Ministry of the Environment, Conservation and Parks

2020 Proposed Amendments to Technical Rules: Assessment Report

Clean Water Act, 2006

Technical Rules Amended on:
December 2008
November 2009
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Clean Water Act, 2006
Technical Rules: Assessment Reports

Part I - General

Part I.1 - Definitions

1. In these rules,

(1) the following definitions apply:

"Act" means the Clean Water Act, 2006;

"agricultural managed land" means managed land that is used for agricultural production purposes including areas of cropland, fallow land and improved pasture where agricultural source material (ASM), commercial fertilizer or non-agricultural source material (NASM) is applied or may be applied;

"agricultural source material" has the same meaning as in section 1 of O. Reg. 276/03 (General) made under the Nutrient Management Act, 2002;

"allocated quantity of water" means, in respect of an existing surface water intake or an existing well, the existing demand of the intake or well plus any additional quantity of water that would have to be taken by the intake or well to meet its committed demand, up to the maximum quantity of water that can lawfully be taken by the intake or well.

"committed demand" means a quantity of water, greater than the existing demand, that is necessary to meet the needs of the approved settlement area within an official plan.

"cone of influence" means,

(a) in respect of one or more wells that draw water from an unconfined aquifer, the area within the depression created in the water table when the wells are pumped at a rate equivalent to their allocated quantity of water; and

(b) in respect of one or more wells that draw water from a confined or semi-confined aquifer, the area within the depression created in the potentiometric surface when the wells are pumped at a rate equivalent to their allocated quantity of water;

"connecting channel" means the St. Lawrence River, St. Mary's River, St. Clair River, Detroit River, Niagara River and the Welland Canal;

"Conservation Authority Regulation Limit" means the areas delineated in accordance with O. Reg. 97/04 (Content of Conservation Authority

Regulations Under Subsection 28(1) of the Conservation Authorities Act: Development, Interference with Wetlands and Alterations to Shorelines and Watercourses) for the purpose of describing the areas where development is prohibited unless a person obtains a permission under section 28 of the Act;

“consumptive activity” means an activity that takes water from an aquifer or a surface water body without returning the water taken to the same aquifer or surface water body;

“Director” means a director appointed for the purpose of section 107 of the Act;

“drinking water” has the same meaning as in the Safe Drinking Water Act, 2002;

“existing demand” means the quantity of water determined to be currently taken from an existing surface water intake or an existing well during the study period.

“extreme event” means,

(a) a period of heavy precipitation or winds up to a 100 year storm event;

(b) a freshet; or

(c) a surface water body exceeding its high water mark;

“farm unit” has the same meaning as in section 1 of O. Reg. 267/03 (General) made under the Nutrient Management Act, 2002;

“future development” means the development of an area in accordance with the official plans applicable to the area to an extent that would have the most significant impact on the quality of water used for drinking water purposes and the quantity of water available from sources of drinking water;

“geographic information system” means a computer based system that has the capability to input, store, retrieve, manipulate, analyze, and output geographically referenced data;

“Great Lakes agreement” means an agreement to which subsection 14(1) of the Act applies;

“land cover” means the physical and biological cover on the land, including vegetation and anthropogenic features;

“local area” means,

(a) in respect of a surface water intake, the drainage area that contributes surface water to the intake and the area that provides recharge to an aquifer that contributes groundwater discharge to the drainage area; and

(b) in respect of a well, the area that is created by combining all of the following areas:

(i) the cone of influence of the well;

(ii) the cones of influence resulting from other water takings where those cones of influence intersect that of the well;

(iii) the areas outside the combined cones of influence where a future reduction in recharge would have a measurable impact on the wells; and

(iv) the surface water drainage area upstream of, and including, a losing reach of a stream that contributes a significant proportion of surface water to the wells.

“managed land” means land to which agricultural source material, commercial fertilizer, non-agricultural source material, or processed organic waste is applied, excluding compost that meets the requirements for Categories “AA”, “A”, and “B” compost in Part II of the Compost Standards;

”non-agricultural source material” has the same meaning as in section 1 of O. Reg. 276/03 (General) made under the Nutrient Management Act, 2002;

“nutrient unit” has the same meaning as in section 1 of O. Reg. 267/03 (General) made under the Nutrient Management Act, 2002;

“Nutrient Management Protocol” has the same meaning as in section 1 of O. Reg. 267/03 (General), made under the Nutrient Management Act, 2002;

“official plan” means an official plan prepared in accordance with part III of the Planning Act;

“Ontario Drinking Water Quality Standards” means O. Reg. 169/03 (Ontario Drinking Water Quality Standards) made under the Safe Drinking Water Act, 2002;

“planned demand” means a specific quantity of water that is required to meet the projected growth identified within a master plan or class environmental assessment, but is not already linked to growth within an official plan.

“planned quantity of water” means,

(a) in respect of an existing surface water intake or existing well, any amount of water that meets the definition of a planned system in O. Reg. 287/07 and any amount of water that is needed to meet a committed demand above the maximum quantity of water that can lawfully be taken by the intake or well.

(b) in respect of a new planned surface water intake or planned well, any amount of water that meets the definition of a planned system in O. Reg. 287/07.

“Regulation Limit” Removed and replaced with “Conservation Authority Regulation Limit”;

“river” includes a creek, stream, brook and any similar watercourse but does not include a connecting channel;

Soil, Ground Water and Sediment Standards” means the drinking water component of those standards (which assists in determining whether a ground water supply is a suitable source of drinking water and is referred to as “GW1” or “S-GW1”), as described in the Ministry of the Environment and Climate Change publication entitled “Rationale For The Development of Soil and Groundwater Standards for Use at Contaminated Sites in Ontario” under “Soil, Ground Water and Sediment Standards for Use under Part XV.1 of the Environmental Protection Act” dated April 15, 2011, or as amended from time to time;

“study year” Deleted

“study period” means the period during which data is available in relation to the current, representative water demand of an existing drinking water system;

“subwatershed” means an area that is drained by a tributary or some defined portion of a stream;

“surface soil” means soil that is no more than 1.5 metres beneath the soil surface but does not include soil beneath any non-soil surface treatment including asphalt, concrete or aggregate;

“Tables of Drinking Water Threats” means the Ministry of the Environment publication "Table of Drinking Water Threats: Clean Water Act, 2006" dated December 12, 2008, as amended from time to time;

“Technical Support Document for Ontario Drinking Water Standards, Objectives and Guidelines” means the Ministry of the Environment publication of that name dated June 2003 as amended June 2006;

“ten year drought period” means the continuous ten year period for which precipitation records exist with the lowest mean annual precipitation;

“Tier One” in respect of a water budget means a water budget developed using a geographical information system or equivalent to assess groundwater flows and levels, surface water flows and levels, and the interactions between them;

“Tier Two” in respect of a water budget means a water budget developed using computer based three dimensional groundwater flow models and computer based continuous surface water flow models to assess groundwater flows and levels, surface water flows and levels, and the interactions between them;

“Tier Three” in respect of a water budget means a water budget developed using computer based three dimensional groundwater flow models and computer based continuous surface water flow models to assess groundwater flows and levels, surface water flows and levels, and the interactions between them, and that includes consideration of the following circumstances:

(a) current and future land cover within the area;

(b) hydraulic flow controls within the area;

(c) water taken by the surface water intakes and wells related to the area;

(d) other uses of water within and downstream of the area;

(e) steady and transient states in groundwater;

(f) drought conditions;

(g) the average daily supply and demand for surface water within the area; and

(h) average monthly supply and average monthly demand for groundwater within the area;

“time of travel” means,

(a) in respect of groundwater, the length of time that is required for groundwater to travel a specified horizontal distance in the saturated zone; and

(b) in respect of surface water, the length of time that is required for surface water to travel a specified distance within a surface water body;

"transport pathway" in respect of an intake protection zone means works or any other thing that reduces the time it takes for a contaminant to reach a surface water intake and may include storm sewers, discharge pipes, utility trenches, ditches, swales, drainage works or any other types of drains;

"total impervious surface area" in respect of subrule 16 (11) means the surface area of all highways and other impervious land surfaces used for vehicular traffic and parking, and all pedestrian paths;

