in paints.

Dichlorobenzene-1,4 (para) – used mainly as an air freshener/deodorizer and a moth repellent (moth balls). It is also used in the manufacture of a range of pesticides, pharmaceuticals, and polyphenylene sulfide resins.

Dichlorophenoxy Acetic Acid (D-2,4) – used as an agricultural and commercial pesticide/herbicide to control broadleaf dicot weeds.

Hexachlorobenzene - released in trace amounts in the manufacture and use of chlorinated solvents and pesticides, and in emissions from incinerators and other industrial processes. (not used commercially in Canada since 1972)

Hexachlorocyclopentadiene – mainly used in the production of insecticides. Also used in polyester resins and flame retardants.

Hydrogen Sulphide - results from the anaerobic bacterial breakdown of organic matter. It also occurs in volcanic gases, natural gas, and some well waters. Hydrogen Sulphide is used to produce pure sulfur, in laboratory chemistry, the production of alkali metal sulfides and metal sulfides, the separation of heavy water.

Lead, Mercury – Lead and mercury contaminants can be found in batteries, paint, cathode ray tubes in computer screens and TVs, electronics and old plumbing. Mercury is also found in compact fluorescent lights and thermostats.

Nitrogen – an inert gas which makes up 78% of Earth's atmosphere used biologically by growing organisms and released by decaying plant and animal matter. Nitrogen gas is also distilled for industrial processes, nitrate fertilizers, explosives, food preservation, incandescent light bulbs, production of electronics, aircraft fuel, paintball gun propellant, and as a pressurizing agent for

beer kegs. Nitrogen in the liquid form is used a refrigeration and cooling.

Nickel – a lustrous metal, extracted from ore. It has a wide range of uses including stainless steel, magnets, coinage, rechargeable batteries, and special alloys.

Oxamyl – commercial/agricultural insecticide

Phosphorus (total) - commonly found in inorganic phosphate rocks. It is an essential element for all living cells. Commercial uses include fertilizers, explosives, nerve agents, friction matches, fireworks, pesticides, toothpaste, and detergents.

Petroleum Hydrocarbons (F1-F4) – organic compounds found naturally in crude oil. Predominantly used as a combustible fuel source, also used in road asphalt and a propellant in aerosol sprays.

Polychlorinated Biphenyls (PCBs) – synthetic industrial chemicals widely used prior to the late 1970s as dielectrics in electrical transformers and capacitors, as heat exchange fluids, paint and plastic additives, cutting oils, and inks.

Polycyclic Aromatic Hydrocarbons (PAHs) - emitted naturally from forest fires. Human-related activities can include wood heating, aluminum smelters, creosote-treated products, spills of petroleum products, and industrial processes.

Selenium – occurs naturally and is associated with copper ores, used widely in electronics and photocopiers. Selenium occurs in a wide variety of items from vegetables to personal hygiene products.

Silver – a lustrous metal, occurring naturally. Currently used in electrical systems, mirrors, chemical reactions (catalyst), photographic film, and disinfectants and microbiocides.

Pathogens – a biological agent that causes disease. Pathogens can be transmitted by bacteria and fungus in contaminated meat, animal and human wastes.

Trichloroethylene (TCE) – a chlorinated hydrocarbon (DNAPL) used as an industrial solvent for degreasing metal parts. Historically used as a dry cleaning solvent and for coffee decaffeination.

Trichlorophenoxyacetic acid-2,4,5 – herbicide used to defoliate broad leaf plants (phased out in 1970's) (aka Agent Orange)

Trichlorobenzene-1,2,4 - used as an intermediate in chemical synthesis, a solvent, a coolant, a lubricant and a heat-transfer medium. It is also used in polyester dyeing, in termite control preparations and as an insecticide.

Trichloroethane-1,1,1 - used as a solvent for adhesives, in metal degreasing and in the manufacture of

vinylidene chloride. Other applications include its use in pesticides, textile processing, cutting fluids, aerosols, lubricants, cutting oil formulations, drain cleaners, shoe polishes, spot cleaners, printing inks, and stain repellents.