"two year or greater drought period" means,

(a) in relation to an assessment of surface water quantity, the continuous period, consisting of at least two years, for which precipitation records exist with the lowest mean annual precipitation, or

(b) in relation to an assessment of groundwater quantity, a simulated period, consisting of at least two years with no groundwater recharge;

"type I system" means a drinking water system described in subclause 15(2)(e)(i) of the Act;

"type II system" means a drinking water system described in subclause 15(2)(e)(ii) of the Act;

"type III system" means a drinking water system described in subclause 15(2)(e)(iii) of the Act; and

"water taking" has the same meaning as in the Ontario Water Resources Act;

(2) the following equation shall be used where these rules require the calculation of a percent water demand in relation to groundwater:

$$\text{\% Water Demand (Groundwater)} = \frac{\text{QDEMAND}}{\text{QSUPPLY- QRESERVE}} \text{ x } 100;$$

QDEMAND - Definition: Groundwater Consumptive Use; Calculation: Groundwater consumptive use is calculated as the portion of estimated average annual and monthly rate of groundwater takings in a subwatershed that is not returned to the aquifer that is the source of the water taking;

QSUPPLY – Definition: Groundwater Supply: Calculation: Groundwater supply is calculated as the groundwater recharge plus the groundwater inflow into a subwatershed. Recharge can be estimated by multiplying the average subwatershed recharge rate by the area of a subwatershed.

QRESERVE - Definition: Groundwater Reserve; Calculation: Groundwater reserve is calculated as 10% of the estimated average annual groundwater discharge rate, if available, or if such information is not available to make such a calculation, 10% of the estimated annual groundwater supply (Q SUPPLY);

(3) the following equation shall be used where these rules require the calculation of a percent water demand in relation to surface water:

$$\text{\% Water Demand (Surface water)} = \frac{\text{QDEMAND}}{\text{QSUPPLY- QRESERVE}} \text{ x 100.}$$

QDEMAND - Definition: Surface Water Consumptive Use; Calculation: Surface Water Consumptive Use is calculated as the portion of estimated monthly surface water takings in a subwatershed that is not returned to the surface water body that is the source of the water taking;

QSUPPLY - Definition: Surface Water Supply; Calculation: Monthly surface water supply is calculated by determining the monthly median flow of a surface water body. Where median flow conditions cannot be determined, best available monthly baseflow measurements or estimates should be used;

QRESERVE - Definition: Surface Water Reserve; Calculation: Surface water reserve is calculated by determining the lower decile stream flow (Qp90) on a monthly basis. The lower decile stream flow is the stream flow value that is exceeded 90% of the time. Where measured or modeled stream flow data is not available, an equivalent method may be used.

(4) Where these rules refer to the “high water mark” of a surface water body,

a) the “high water mark” shall be determined in accordance with the method described in the document entitled “Fish Habitat & Determining the High Water Mark on Lakes”, Fact Sheet T-6, published in 2005 by Fisheries and Oceans Canada, as it may be amended from time to time; or

b) in circumstances where there is insufficient data on the water levels or elevations of a surface water body to use the method described in Fact Sheet T-6 to determine the high water mark, a method that is substantially equivalent to the method described in the Fact Sheet shall be used to establish the high water mark for that surface water body.

(5) If a source protection authority is undertaking work in relation to an amendment to the assessment report portion of a source protection plan, a reference in these rules to “source protection committee” shall be read as the “source protection authority”.

Note: Under the method described in Fact Sheet T-6, the high water mark ("HWM") for a surface water body is calculated as the 80th percentile elevation for the month in which the highest annual water level occurs. For Great Lakes and Connecting Channels, the 80 percentile has been determined by Department of Fisheries and Oceans Canada (DFO) and those elevations are indicated in Fact Sheet T-6.
For inland rivers and streams, where the 80th percentile is not available or the length of records of water levels is not sufficient to calculate the HWM, the HWM would be equivalent to the "bank full level" for the river or stream (the water level at which a stream or river is at the top of its banks without flooding which corresponds to 1.5 -2 years flood event) or its "active channel" (sometimes referred to as the "ordinary high water mark").
For inland lakes where the 80th percentile is not available or the length of records of water levels is not sufficient to calculate the HWM, the HWM would be determined as the mark where the lake is frequently flooded and leaves a mark on the land. For inland "regulated rivers" (the levels of rivers are regulated by hydraulic structures such as dams) the HWM is determined as the normal high operating water levels of the hydraulic structures.
For any other circumstances where the HWM elevations are not available and not addressed in this footnote, another method may be used that is substantially equivalent to the method described herein.

Part I.2 - Assessment Report Contents

Watershed Characterization

2. The watershed shall be described for the purposes of paragraph 1 of subsection 13(1) of O. Reg. 287/07 (General) in accordance with Part II.

Water budget

3. Subject to rule 4, a water budget set out for the purpose of clause 15(2)(c) of the Act shall be completed as follows:

(1) prepare a conceptual water budget for every watershed in accordance with Part III.1; and

(2) prepare a water budget for every subwatershed in the source protection area in accordance with Part III.2.

4. An area represented by a conceptual water budget or water budget prepared in accordance with rule 3 shall not include any part of a surface water body that is a Great Lake, a connecting channel, Lake Simcoe, Lake Nipissing, Lake St. Clair or the Ottawa River.

Vulnerable area delineation

5. The identification of vulnerable areas for the purposes of clauses 15(2)(d) and 15(2)(e) of the Act shall be completed as follows:

(1) prepare a qualitative description of the physical geology and hydrodynamic settings across the source protection area, including information to support the delineation of significant groundwater recharge areas, highly vulnerable aquifers and wellhead protection areas;

(2) assess and delineate areas of groundwater vulnerability in accordance with Part IV;

(3) delineate highly vulnerable aquifers, significant groundwater recharge areas and wellhead protection areas in accordance with Part V; and

(4) delineate surface water intake protection zones in accordance with Part VI.

Drinking water issues

6. The description of drinking water issues for the purpose of clause 15(2)(f) of the Act shall be completed in accordance with Part XI.1.

Drinking water threats

7. The listing of drinking water threats for each vulnerable area for the purpose of clause 15(2)(g) of the Act shall be completed as follows:

(1) For every local area for which Part III.2 requires a water budget to be prepared, assign a risk level associated to the area in accordance with Part IX.

(2) List those activities that are determined to be activities that are or would be drinking water threats in relation to water quantity in accordance with Part X.1.

(3) List those activities that are determined to be activities that are or would be drinking water threats in relation to water quality in accordance with Part XI.2.

(4) List those conditions that result from past activities that are determined to be drinking water threats in relation to water quality in accordance with Part XI.3.

Significant, moderate or low drinking water threats

8. The identification of the areas within vulnerable areas where an activity is or would be a significant, moderate or low drinking water threat for the purpose of subclause 15(2)(h)(i) of the Act and subparagraphs 2i and 2ii of subsection 13(1) of O. Reg. 287/07 (General) and where a condition that results from past activities is a significant, moderate or low drinking water threat for the purpose of subclause 15(2)(h)(ii) and subparagraphs 2iii and 2iv of subsection 13(1) of O. Reg. 287/07 (General) shall be completed as follows:

(1) Assign vulnerability scores to highly vulnerable aquifers and wellhead protection areas in accordance with Part VII.

(2) Assign vulnerability scores to surface water intake protection zones in accordance with Part VIII.

(3) Identify those areas where activities listed as drinking water threats in relation to water quantity in accordance with Part X.1 are or would be significant or moderate drinking water threats in accordance with Part X.2.

(4) Identify those areas where activities listed as drinking water threats in relation to water quality in accordance with Part XI.2 are or would be significant, moderate or low drinking water threats in accordance with Part XI.4.

(5) Identify those areas where conditions that result from past activities and that are listed as drinking water threats in accordance with Part XI.3 are significant, moderate or low drinking water threats in accordance with Part XI.5.

Minimum information

9. An assessment report shall include the following:

(1) One or more maps, graphics or tables detailing the following:

(a) The elements required to be included in a characterization of a watershed in accordance with Part II.