Uranium – a metallic chemical element occurring naturally in low concentrations. Uranium is used in nuclear technology, ammunitions, guidance devices, as a shielding material, and a target for X-ray imaging. Historically used as a photographic toner, coloured glass, and glow-in-the-dark paints.

Vinyl chloride – an industrial chemical (DNAPL) used to produce Polymer Polyvinyl Chloride (PVC) for electrical wiring/insulation, food packaging, and many household and industrial items. Vinyl chloride enter the environment by leaches from old PVC products such as pipes and siding (pre-1990) and industrial discharge from chemical and latex manufacturing plants. It is also a natural breakdown product of trichloroethylene (TCE).

Zinc – a lustrous metal, mainly used for plating steel for corrosion-resistance. Other uses include batteries, alloys, dietary supplements, deodorants, anti-dandruff shampoos), and paints.

Appendix B – Local Information on Drinking Water Threat

1. Local scale of the drinking water threat?

[Insert description and/or map of local threat context with reference to Table A/B or applicable maps]

- Waste disposal sites is or would be a significant, moderate, or low threat in {insert areas}.
 - This activity is most likely to occur in {insert area}

Table A identifies where waste disposal sites are or would be significant, moderate or low drinking water threats in the SPA based on the MOE Tables of Drinking Water Threats (2008, as amended in 2009).

Table A – Waste Disposal Sites Threat Classification Table

Threat Circumstance	Vulnerable Area	Significant	Moderate	Low
Land Disposal of Municipal Waste (O. Reg. 347 s. 1 land disposal definition clauses (a) & (b))				
Area less than 1 ha	IPZ 1-3, WHPA-E		9-10	5.6-9
	WHPA-A-D	10	8-10	6-8
	HVA/SGRA			6
Area 1 ha to 10 ha	IPZ 1-3, WHPA-E	10	8-10	4.9-8.1
	WHPA-A-D	10	8	6
	HVA/SGRA			6
Area more than 10 ha	IPZ 1-3, WHPA-E	9-10	7-9	4.5-7.2
	WHPA-A-D	8-10	6-8	6
	HVA/SGRA		6	6
Land Disposal of Industrial Waste or Commercial Waste (O. Reg. 347 s. 1 land disposal definition clause (c))				
Area less than 1 ha	IPZ 1-3, WHPA-E		9-10	5.6-9
	WHPA-A-D	10	8-10	6-8
	HVA/SGRA			6
Area 1 ha to 10 ha	IPZ 1-3, WHPA-E	10	8-10	4.9-8.1
	WHPA-A-D	10	8	6
	HVA/SGRA			6

Threat Circumstance	Vulnerable Area	Significant	Moderate	Low
Area more than 10 ha	IPZ 1-3, WHPA-E	9-10	7-9	4.5-7.2
	WHPA-A-D	8-10	6-8	6
	HVA/SGRA		6	6
Land Disposal of Petroleum Refining Waste (O. Reg. 347 s. 1 land disposal definition clause (d))				
Area less than 1 ha	IPZ 1-3, WHPA-E		8-10	5.4-8.1
	WHPA-A-D		10	6-8
	HVA/SGRA			6
Area 1 ha to 10 ha	IPZ 1-3, WHPA-E	10	7-10	4.8-7.2
	WHPA-A-D		8-10	6-8
	HVA/SGRA			6
Area more than 10 ha	IPZ 1-3, WHPA-E	9-10	6.4-9	4.5-6.4
	WHPA-A-D	10	8-10	6
	HVA/SGRA			6
Land Disposal of Hazardous Waste, Liquid Industrial Waste or Processed Liquid Industrial Waste (O. Reg. 347 s. 1 land disposal definition clauses (a) & (b))				
Area less than 1 ha	IPZ 1-3, WHPA-E		9-10	5.6-9
	WHPA-A-D	10	8-10	6-8
	HVA/SGRA			6
Area 1 ha to 10 ha	IPZ 1-3, WHPA-E	10	8-10	4.9-8.1
	WHPA-A-D	10	8	6
	HVA/SGRA			6
Area more than 10 ha	IPZ 1-3, WHPA-E	9-10	7-9	4.5-7.2
	WHPA-A-D	10	8	6
	HVA/SGRA			6
A Site that is Not Approved to Accept, but Does Accept a Hazardous or Industrial Waste (O. Reg. 347 waste description clauses (p), (q), (r), (s), (t) or (u); hazardous waste definition clause (d))				
Waste stored above grade	IPZ 1-3, WHPA-E	10	8-10	4.9-8.1
	WHPA-A-D	10	8-10	6-8
	HVA/SGRA			6
Waste stored below grade	IPZ 1-3, WHPA-E		10	6.3-10

Threat Circumstance	Vulnerable Area	Significant	Moderate	Low
	E			
	WHPA-A-D	10	8	6
	HVA/SGRA			6
Waste stored above & below grade	IPZ 1-3, WHPA-E	10	8-10	4.9-8.1
	WHPA-A-D	10	8	6
	HVA/SGRA			6
Storage of Hazardous Waste at Disposal Sites (as defined in O. Reg. 347 (General – Waste Management), R.R.O. 1990)				
Waste stored above & below grade	IPZ 1-3, WHPA-E	9-10	7-9	4.5-7.2
	WHPA-A-D	10	8	6
	HVA/SGRA			6
Waste stored below grade	IPZ 1-3, WHPA-E		9-10	5.6-9
	WHPA-A-D	10	8	6
	HVA/SGRA			6
PCB Waste Storage at Disposal Sites (as described in O. Reg. 362 s.3 or in accordance with clause 8(a))				
Below grade in a facility, engineered cell or storage tanks	IPZ 1-3, WHPA-E		9-10	6-8.1
	WHPA-A-D	10	8	6
	HVA/SGRA			6
In drums at or above grade; or storage tanks partially below grade	IPZ 1-3, WHPA-E		8-10	5.4-7.2
	WHPA-A-D		8-10	6
	HVA/SGRA			6
In and outdoor area and not in a container	IPZ 1-3, WHPA-E	10	7.2-9	4.8-7
	WHPA-A-D	10	8	6
	HVA/SGRA			6
Liquid Industrial Waste Injection into a Well (as defined in O. Reg. 347 (General – Waste Management), R.R.O. 1990)				
Sum discharge = 380 m ³ /yr or less	IPZ 1-3, WHPA-E			8.1-10
	WHPA-A-D		8-10	6-10
	HVA/SGRA			6
Sum discharge = 380 to 3,800 m ³ /yr	IPZ 1-3, WHPA-E			8-10
	WHPA-A-D	10	8-10	6-8

Threat Circumstance	Vulnerable Area	Significant	Moderate	Low
	HVA/SGRA			6
Sum discharge = 3,800 to 38,000 m ³ /yr	IPZ 1-3, WHPA-E			7-10
	WHPA-A-D	10	8-10	6-8
	HVA/SGRA			6
Sum discharge = 38,000 to 380,000 m ³ /yr	IPZ 1-3, WHPA-E		10	7-10
	WHPA-A-D	10	8-10	6-8
	HVA/SGRA			6
Sum discharge = 380,000 to 3,800,000 m ³ /yr	IPZ 1-3, WHPA-E		10	6.3-10
	WHPA-A-D	10	8-10	6-8
	HVA/SGRA			6
Sum discharge = 3,800,000 to 38,000,000 m ³ /yr	IPZ 1-3, WHPA-E		9-10	6-10
	WHPA-A-D	10	8-10	6
	HVA/SGRA			6
Sum discharge is more than 38,000,000 m ³ /yr	IPZ 1-3, WHPA-E		9-10	5.6-10
	WHPA-A-D	8-10	6-8	6
	HVA/SGRA		6	6

Table represents the range of possible vulnerability scores per threat circumstance.

Table B Waste Disposal Sites in the X Source Protection Area

Name of Site	Owner	C of A # / Issue Date	Type of Disposal Site	Status (open, inactive, closed)	Date Opened	Date Closed	Site Area (ha)	Approved Waste Types	Monitoring Program (Y/N)	Threat Type
Common name of the site	Municipality, private operator	Important for policy considerations	As per threat circumstance groupings (municipal, Hazardous, industrial, PCB, etc waste)	Open, inactive, or closed				As per threat circumstance, multiple wastes approved for site	May want to specify the type of monitoring available at the site	Significant, Moderate or Low

Include additional context on threat, for example:

There are XX waste disposal sites in the XX Source Protection Area identified as significant threats. There are a number of other waste disposal sites within highly vulnerable aquifers (HVAs) and significant groundwater recharge areas (SGRAs).