(b) The component elements of the water budget for the source protection area that are listed in rule 19.

(c) The location or distribution of the following within the source protection area:

(i) Areas of groundwater vulnerability determined in accordance with Part IV.1.

(ii) Vulnerable areas delineated in accordance with Parts V and VI.

(iii) Drinking water systems and their related surface water intake protection zones and wellhead protection areas.

(iv) Vulnerability scores for areas within vulnerable areas assigned in accordance with Part VII and VIII.

(v) Subwatersheds delineated and stress levels assigned to subwatersheds in accordance with Part III.3 and Part III.4.

(vi) Risk levels assigned to local areas in accordance with Part IX.1.

(vii) Removed.

(viii) Source vulnerability factors and area vulnerability factors for areas within surface water intake protection zones.

(ix) Areas determined in accordance with Parts X and XI.4 to be areas within vulnerable areas where activities listed as drinking water threats in accordance with Parts X and XI.2 are or would be significant, moderate or low drinking water threats.

(x) Areas determined in accordance with Part XI.5 to be areas within vulnerable areas where conditions resulting from past activities listed as drinking water threats in accordance with Part XI.3 are significant, moderate or low drinking water threats.

(xi) Areas within a vulnerable area where drinking water threats listed in accordance with rule 118 or 119 may contribute to a parameter or pathogen associated with a drinking water issue described in accordance with rule 114.

(xii) Drinking water issues and the related information described in rules 114 and 115.

(d) Activities that are or would be and conditions resulting from past activities that are drinking water threats and their respective hazard rating provided by the Director if one is required to be determined in accordance with rule 120, 121, or 139.

(e) The number of locations at which an activity that is a significant drinking water threat is being engaged in.

(f) The number of locations at which a condition resulting from a past activity is a significant drinking water threat.

(2) A written description of the work undertaken in accordance with these rules including,

(a) information sources for data used in the assessment report and the purposes for which information was used,

(b) methods of analysis applied to the data,

(c) any limitations in respect of (a) and (b),

(d) the component elements of the water budget for the source protection area that are listed in Part III.1 and the interrelationships between those elements,

(e) with respect to the assessment of the climate of the source protection area undertaken in accordance with Part III.1, the effects that projected

changes in the climate over the following 25 years will have on the conclusions reached in the assessment report and a list of the information sources underlying those projected changes,

(f) a description of every uncertainty analysis conducted in accordance with these rules and the results of that analysis, and

(g) a description of how the Great Lakes agreements were considered in the work undertaken, if the source protection area contains water that flows into the Great Lakes or the St. Lawrence River.

(3) Tables listing with respect to the source protection area:

(a) The quality of groundwater and surface water across the area.

(b) The results of every calculation, assessment and assignment required by Parts III.3, III.4 and IX.

(c) Conditions resulting from past activities that are drinking water threats.

(d) Stress levels assigned to subwatersheds and risk levels assigned to local areas.

Part I.3 - General

Method and models

10. A method or model used in the assessment report shall be representative of the area or thing under study.

No assessment of risk management measures

11. Where these rules provide for or require an assessment of risk for the purpose of listing a drinking water threat in accordance with clause 15(2)(g) of the Act or for the purpose of identifying an area where a drinking water threat may be a significant, moderate or low drinking water threat in accordance with 15(2)(h) of the Act and subsection 13(1) of O. Reg. 287/07 (General), the assessment does not and shall not include consideration of any risk management measures.

Map standards

12. Maps submitted in an assessment report shall,

(1) include a title, scale bar and a compass rose indicating north;

(2) include a legend using symbols in accordance with the Ministry of Natural Resources publication “Mapping Symbology for the Clean Water Act”, dated November 2008, as amended from time to time; and

(3) be uncluttered and have such large and clear typeface and symbols that they remain legible upon being reduced to one half of their original size.

Part I.4 - Uncertainty analysis

13. An analysis of the uncertainty, characterized by “high” or “low” shall be made in respect of the following:

(1) The assessment of the vulnerability of groundwater throughout the area undertaken in accordance with Part IV.

(2) The delineation of highly vulnerable aquifers, significant groundwater recharge areas and wellhead protection areas undertaken in accordance with Part V.

(3) The delineation of surface water intake protection zones undertaken in accordance with Part VI.

(4) The assessment of the vulnerability of surface water intake protection zones undertaken in accordance with Part VIII.

(5) The assessment of the vulnerability of highly vulnerable aquifers and wellhead protection areas undertaken in accordance with Part VII.

14. The following factors shall be considered in an analysis conducted for the purpose of rule 13:

(1) The distribution, variability, quality and relevance of data used in the assessment report.

(2) The ability of the methods and models used to accurately reflect the flow processes in the hydrological system.

(3) The quality assurance and quality control procedures applied.

(4) The extent and level of calibration and validation achieved for models used or calculations or general assessments completed.

(5) For the purpose of subrule 13(1), the accuracy to which the groundwater vulnerability categories effectively assess the relative vulnerability of the underlying hydrogeological features.

(6) For the purpose of subrule 13(4), the accuracy to which the area vulnerability factor and the source vulnerability factor effectively assesses the relative vulnerability of the hydrological features.

15. An uncertainty factor of “high” or “low” shall be assigned to each vulnerable area delineated based on the results of the analysis conducted under rule 13.

Part I.5 – Alternate Methods or Approaches

15.1 Despite any provision of these rules, a source protection committee may use an alternate method or approach in the assessment report for gathering information or for performing a task that departs from the method or approach prescribed in these rules by including the following information in the assessment report:

(1) the rule that is being departed from;

(2) a rationale for the departure;

(3) an explanation of how the method or approach used by the source protection committee to gather information or perform the task is equivalent to or better than the approach or method prescribed in these rules; and

(4) the source protection committee provides the Director with a notice of the alternate method or approach that identifies the rule being departed from and a brief summary of the rationale and explanation referred to in (2) and (3).

15.2 For greater certainty, section 15.1 does not relieve the source protection committee from ensuring that an assessment report is made in accordance with an applicable requirement in the Act, the regulations or the terms of reference.

Part I.6 – Climate Consideration – Water quality

15.3 If a source protection committee prepares a climate impact assessment in relation to a wellhead protection area or intake protection zone delineated in the assessment report and the source protection committee intends to use the findings of the impact assessment in the assessment report, the following shall be included in the assessment report,

(1) An explanation of why specified climate data sets were used as the basis for the climate impact assessment;

(2) A summary of the findings of the climate impact assessment;

(3) A description of the approach used by the source protection committee to evaluate the vulnerability of a drinking water system to climate impacts identified in the climate impact assessment; and

(4) An explanation of the results of the evaluation under subrule (3), including whether the evaluation concluded that the drinking water system is resilient to the climate impacts identified in the climate impact assessment.

Part II – Watershed Characterization

16. The following shall be included in a characterization of a watershed, where the information is available:

(1) The boundaries of the watershed.

(2) The following areas within the watershed:

(a) Subwatersheds.

(b) Areas of settlement, as defined in the Places to Grow Act, 2005.

(c) Municipal boundaries, and their population and population density.

(d) Reserves as defined in the Indian Act (Canada), and their population and population density.

(e) Federal lands.

(3) With respect to drinking water systems,

(a) the location and area served by a system,

(b) the classification of the system into the following classifications as defined by O. Reg. 170/03 (Drinking Water Systems) made under the Safe Drinking Water Act, 2002:

(i) Large municipal residential system.

(ii) Small municipal residential system.

(iii) Large municipal non-residential system.

(iv) Small municipal non-residential system.

(v) Non-municipal year-round residential system.

(vi) Non-municipal seasonal residential system.

(vii) Large non-municipal non-residential system.

(viii) Small non-municipal non-residential system.

(c) the number of users served by the system,

(d) the location of surface water intakes and wells that are part of the system, and their average annual and average monthly pumping rates, and

(e) the location of monitoring locations related to the system.

(4) The location and types of natural vegetative cover, including wetlands, woodlands and vegetated riparian areas, and the percentage of land coverage of each type.

(5) The location and types of aquatic habitats, including cold water, mixed, and warm water fisheries, and macroinvertebrate communities.