The majority of the sites within the XX Source Protection Area are operated by municipalities to accept household (municipal) waste and some commercial waste. Private sites may accept a variety of municipal, industrial and commercial waste but only in accordance with their Certificate of Approval. Table 1 summarizes important information relative to waste disposal sites and Table 2 summarizes the waste disposal site drinking water threats in the XXXXX Source Protection Area.

The following lists salient points identified in the Certificate of approval for XXXX waste disposal site:

- List of Certificate of approval conditions
- If it is useful to include them
- Such as existing environmental monitoring, leachate and stormwater monitoring
- And types of waste accepted at the site.

2. Local approaches to managing these drinking water threats.

a. Land Use Planning

[Insert description of local land use approaches that are being used]

b. Other Local Programs

[Insert discussion on local programs including Stewardship, Education/Outreach, Incentive, etc. implemented by Conservation Authority, Municipality, or other watershed/community groups.]

c. Cross Jurisdiction Considerations

[Insert discussion on policy approaches being considered by neighboring Source Protection Areas/Regions.]

3. Further Research for Specific Vulnerable Areas

- [insert additional background research needed, where applicable]

Appendix C – Reference List

Government of Ontario. 1990. Environmental Protection Act . www.e-laws.gov.on.ca/html/statutes/english/elaws_statutes_90e19_e.htm#BK61

Government of Ontario. 1990. Environmental Assessment Act. www.e-laws.gov.on.ca/html/statutes/english/elaws_statutes_90e18_e.htm

Government of Ontario. 1990. Environmental Protection Act. Ontario Regulation 347- General Waste Management www.e-laws.gov.on.ca/html/regs/english/elaws_regs_900347_e.htm#BK0

Government of Ontario. 1990. Environmental Protection Act. Ontario Regulation 362 – Waste Management - PCB's. www.e-laws.gov.on.ca/html/regs/english/elaws_regs_900362_e.htm

Government of Ontario. 1990. Ontario Water Resources Act http://www.e-laws.gov.on.ca/html/statutes/english/elaws_statutes_90o40_e.htm

Government of Ontario. 1994. Environmental Protection Act. Ontario Regulation 101/94: Recycling and Composting of Municipal Waste www.e-laws.gov.on.ca/html/regs/english/elaws_regs_940101_e.htm

Government of Ontario. 1998. Environmental Protection Act. Ontario Regulation 232/98: Land filling Sites. www.e-laws.gov.on.ca/html/regs/english/elaws_regs_980232_e.htm#

Government of Ontario. 2007. Environmental Protection Act. Ontario Regulation 101/07 – Waste Management Projects www.ene.gov.on.ca/envision/env_reg/er/documents/2007/eawasteprojects_oreg101_07.pdf

Ontario Ministry of the Environment. 1994. Guidelines B-7 (formerly referenced by 15-08) – Incorporation of the Reasonable Use Concept into MOEE Groundwater Management Activities. www.ene.gov.on.ca/envision/gp/430e.pdf

Ontario Ministry of the Environment. 1994. Guideline D-4 (formerly 07-07) – Land Use On or Near Landfills and Dumps. www.ene.gov.on.ca/envision/gp/2158.pdf

Ontario Ministry of the Environment. 1994. 3 Rs - A Guide to Approvals for Recycling Sites, Leaf and Yard Waste Composting Sites and Compost Use. www.ene.gov.on.ca/envision/gp/2477e.pdf

Ontario Ministry of the Environment. 2004. Ontario's 60% Waste Diversion Goal – A Discussion Paper, June 2004. www.ene.gov.on.ca/programs/4651e.pdf

Ontario Ministry of the Environment. 2007. Guidelines for Environmental Protection Measures at Chemical and Waste Storage Facilities.

www.ene.gov.on.ca/envision/env_reg/er/documents/2007/Storage%20Guidelines.pdf

Ontario Ministry of the Environment. 2008. Guideline B-7-1 (formerly referenced by 15-08) – Determination of Contaminant Limits and Attenuation Zones.