(6) A comparison of the communities described in clause (5) to similar communities not impacted by anthropogenic factors.

(7) A description of Species within the source protection area that are on the Species at Risk in Ontario List as defined in the Endangered Species Act, 2007, if the source protection committee is of the opinion that the watershed characterization should include a discussion for the purposes of informing the public about species at risk in the source protection area.

(8) Surface water quality and groundwater quality across watersheds.

(9) One or more maps of the percentage of managed lands within,

(a) a highly vulnerable aquifer;

(b) each of the following areas within a vulnerable area:

(i) WHPA-A.

(ii) WHPA-B.

(iii) WHPA-C.

(iv) WHPA-C1, if any.

(v) WHPA-D.

(vi) WHPA-E.

(vii) IPZ-1.

(viii) IPZ-2.

(ix) IPZ-3, if any;

(x) IPZ-ICA, if any.

(xi) WHPA-ICA, if any.

If two or more areas in an area referred to in clause (a) and (b) have different vulnerability scores, the percentage of managed land may be determined for each of those areas. Mapping the percentage of managed lands is not required for any area in an area mentioned in clause (a) and (b) where the vulnerability scores for that area are less than those necessary for the following activities to be considered a significant, moderate or low drinking water threat in the Table of Drinking Water Threats: the application of agricultural source material to land, the

application of non-agricultural source material to land and the application of commercial fertilizer to land. Each map prepared in accordance with this subrule shall be labelled the "managed land map”.

(10) One or more maps of livestock density for each area referred to in subrule (9). Livestock density shall be determined by dividing the nutrient units generated in each area by the number of acres of agricultural managed land in that area where agricultural source material is applied. If two or more areas in an area referred to in subrule (9) (a) and (b) have different vulnerability scores, the livestock density may be determined for each of those areas. Mapping livestock density is not required for any area in an area mentioned in clause (9) (a) and (b) where the vulnerability scores for that area are less than those necessary for the following activities to be considered a significant, moderate or low drinking water threat in the Table of Drinking Water Threats: the application of agricultural source material to land, the application of non-agricultural source material to land and the application of commercial fertilizer to land. Each map prepared in accordance with this subrule shall be labelled the "livestock density map".

(11) For every highly vulnerable aquifer or each area of a wellhead protection area and intake protection zone identified in clause 9 (b), one or more maps showing the percentage of impervious surface areas where road salt application in those areas is or would be a significant, moderate of low threat as determined in accordance with the Table of Drinking Water Threats. Where an area identified in clause 9 (b) has two or more vulnerability scores, the percentage of impervious surface area may be determined for each sub-area with the same vulnerability score. Each map prepared in accordance with this subrule shall be labelled the “total impervious surface area map”.

17. Removed.

18. Parameters used to assess the quality of groundwater and surface water across the watershed shall be selected with consideration given to the natural features and land uses within the source protection area.

Part III – Water Budget

Part III.1 - Conceptual Water Budget

19. Subject to rule 24, a conceptual water budget shall include an assessment of the following:

(1) Physiography.

(2) Geology.

(3) Surface water bodies and their flows and water levels.

(4) Surface water control structures, including any dams within the meaning of section 1 of the Lakes and River Improvement Act, and any plans that govern operations of the structure.

(5) Groundwater aquifers, their direction of flow, and mapping of the water table and potentiometric surface(s).

(6) Wells and surface water intakes.

(7) Interactions between groundwater and surface water.

(8) In respect of every surface water intake and well for which a permit to take water has been issued under the Ontario Water Resources Act the maximum annual quantity of water that a person is permitted to take under the permit and the purpose for which water is being taken.

(9) How land cover across the area affects groundwater and surface water.

(10) In respect of every surface water intake and well for which a permit to take water has not been issued under the Ontario Water Resources Act, the annual quantity of water taken and the purpose for which water is being taken, including whether water is being taken for a domestic use, agricultural use, commercial use, industrial use or any other specified use.

(10.1) In respect of the water takings described in subrules (8) and (10), where available, the actual amounts of water taken annually and the projected annual takings of water.

(11) Aquatic habitat dependent upon water depth, flow and temperature.

(12) Trends related to any items listed in subrules (3) to (11).

(13) The climate of the area, including historical trends and existing projections related to changes in the climate of the area.

Part III.2 – Subwatershed water budgets

20. Subject to rule 24, prepare a Tier One water budget for every subwatershed in the source protection area.

21. Subject to rule 24, using the data underlying the Tier One water budget for the subwatershed, assign every subwatershed in the source protection area a surface water stress level and a groundwater stress level in accordance with Part III.3.

22. Subject to rule 24, prepare a Tier Two water budget that,

(1) assigns a surface water stress level for every subwatershed in the source protection area that was assigned a significant or moderate surface water stress level in accordance with rule 21 and from which an existing or planned type I, II or III system takes or will take water from a surface water supply; and

(2) assigns a groundwater stress level for every subwatershed in the source protection area that was assigned a groundwater stress level of significant or moderate in accordance with rule 21 and from which an existing or planned type I, II or III system takes or will take water from a groundwater supply.

23. Subject to rule 24, using the data underlying the Tier Two water budget for the subwatershed, assign every subwatershed in the source protection area for which a Tier Two water budget has been prepared a surface water stress level and a ground water stress level in accordance with Part III.4.

24. Rules 19, 20, 21, 22 and 23 do not apply if a water budget was prepared for every subwatershed in the source protection area and those water budgets meet the requirements of a Tier Two water budget and include an assessment of the elements listed in rule 19.

25. Where rules 19, 20, 21, 22 and 23 do not apply as a result of the application of rule 24, using the data underlying the equivalent Tier Two water budgets described in rule 24, assign every subwatershed in the source protection area from which an existing or planned type I, II or III system takes water a surface water stress level and a ground water stress level in accordance with Part III.4.

26. Delineate a local area in respect of every surface water intake in the source protection area relating to an existing or planned type I, II or III system that takes water from a subwatershed assigned a surface water stress level of significant or moderate in accordance with rule 23.

27. Delineate a local area in respect of every well in the source protection area relating to an existing or planned type I, II or III system that takes water from a subwatershed assigned a groundwater stress level of significant or moderate in accordance with rule 23.

28. Removed.

29. Removed.

30. For every local area delineated in accordance with rule 26 or 27, prepare a Tier Three water budget for the local area in accordance with Part IX for the purpose of determining if the local area should be assigned a risk level of significant, moderate or low.

30.1 If, the information required to delineate a local area or to complete a Tier Three water budget in accordance with rule 30 may not be readily ascertained, the assessment report may instead include a description of the steps that will be taken to ascertain the necessary information and complete the work.

31. Where the rules in Part III.3 and Part III.4 require that a percent demand calculation is undertaken in relation to a scenario,

(1) the annual percent demand or twelve consecutive monthly percent demands shall be calculated based on the water demand of the study period;

(2) data used to determine demand shall meet the requirements listed in Column 3 of Table 1 where a requirement in respect of all or part of the data is listed, and in all other cases the data shall be reflective of conditions that existed during the most recent period for which data is available and which parallels the duration and starting point of the study period; and

(3) data used to determine supply and reserve shall meet the requirements listed in Column 4 of Table 1 where a requirement in respect of all or part of the data is listed, and in all other cases the data shall be reflective of conditions that existed during the study period.

Part III.3 – Subwatershed stress levels – Tier One Water Budget

32. For the purposes of rule 21, a subwatershed shall be assigned a surface water stress level of significant, moderate or low in accordance with the following:

(1) Significant, if during scenario A or B in Table 1 the maximum monthly percent water demand for surface water for the subwatershed would be greater than or equal to 50%.

(2) Moderate, if a stress level was not assigned by subrule (1) and one or more of the following circumstances exist:

(a) During scenario A or B in Table 1 the maximum monthly percent water demand for surface water for the subwatershed would be less than 50% but greater than 20%.

(b) At any time after January 1, 1990, in relation to a type I, II or III system within the subwatershed,

(i) any part of a surface water intake was not below the water's surface during normal operation of the intake, or

(ii) the operation of a surface water intake pump was terminated because of an insufficient quantity of water being supplied to the intake.

(c) Both of the following are true:

(i) The result of one or more maximum monthly percent water demand calculations made in accordance with clause (a) of subrule (2) is between 18% and 20%, inclusive.

(ii) A sensitivity analysis of the data used to prepare the Tier One Water Budget suggests that the stress level for the subwatershed could be moderate.

(3) Low, if a stress level was not assigned by either subrule (1) or subrule (2).

33. For the purposes of rule 21, a subwatershed shall be assigned a groundwater stress level of significant, moderate or low in accordance with the following:

(1) Significant, if during scenario A or B in Table 1 one or both of the following circumstances exist:

(a) The annual percent water demand for groundwater for the subwatershed would be greater than or equal to 25%.

(b) The maximum monthly percent water demand for groundwater for the subwatershed would be greater than or equal to 50%.

(2) Moderate, if a stress level was not assigned by subrule (1) and one or more of the following circumstances exist:

(a) During scenario A or B in Table 1 the annual percent water demand for groundwater for the subwatershed would be less than 25% but greater than 10%.

(b) During scenario A or B in Table 1 the maximum monthly percent water demand for groundwater for the subwatershed would be less than 50% but greater than 25%.

(c) At any time after January 1, 1990, in relation to a type I, II or III system within the subwatershed,

(i) the groundwater level in the vicinity of the well was not at a level sufficient for the normal operation of the well, or

(ii) the operation of a well pump was terminated because of an insufficient quantity of water being supplied to the well.

(d) Both of the following are true:

(i) The result of one or more annual percent water demand calculations made in accordance with clause (a) of subrule (2) is between 8% and 10%, inclusive.

(ii) A sensitivity analysis of the data used to prepare the Tier One Water Budget suggests that the stress level for the subwatershed could be moderate.

(e) Both of the following are true:

(i) The result of one or more maximum monthly percent water demand calculations made in accordance with clause (b) of subrule (2) is between 23% and 25%, inclusive.

(ii) A sensitivity analysis of the data used to prepare the Tier One Water Budget suggests that the stress level for the subwatershed could be moderate.

(3) Low, if a stress level was not assigned by either subrule (1) or subrule (2).

Table 1 – Subwatershed Stress Level Scenarios

Column 1 Scenario	Column 2 Description of the Scenario	Column 3 Data Restrictions Demand	Column 4 Data Restrictions Supply and Reserve
A	existing system – average	Data related to the study period	Data related to climate and stream flow shall be the historical data set for climate and stream flow.
B	existing system - future demand	Data related to demand associated with the system within the subwatershed shall be reflective of the future development in the subwatershed.	Data related to climate and stream flow shall be historical data set for climate and stream flow. Data related to land cover shall be reflective of the future development in the subwatershed.

C	planned system demand – operational year	Data related to demand associated with an existing type I, II or III system within the subwatershed shall be reflective of the demand that would exist in the year that the planned system will be operational.	Data set related to climate and stream flow shall be the historical data set for climate and stream flow. Data related land cover shall be reflective of the year that the planned system will be operational.
D	existing system - two year drought	Data related to the study period	Data related to climate and stream flow shall be reflective of the two year drought period.
E	existing system - future two year drought	Data related to demand associated with an existing type I, II or III system within the subwatershed shall be reflective of the future development in the subwatershed.	Data related to climate and stream flow shall be reflective of the two year drought period. Data related to land cover shall be reflective of the future development in the subwatershed.
F	planned system - operational year - two year drought	Data related to demand associated with an existing type I, II or III system within the subwatershed shall be reflective of the demand that would exist in the year that the planned system will be operational.	Data related to climate and stream flow shall be reflective of the two year drought period. Data related to land cover shall be reflective of the future development that would exist in the subwatershed in the year that the planned system will be operational.
G	existing system - ten year drought	Data related to the study period	Data related to climate and stream flow shall be reflective of the ten year drought period.
H	existing system - future ten year drought	Data related to demand associated with an existing type I, II or III system within the subwatershed shall be reflective of	Data related to climate and stream flow shall be reflective of the ten year drought period. Data related to land cover shall be reflective of the future

		the future development in the subwatershed.	development in the subwatershed.
I	Planned system – operational year - ten year drought	Data related to demand associated with an existing type I, II or III system within the subwatershed shall be reflective of the demand that would exist in the year that the planned system will be operational.	Data related to climate and stream flow shall be reflective of the ten year drought period. Data related to land cover shall be reflective of the future development that would exist in the subwatershed in the year that the planned system will be operational.

Part III.4 – Subwatershed stress levels – Tier Two Water Budgets

34. For the purposes of rule 23 or 25, a subwatershed shall be assigned a surface water stress level of significant, moderate or low in accordance with the following:

(1) Significant, if one or both of the following circumstances exist:

(a) During scenario A or B in Table 1 the maximum monthly percent water demand for surface water for the subwatershed would be greater than or equal to 50%.

(b) Where there is a planned type I, II or III system proposed to be located within the subwatershed, during scenario C in Table 1 the maximum monthly percent water demand for surface water for the subwatershed would be greater than or equal to 50%.

(2) Moderate, if a stress level was not assigned by subrule (1) and one or more of the following circumstances exist:

(a) During scenario A or B in Table 1 the maximum monthly percent water demand for surface water for the subwatershed would be less than 50% but greater than 20%.

(b) Where there is a planned type I, II or III system proposed to be located within the subwatershed, during scenario C in Table 1 the maximum monthly percent water demand for surface water for the subwatershed would be less than 50% but greater than 20%.

(c) At any time after January 1, 1990, in relation to a type I, II or III system within the subwatershed,

(i) any part of a surface water intake was not below the water's surface during normal operation of the intake, or

(ii) the operation of a surface water intake pump was terminated because of an insufficient quantity of water being supplied to the intake.

(d) In relation to a type I, II or III system within the subwatershed, one or both of the circumstances described in clause (c) would occur during scenarios D, E, F, G, H or I.

(e) Removed.

(f) All of the following are true:

(i) The result of one or more maximum monthly percent water demand calculations made in accordance with this subrule is between 18% and 20%, inclusive.

(ii) The uncertainty associated with the percent demand calculations required by this rule, when evaluated to be high or low considering the factors set out in rule 36, is high.

(iii) A sensitivity analysis of the data used to prepare the Tier Two Water Budget suggests that the stress level for the subwatershed could be moderate.

(3) Low, if a stress level was not assigned by either subrule (1) or subrule (2).

35. For the purposes of rule 23 or 25, a subwatershed shall be assigned a groundwater stress level of significant, moderate or low in accordance with the following:

(1) Significant, if one or more of the following circumstances exist:

(a) During scenario A or B in Table 1 the annual percent water demand for groundwater for the subwatershed would be greater than or equal to 25%.

(b) Where there is a planned type I, II or III system proposed to be located within the subwatershed, during scenario C in Table 1 the annual percent water demand for groundwater for the subwatershed would be greater than or equal to 25%.

(c) During scenario A or B in Table 1 the maximum monthly percent water demand for groundwater for the subwatershed would be greater than or equal to 50%.

(d) Where there is a planned type I, II or III system proposed to be located within the subwatershed, during scenario C in Table 1 the maximum monthly

percent water demand for groundwater for the subwatershed would be greater than or equal to 50%.

(2) Moderate, if a stress level was not assigned by subrule (1) and one or more of the following circumstances exist:

(a) During scenario A or B in Table 1 the annual percent water demand for groundwater for the subwatershed would be less than 25% but greater than 10%.

(b) Where there is a planned type I, II or III system proposed to be located within the subwatershed, during scenario C in Table 1 the annual percent water demand for groundwater for the subwatershed would be less than 25% but greater than 10%.

(c) During scenario A or B in Table 1 the maximum monthly percent water demand for groundwater for the subwatershed would be less than 50% but greater than 25%.

(d) Where there is a planned type I, II or III system proposed to be located within the subwatershed, during scenario C in Table 1 the maximum monthly percent water demand for groundwater for the subwatershed would be less than 50% but greater than 25%.