www.ene.gov.on.ca/envision/gp/B7-1.pdf

Ontario Ministry of the Environment 2008. Procedure C-13-1: Engineered Facilities.

www.ene.gov.on.ca/en/publications/index.php (dead link to PDF)

Ontario Ministry of the Environment. 2009. Land Disposal Restrictions (LDR) Handbook

www.ene.gov.on.ca/publications/7400e.pdf

Ontario Ministry of the Environment. 2009. Tables of Drinking Water Threats. 2008, as amended in 2009. www.ene.gov.on.ca/publications/cw/7561e03.pdf

Appendix C-1 - Legislative Definitions Excerpts

Waste Management Facility (under the Environmental Protection Act)

Definitions, Part V

25. In this Part,

“waste” includes ashes, garbage, refuse, domestic waste, industrial waste, or municipal refuse and such other materials as are designated in the regulations; (“déchets”)

“waste disposal site” means,

- (a) any land upon, into, in or through which, or building or structure in which, waste is deposited, disposed of, handled, stored, transferred, treated or processed, and
- (b) any operation carried out or machinery or equipment used in connection with the depositing, disposal, handling, storage, transfer, treatment or processing referred to in clause (a);

“waste management system” means any facilities or equipment used in, and any operations carried out for, the management of waste including the collection, handling, transportation, storage, processing or disposal of waste, and may include one or more waste disposal sites. R.S.O. 1990, c. E.19, s. 25; 1992, c. 1, s. 25.

Application of Part, domestic waste

26. This Part does not apply to the storage or disposal by any person of the person’s domestic wastes on the person’s own property unless the Director is of the opinion, based upon reasonable and probable grounds, that such storage or disposal is or is likely to create a nuisance, or to any sewage or other works to which the *Ontario Water Resources Act* or the regulations thereunder apply. R.S.O. 1990, c. E.19, s. 26; 2005, c. 12, s. 1 (11).

Tables of Drinking Water Threats - Definitions

Hazardous Waste: O. Reg. 347 (General – Waste Management)

“hazardous waste” means a waste that is a,

- (a) hazardous industrial waste,
- (b) acute hazardous waste chemical,
- (c) hazardous waste chemical,
- (d) severely toxic waste,
- (e) ignitable waste,
- (f) corrosive waste,
- (g) reactive waste,

- (h) radioactive waste, except radioisotope wastes disposed of in a landfilling site in accordance with the written instructions of the Canadian Nuclear Safety Commission,
 - (i) pathological waste,
 - (j) leachate toxic waste, or
 - (k) PCB waste,
- but does not include,
- (l) hauled sewage,
 - (m) waste from the operation of a sewage works subject to the *Ontario Water Resources Act* where the works,
 - (i) is owned by a municipality,
 - (ii) is owned by the Crown or the Ontario Clean Water Agency, subject to an agreement with a municipality under the Ontario Water Resources Act, or
 - (iii) receives only waste similar in character to the domestic sewage from a household,
 - (n) domestic waste,
 - (o) incinerator ash resulting from the incineration of waste that is neither hazardous waste nor liquid industrial waste,
 - (p) waste that is a hazardous industrial waste, hazardous waste chemical, ignitable waste, corrosive waste, leachate toxic waste or reactive waste and that is produced in any month in an amount less than five kilograms or otherwise accumulated in an amount less than five kilograms,
 - (q) waste that is an acute hazardous waste chemical and that is produced in any month in an amount less than one kilogram or otherwise accumulated in an amount less than one kilogram,
 - (r) an empty container or the liner from an empty container that contained hazardous industrial waste, hazardous waste chemical, ignitable waste, corrosive waste, leachate toxic waste or reactive waste,
 - (s) an empty container of less than twenty litres capacity or one or more liners weighing, in total, less than ten kilograms from empty containers, that contained acute hazardous waste chemical,
 - (t) the residues or contaminated materials from the clean-up of a spill of less than five kilograms of waste that is a hazardous industrial waste, hazardous waste chemical, ignitable waste, corrosive waste, leachate toxic waste or reactive waste, or
 - (u) the residues or contaminated materials from the clean-up of a spill of less than one kilogram of waste that is an acute hazardous waste chemical;

Related Definition: Threat Circumstance: A site accepts a waste described in clause (p), (q), (r), (s), (t), or (u) of the definition of hazardous waste as defined in Regulation 347 (General – Waste Management), made under the Environmental Protection Act: - clauses identified in italics above.