(e) At any time after January 1, 1990, in relation to a type I, II or III system within the subwatershed, one or both of the following circumstances occurred:

(i) The groundwater level in the vicinity of the well was not at a level sufficient for the normal operation of the well.

(ii) The operation of a well pump was terminated because of an insufficient quantity of water being supplied to the well.

(f) In relation to a type I, II or III system within the subwatershed, one or both of the circumstances described in clause (e) would occur during scenarios D, E, F, G, H or I.

(i) Removed.

(ii) Removed.

(g) Removed.

(h) All of the following are true:

(i) The result of one or more annual percent water demand calculations made in accordance with subclause (a) or (b) of this subrule is between 8% and 10%, inclusive.

(ii) The uncertainty associated with the percent demand calculations required by this rule, when evaluated to be high or low considering the factors set out in rule 36, is high.

(iii) A sensitivity analysis of the data used to prepare the Tier Two Water Budget suggests that the stress level for the subwatershed could be moderate.

(i) All of the following are true:

(i) The result of one or more maximum monthly percent water demand calculations made in accordance with clause (c) or (d) of subrule (2) is between 23% and 25%, inclusive.

(ii) The uncertainty associated with the percent demand calculations required by this rule, when evaluated to be high or low considering the factors set out in rule 36, is high.

(iii) A sensitivity analysis of the data used to prepare the Tier Two Water Budget suggests that the stress level for the subwatershed could be moderate.

(3) Low, if a stress level was not assigned by either subrule (1) or subrule (2).

Uncertainty analysis

36. The following factors shall be considered in an analysis of uncertainty required by subclauses 34(2)(f)(ii) and 35(2)(h)(ii) and 35(2)(i)(ii):

(1) The distribution, variability, quality and relevance of the available input data.

(2) The ability of the methods and models used to accurately reflect the hydrologic system.

(3) The quality assurance and quality control procedures applied.

(4) The extent and level of calibration and validation achieved for any groundwater and surface models used or calculations and general assessments completed.

Part IV – Groundwater Vulnerability Assessment

Part IV.1 - Vulnerability Assessment and Delineation, Groundwater

37. The vulnerability of groundwater within a source protection area shall be assessed using one or more of the following groundwater vulnerability assessment methods:

(1) Intrinsic susceptibility index (ISI).

(2) Aquifer vulnerability index (AVI).

(3) Surface to aquifer advection time (SAAT).

(4) Surface to well advection time (SWAT).

(5) Removed.

38. A source protection area shall be divided into areas of high, medium or low groundwater vulnerability, high corresponding to greater vulnerability, as follows:

(1) Where a method described in subrule 37(1) or (2) was used to assess vulnerability,

(a) areas of high vulnerability are those areas with scores that are less than 30,

(b) areas of medium vulnerability are those areas with scores that are greater than or equal to 30 but less than or equal to 80, and

(c) areas of low vulnerability are those areas with scores that are greater than 80.

(2) Where a method described in subrule 37(3) or (4) was used to assess vulnerability,

(a) areas of high vulnerability are those areas with results that are less than 5 years,

(b) areas of medium vulnerability are those areas with results that are greater than or equal to 5 years but less than or equal to 25 years, and

(c) areas of low vulnerability are those areas with results that are greater than 25 years.

(3) Where, in accordance with rule 15.1, a method that departs from the methods specified in rule 37 has been used to assess vulnerability, an approach shall be used that, in the Director’s opinion, is comparable to the approach specified in subrules (1) and (2).

38.1 When using a groundwater vulnerability assessment method referred to in subrules 37(3) or (4) to assess the vulnerability of groundwater in a wellhead protection area in respect of a drinking water system mentioned in clause 15(2)(e) of the Act, the shallow and deep aquifer shall be independently assessed and delineated into areas of high, medium or low groundwater vulnerability in accordance with subrule 38(2).

38.2 If more than one method is used to assess groundwater vulnerability under rule 38.1, the results of both methods must be mapped.

Vulnerability increase, transport pathways

39. Where the vulnerability of an area identified as low in accordance with rule 38 is increased because of the presence of a transport pathway that is anthropogenic in origin, the area shall be identified as an area of medium or high vulnerability, high corresponding to greater vulnerability.

40. Where the vulnerability of an area identified as medium in accordance with rule 38 is increased because of the presence of a transport pathway that is anthropogenic in origin, the area shall be identified as an area of high vulnerability.

41. When determining whether the vulnerability of an area is increased for the purpose of rules 39 and 40 and the degree of the increase, the following factors shall be considered:

(1) Hydrogeological conditions.

(2) The type and design of any transport pathways.

(3) The cumulative impact of any transport pathways.

(4) The extent of any assumptions used in the assessment of the vulnerability of the groundwater.

Part V – Delineation of Vulnerable Areas: Highly Vulnerable Aquifers, Significant Groundwater Recharge Areas and Wellhead Protection Areas

42. Where the rules in this Part require that the extent of an area be determined by time of travel to a wellhead, one or more of the following models and methods shall be used:

(1) A computer based three-dimensional groundwater flow model.

(2) Two-dimensional analytical model.

(3) Uniform flow method.

(4) Calculated fixed radius method.

(5) Removed.

Part V.1 - Delineation of highly vulnerable aquifers

43. An area identified as an area of high groundwater vulnerability in accordance with Part IV and the subsurface beneath that area shall be delineated as a highly vulnerable aquifer.

43.1 If the vulnerability of a shallow and deep aquifer in a wellhead protection area is assessed and delineated independently in accordance with rule 38.1 the area identified as a shallow aquifer with high groundwater vulnerability in accordance with Part IV shall be delineated as a highly vulnerable aquifer.

Part V.2 - Delineation of significant groundwater recharge areas

44. Subject to rule 45, an area is a significant groundwater recharge area if,

(1) the area annually recharges water to the underlying aquifer at a rate that is greater than the rate of recharge across the whole of the related groundwater recharge area by a factor of 1.15 or more; or

(2) the area annually recharges a volume of water to the underlying aquifer that is 55% or more of the volume determined by subtracting the annual evapotranspiration for the whole of the related groundwater recharge area from the annual precipitation for the whole of the related groundwater recharge area.

45. Despite rule 44, an area shall not be delineated as a significant groundwater recharge area unless the area has a hydrological connection to a surface water body (excluding Great Lakes, Connecting Channels, Lake Simcoe, Lake Nipissing, Lake St. Clair or the Ottawa River) or aquifer that is a source of drinking water for a drinking water system.

46. The areas described in rule 44 shall be delineated using the models developed for the purposes of Part III of these rules and with consideration of the topography, surficial geology, and how land cover affects groundwater and surface water.

Part V.3 - Delineation of wellhead protection areas, type I systems

47. A wellhead protection area for a well associated with a type I system is the area created by combining all of the following areas:

(1) Area WHPA-A, being the surface and subsurface area centred on the well with an outer boundary identified by a radius of 100 metres.

(2) Area WHPA-B, being the surface and subsurface areas within which the time of travel to the well is less than or equal to two years but excluding WHPA-A.

(3) Area WHPA-C, being the surface and subsurface areas within which the time of travel to the well is less than or equal to five years but greater than two years.

(4) Area WHPA-D, being the surface and subsurface areas within which the time of travel to the well is less than or equal to twenty-five years but greater than five years.

(5) Area WHPA-E, being the area delineated in accordance with the rules in Part VI that apply to the delineation of an IPZ-2, as if an intake for the system were located,

(a) at the point of interaction between groundwater that is the source of raw water supply for the well and the surface water that is directly influencing that groundwater, or

(b) at the point in the surface water body influencing the raw water supply for the well that is closest in proximity to the well, if the point of interaction described in (a) is not known.

(6) Removed.

(7) Area WHPA-ICA, being the issue contributing area in relation to Part XI.1, shall only be delineated where,

(a) a drinking water issue is identified in accordance with rule 114 in relation to the well, and

(b) there is evidence that activities, conditions that result from past activities, and naturally occurring conditions, within this area, contribute to the drinking water issue described in subrule (a).