A site accepts a waste described in clause (p), (q), (r), (s), (t), or (u) of the definition of hazardous waste as defined in Regulation 347 (General – Waste Management), made under the Environmental Protection Act Or in clause (d) of the definition of liquid industrial waste

“liquid industrial waste” means waste that is both liquid waste and industrial waste but does not include,

- (d) waste that is produced in any month in an amount less than twenty-five litres or otherwise accumulated in an amount less than twenty-five litres,

Liquid Industrial Waste: O. Reg. 347 (General – Waste Management)

“liquid industrial waste” means waste that is both liquid waste and industrial waste but does not include,

- (a) hazardous waste,
- (a.1) hauled sewage,
- (b) waste from the operation of a sewage works described in clause (m) of the definition of “hazardous waste”,
- (c) waste from the operation of a water works subject to the *Ontario Water Resources Act* or the *Safe Drinking Water Act, 2002*,
- (d) waste that is produced in any month in an amount less than twenty-five litres or otherwise accumulated in an amount less than twenty-five litres,
- (e) waste directly discharged by a generator from a waste generation facility into,
 - (i) a sewage works, other than a storm sewer, that is subject to the *Ontario Water Resources Act* or was established before April 3, 1957, or
 - (ii) a sewage system regulated under Part 8 of the building code made under the *Building Code Act, 1992*,
- (f) waste that results directly from food processing and preparation operations,
- (g) drilling fluids and produced waters associated with the exploration, development or production of crude oil or natural gas,
- (h) processed organic waste, or
- (i) asbestos waste;

Municipal waste: O. Reg. 347 (General – Waste Management)

“municipal waste” means,

- (a) any waste, whether or not it is owned, controlled or managed by a municipality, except,
 - (i) hazardous waste,
 - (ii) liquid industrial waste, or
 - (iii) gaseous waste, and
- (b) solid fuel, whether or not it is waste, that is derived in whole or in part from the waste included in clause (a);

Petroleum Refining Waste: O. Reg. 347 (General – Waste Management) – as defined in the circumstance (not the glossary)

“land disposal” means, with respect to a waste, the deposit or disposal of the waste upon, into, in or through land, including,

- (d) the landfarming of the waste, in the case of a petroleum refining waste,

“landfarming” means the biodegradation of petroleum refining wastes by naturally occurring soil bacteria by means of controlled application of the wastes to land followed by periodic tilling;

Land Disposal of Municipal Waste and Hazardous Waste, Liquid Industrial Waste or Processed Liquid Industrial Waste within the meaning of clauses (a) and (b) of the definition of "land disposal" in section 1 of Regulation 347, R.R.O. 1990 (General - Waste Management) made under the Environmental Protection Act:

“land disposal” means, with respect to a waste, the deposit or disposal of the waste upon, into, in or through land, including,

- (a) the deposit of the waste at a dump,
- (b) the landfilling of the waste,

Industrial or Commercial Waste and Industrial Waste - within the meaning of clause (c) of the definition of "land disposal" in section 1 of Regulation 347 (General- Waste Management) made under the Environmental Protection Act:

“land disposal” means, with respect to a waste, the deposit or disposal of the waste upon, into, in or through land, including,

- (c) the discharge of the waste into a geological formation by means of a well,

PCB Waste Disposal Site as described in Section 3 of Regulation 362 (Waste Management – PCBs), R.R. O. 1990, made under the Environmental Protection Act, or under s. 8a:

3. (1) Every site containing PCB waste and PCB related waste but not containing other wastes is classified as a PCB waste disposal site. R.R.O. 1990, Reg. 362, s. 3 (1).

(2) In subsection (1),

“PCB related waste” means waste containing low levels of PCBs or waste arising from a spill or clean up of PCB liquid or PCB waste. R.R.O. 1990, Reg. 362, s. 3 (2).