48. Despite rule 47, where a zone representing a ten year time of travel was delineated for the well in a report prepared prior to April 30, 2005 and a five year time of travel has never been delineated for the well the wellhead protection area for a well associated with a type I system is the area created by combining all of the following areas:

(1) Area WHPA-A, delineated in accordance with the requirements of subrule 47(1).

(2) Area WHPA-B, delineated in accordance with the requirements of subrule 47(2).

(3) Area WHPA-C1, being the surface and subsurface areas within which the time of travel to the well is less than or equal to ten years but greater than two years.

(4) Area WHPA-D, being the surface and subsurface areas within which the time of travel to the well is less than or equal to twenty-five years but greater than ten years.

(5) Area WHPA-E, delineated in accordance with the requirements of subrule 47(5).

(6) Removed.

(7) Area WHPA-ICA, being the issue contributing area in relation to Part XI.1, shall only be delineated where,

(a) a drinking water issue is identified in accordance with rule 114 in relation to the well, and

(b) there is evidence that activities, conditions that result from past activities, and naturally occurring conditions, within this area, contribute to the drinking water issue described in subrule (a).

49. Despite subrules 47(5) and 48(5), area WHPA-E shall only be added to a wellhead protection area where,

(1) the well obtains water from a raw water supply that is groundwater under the direct influence of surface water as determined in accordance with subsection 2 (2) of O. Reg. 170/03 (Drinking Water Systems) made under the Safe Drinking Water Act, 2002;

(2) a determination has not been made under subsection 2(3) of O. Reg. 170/03 (Drinking Water Systems) that subsection 2(2) of that regulation does not apply; and

(3) the interaction between surface water and groundwater has the effect of decreasing the time of travel of water to the well when compared to the time it would take water to travel to the well if the raw water supply for the well was not under the direct influence of surface water.

50. Removed.

50.1 If the information required to delineate a WHPA-E in accordance with subrule 47(5) or 48(5) may not be readily ascertained, the assessment report may instead include~~,~~ a description of the steps that will be taken to ascertain the necessary information and complete the work.

Part V.4 - Delineation of wellhead protection areas, type II and III systems

51. The wellhead protection area for a well associated with a type II or III system to which O. Reg. 170/03 (Drinking Water Systems) made under the Safe Drinking Water Act, 2002, O. Reg. 318/08 (Transitional – Small Drinking Water Systems) made under the Health Protection and Promotion Act or O. Reg. 319/08 (Small Drinking Water Systems) made under the Health Protection and Promotion Act applies, is the area created by combining all of the following areas:

(1) Area WHPA-A, being the surface and subsurface area centred on the well with an outer boundary identified by a radius of 100 metres.

(2) Area WHPA-B, being the surface and subsurface areas within which the time of travel to the well is less than or equal to two years but excluding WHPA-A.

(3) Area WHPA-C, being the surface and subsurface areas within which the time of travel to the well is less than or equal to five years but greater than two years.

(4) Area WHPA-D, being the surface and subsurface areas within which the time of travel to the well is less than or equal to twenty-five years but greater than five years.

52. The wellhead protection area for a wellhead associated with a type II or III system to which none of the regulations described in rule 51 apply, is the area created by combining all of the following areas:

(1) Area WHPA-A, being the surface and subsurface area centred on the well with an outer boundary identified by a radius of 100 metres.

(2) Area WHPA-B, being the surface and subsurface areas within which the time of travel to the well is less than or equal to two years but excluding WHPA-A.

Part V.5 – Delineation of WHPA-Q1 or WHPA-Q2

53. A wellhead protection area shall include all of the following areas if the relating well takes water from a subwatershed assigned a groundwater stress level of moderate or significant in accordance with Part III.4:

(1) Area WHPA-Q1, being the combined area that is the cone of influence of the well plus the whole of the cones of influence of all other wells that intersect that area and any surface water drainage area upstream of, and including, a losing reach of a stream that contributes a significant proportion of surface water to the wells.

(2) Area WHPA-Q2, being the area described in subrule (1) and any area outside the WHPA-Q1 where a future reduction in recharge would have a measurable impact on the municipal wells.

54. The model used in Part III to prepare the water budget for the local area that contains the well described in rule 53 shall be used to delineate WHPA-Q1 and WHPA-Q2.

Part VI – Delineation of Vulnerable Areas: Surface Water Intake Protection Zones

Part VI.1 – General

Classification of intakes

55. Subject to rule 55.1, a surface water intake associated with a type I, II or III system shall be classified as a,

(1) type A intake if the intake or the planned intake is or would be located in a Great Lake;

(2) type B intake if the intake or the planned intake is or would be located in a connecting channel;

(3) type C intake if the intake or the planned intake is or would be located in a river and neither the direction nor velocity of the flow of the water at the intake is affected by a water impoundment structure; or

(4) type D intake if the intake is not described in subrule (1), (2) or (3).

55.1 If the source protection committee is of the opinion that the classification of an intake or planned intake in accordance with rule 55 is not appropriate, the committee may reclassify the intake or planned intake and shall include in the assessment report a rationale and evidence to support the reclassification.

Identification of surface water bodies

56. Where these rules require the delineation of an IPZ-2 or an IPZ-3, the Water Virtual Flow – Seamless Provincial Data Set and the Water Poly Segment data layers housed in the Ontario Land Information Warehouse shall be used to identify the surface water bodies to be included in the IPZ-2 or IPZ-3, as the case may be.

57. Where there is no data in respect of the subwatershed in which the drinking water system related to the IPZ-2 or IPZ-3 is located in the Water Virtual Flow – Seamless Provincial Data Set data layer or in the Water Poly Segment data layer housed in the Ontario Land Information Warehouse, or where the data in the data layers is not sufficient to allow conclusions to be drawn with respect to the surface water bodies to be included in the IPZ-2 or IPZ-3, as the case may be, a computer based geographical information system shall be used to identify the surface water bodies to be included in the IPZ-2 or IPZ-3.

Part VI.2 - Area of surface water intake protection zones

58. A surface water intake protection zone for a surface water intake associated with a type I system or a type II or type III system to which O. Reg. 170/03 (Drinking Water Systems) made under the Safe Drinking Water Act, 2002, O. Reg. 318/08 (Transitional – Small Drinking Water Systems) made under the Health Protection

and Promotion Act or O. Reg. 319/08 (Small Drinking Water Systems) made under the Health Protection and Promotion Act applies, is the area created by combining all of the following areas:

(1) Area IPZ-1, delineated in accordance with the rules in Part VI.3, as applicable.

(2) Area IPZ-2, delineated in accordance with the rules in Parts VI.4 and VI.6, as applicable.

(3) Area IPZ-3, delineated in accordance with the rules in Parts VI.5 and VI.6, as applicable.

(4) Area IPZ-Q, delineated in accordance with the rules in Part VI.7, as applicable.

(5) Area IPZ-ICA, delineated in relation to the rules in Part XI.1, where applicable.

59. A surface water intake protection zone for a surface water intake associated with a type II or type III system to which none of the regulations described in rule 58 apply, is the area created by combining all of the following areas:

(1) Area IPZ-1, delineated in accordance with the rules in Part VI.3.

(2) Area IPZ-Q, delineated in accordance with rules in Part VI.7, as applicable.

60. An area delineated in accordance with Parts VI.3 to Part VI.7 includes all surface and subsurface land, water and beds under the water within the boundary of the area delineated.

Part VI.3 - Delineation of IPZ-1

61. An area known as IPZ-1 shall be delineated in respect of each surface water intake associated with a drinking water system described in rules 58 and 59 and shall be composed of all of the following areas:

(1) A circle that has a radius of 1000 metres from the centre point of every intake that serves as the source or entry point of raw water supply for the system, if the intake is a,

(a) type A intake,

(b) type D intake, or

(c) a type C intake to which rule 63 applies.

(2) If the intake is a type B intake, a semi-circle that has a radius of 1000 metres extending upstream from the centre point of every intake that serves as the source or entry point of raw water supply for the system and a rectangle with a length of 2000 metres and a width of 100 metres extending downstream from the centre point.

(3) If the intake is a type C intake to which rule 63 does not apply, a semi-circle that has a radius of 200 metres extending upstream from the centre point of every intake that serves as the source or entry point of raw water supply for the system and a rectangle with a length of 400 metres and a width of 10 metres extending downstream from the centre point.