8. No person shall have at a waste disposal site PCB wastes received by the person after the 15th day of January, 1982 unless,

(a) the PCB waste was delivered to the waste disposal site under written instructions of the Director; or

Definition of PCB waste in R.R.O. 1990, Regulation 362 (Waste Management – PCB’s), made under the Environmental Protection Act: as per Glossary definition referencing this regulation

“PCB waste” means PCB equipment, PCB liquid or PCB material, but does not include,

(a) PCB material or PCB equipment after it has been decontaminated pursuant to guidelines issued by the Ministry of the Environment or instructions issued by the Director,

(b) PCB equipment that is,

(i) an electrical capacitor that has never contained over one kilogram of PCBs,

(ii) electrical, heat transfer or hydraulic equipment or a vapour diffusion pump that is being put to the use for which it was originally designed or is being stored for such use by a person who uses such equipment for the purpose for which it was originally designed, or

(iii) machinery or equipment referred to in subclause (c) (i), or

(c) PCB liquid that,

(i) is at the site of fixed machinery or equipment, the operation of which is intended to destroy the chemical structure of PCBs by using the PCBs as a source of fuel or chlorine for purposes other than the destruction of PCBs or other wastes and with respect to which a certificate of approval has been issued under section 9 of the Act after the 1st day of January, 1981 specifying the manner in which PCB liquid be processed in the machinery or equipment, or

(ii) is in PCB equipment referred to in subclause (b) (ii). (“déchets de BPC”) R.R.O. 1990, Reg. 362, s. 1.

“PCB equipment” means equipment designed or manufactured to operate with PCB liquid or to which PCB liquid was added or drums and other containers used for the storage of PCB liquid; (“appareils contenant des BPC”)

“PCB liquid” means,

- (a) liquids, other than liquids used or proposed for use for road oiling, containing PCBs at a concentration of more than fifty parts per million by weight,
- (b) liquids used or proposed for use for road oiling, containing PCBs at a concentration of more than five parts per million by weight, and
- (c) liquids made contrary to section 6 by diluting liquids referred to in clause (a) or (b); (“liquides contenant des BPC”)

“PCB materials” means materials containing PCBs at a concentration of more than fifty parts per million by weight whether the material is liquid or not; (“matières contenant des BPC”)

Appendix D – Additional Resources

1. Ministry of the Environment - Landfill Inventory Management Ontario (LIMO)
www.ene.gov.on.ca/en/land/limo/index.php
2. Ministry of the Environment. Landfill Inventory Management Ontario (LIMO) How Ontario regulates Landfills. www.ene.gov.on.ca/en/land/limo/regulates.php
3. Lindsay Ops Landfill Public Review Committee: www.city.kawarthalakes.on.ca/city-hall/boards-committees/lindsay-ops-landfill-public-review-committee
4. Ministry of the Environment. January, 1986. New Ontario Waste Classes,
www.ene.gov.on.ca/envision/gp/4188e.pdf
5. Waste Disposal Site and Waste Management System Certificates of Approval, MOE
www.ene.gov.on.ca/en/business/cofa/wastedisposal.php
6. The MOE Water Quality Risk Management Measures Catalogue (Version 2, 09/07/2010)
<http://maps.thamesriver.on.ca/swpCAMaps/rmc/disclaimer.aspx>
7. Ministry of the Environment. SPP Bulletins available at:
www.conservationontario.ca/members/members_source_protection_committee/spc_index.html (username: spcmember; password: spc123)

Available as of December 2010:

- Overview of Source Protection Plan requirements
- Notice of when Source Protection Plan preparation begins
- Existing municipal authorities and land use planning
- Section 57 Prohibition
- Overview of Prescribed Instruments
 - Table 2 – Prescribed Instruments Management of Drinking Water Threats
 - Pesticide permits
 - Renewable energy approval
 - Municipal drinking water licence and drinking water works permits
 - Example of municipal drinking water licence
 - Example of drinking water works permit
 - Nutrient Management Instruments
 - Sample letter of approval – nutrient management strategy
 - Sample nutrient management strategy and plan
 - Sample record of approval – nutrient management strategy
 - Sample multiple year nutrient management strategy and plan