62. If the area delineated in accordance with rule 61 includes any land, the IPZ-1 shall only include a setback on the land that is the greater of,

(1) the area of land that drains into the surface water body measured from the high water mark and the area must not exceed 120 metres; and

(2) if a Conservation Authority Regulation Limit is in effect in the IPZ-1, only the area of land located within the Conservation Authority Regulation Limit that drains into a surface water body that is located in the IPZ-1.

62.1 The setback delineated in accordance with rule (62) may be extended to other areas within the area delineated in accordance with rule 61, if applicable, which may contribute water to the intake.

63. The area of an IPZ-1 in a surface water body may be delineated in accordance with subrule 61(1) if the relating surface water body intake is a Type C intake and, having regard to the direction and flow velocity of the water at the intake, it would be reasonable to do so to protect the quality of the water that may enter the intake.

64. The area of an IPZ-1 in a surface water body may be modified to reflect local hydrodynamic conditions affecting flow if the modification is documented in the assessment report and a rationale is provided for the modification.

Part VI.4 - Delineation of IPZ-2

65. An area known as IPZ-2 shall be delineated for each surface water intake associated with a drinking water system described in rule 58, and shall be composed of all of the following areas:

(1) The area within each surface water body that may contribute water to the intake where the time of travel to the intake, subject to rule 66, is equal to or less than the time that is sufficient to allow the operator of the system to respond to a spill or other event that may impair the quality of the water at the intake and where the area abuts land, a setback that is the greater of,

(a) the area of land that drains into the surface water body measured from the high water mark and the area must not exceed 120 metres, and

(b) if a Conservation Authority Regulation Limit is in effect in the IPZ-2, only the area of land located within the Conservation Authority Regulation Limit that drains into a surface water body that is located in the IPZ-2.

(2) In respect of every stormwater management works that may contribute water to the intake, the area within the storm sewershed that contributes water to the works where the time of travel to the intake, subject to rule 66, is equal to or less than the time that is sufficient to allow the operator of the system to respond to a spill or other event that may impair the quality of the water at the intake.

(3) Removed.

66. For the purposes of subrules 65(1) and 65(2), where the time that is sufficient to allow the operator of the system to respond to an adverse condition in the quality of the surface water is less than two hours, the time of travel to the surface water body intake shall be deemed to be two hours.

67. Removed.

Part VI.5 - Delineation of IPZ-3

68. If, in respect of a drinking water system described in rule 58, modeling or other methods demonstrates that contaminants released during an extreme event may be transported to a type A and type B surface water intake or a type C or type D surface water intake located in Lake Nipissing, Lake Simcoe, Lake St. Clair or the Ottawa River, an area known as IPZ-3 shall be delineated and shall be composed of all of the following areas:

(1) Subject to rule 69, the area within each surface water body through which contaminants released during an extreme event may be transported to the intake.

(2) A setback on the land that abuts the portion of the surface water body that has been delineated in accordance with subrule (1), and this setback shall be the greater of,

(a) the area of land that drains into the surface water body measured from the high water mark and the area must not exceed 120 metres, and

(b) if a Conservation Authority Regulation Limit is in effect in the IPZ-3, only the area of land located within the Conservation Authority Regulation Limit that drains into a surface water body that is located in the IPZ-3.

69. The area delineated in accordance with subrule 68(1) shall not exceed the area within each surface water body that may contribute water to the intake during or as a result of an extreme event.

70. An area known as IPZ-3 shall be delineated for each type C and type D surface water intake that is not located in Lake Nippising, Lake Simcoe, Lake St. Clair or the Ottawa River, associated with a drinking water system described in rule 58 and shall be composed of all of the following areas:

(1) The area within each surface water body that may contribute water to the intake.

(2) A setback on the land that abuts the portion of the surface water body that has been delineated in accordance with subrule (1), and this setback shall be the greater of,

(a) the area of land that drains into the surface water body measured from the high water mark and the area must not exceed 120 metres, and

(b) if a Conservation Authority Regulation Limit is in effect in the IPZ-3, only the area of land located within the Conservation Authority Regulation Limit that drains into a surface water body that is located in the IPZ-3.

71. Removed.

Part VI.6 - Transport Pathways and Natural Surface Water Features

72. Where an area that is an IPZ-2 or IPZ-3 includes a setback from a surface water body delineated in accordance with subrules 65(1), 68(2), 70(2) the area may be extended to include an area that contributes water to the IPZ-2 or IPZ-3, as the case may be, through a natural or anthropogenic transport pathway.

73. If an area of an IPZ-2 or IPZ-3 is extended under rule 72, the following factors shall be considered when determining the extended area:

(1) The hydrological and hydrogeological conditions of the area where the transport pathway is located.

(2) Where a transport pathway is anthropogenic in origin, the type and design of the pathway.

(3) In respect of an IPZ-2, the time of travel for water to enter into and pass through the transport pathway.

74. Despite rules 65, 66, and 72, an IPZ-2 shall not include an area of land or water that lies within the IPZ-1 that has been delineated for that surface water intake.

75. Despite rules 68, 70, and 72, an IPZ-3 shall not include an area of land or water that lies within the IPZ-1 or IPZ-2 that has been delineated for that surface water intake.

Part VI.7 - Delineation of IPZ-Q

76. A surface water intake protection zone shall include an area known as IPZ-Q if the relating intake takes water from a subwatershed assigned a surface water stress level of moderate or significant in accordance with Part III.4.

77. The boundary of the IPZ-Q described in rule 76 is the local area delineated in accordance with Part III.2 that relates to the surface water intake.

78. The models required to be used by Part III in the preparation of the water budget for the local area shall be used to delineate IPZ-Q.

Part VI.8 - Delineation of IPZ-ICA

78.1 Area IPZ-ICA, being the issue contributing area in relation to Part XI.1, shall only be delineated where,

(1) a drinking water issue is identified in accordance with rule 114 in relation to the intake; and

(2) there is evidence that activities, conditions that result from past activities, and naturally occurring conditions, within this area, contribute to the drinking water issue described in subrule (1).

Part VII – Vulnerability: Highly Vulnerable Aquifers and Wellhead Protection Areas

Part VII.1 - Highly vulnerable aquifers

79. A highly vulnerable aquifer shall be assigned a vulnerability score of 6.

Part VII.2 - Removed

80. Removed.

81. Removed.

Part VII.3 - Wellhead protection areas

82. A wellhead protection area shall be subdivided by the boundaries of the areas of groundwater vulnerability identified in accordance with Part IV rule 38.

83. The areas identified in accordance with rule 82 shall be assigned a vulnerability based upon their location within the areas identified in Part V rules 47 or 48 in accordance with,

(1) Table 2(a) and rule 84 where the groundwater vulnerability was determined by the use of a method listed in Part IV subrules 37(1) or 37(2);

(2) Table 2(b) and rule 84 where the groundwater vulnerability was determined by the use of a method listed in Part IV subrules 37(3) or 37(4); or

(3) an approach that is, in the opinion of the Director, comparable to those specified in subrules (1) and (2), if, in accordance with rule 15.1, a method that departs from the methods specified in rule 42 has been used, to determine time of travel to a wellhead.

Table 2(a): Wellhead Protection Area Vulnerability Scores – ISI or AVI

Groundwater Vulnerability Category for the Area	Location Within a Wellhead Protection Area: WHPA-A	Location Within a Wellhead Protection Area: WHPA-B	Location Within a Wellhead Protection Area: WHPA-C	Location Within a Wellhead Protection Area: WHPA-C1	Location Within a Wellhead Protection Area: WHPA-D
High	10	10	8	8	6
Medium	10	8	6	6	4
Low	10	6	4	4	2

Table 2(b): Wellhead Protection Vulnerability Scores – SAAT or SWAT

Groundwater Vulnerability Category for the Area	Location Within a Wellhead Protection Area: WHPA-A	Location Within a Wellhead Protection Area: WHPA-B	Location Within a Wellhead Protection Area: WHPA-C	Location Within a Wellhead Protection Area: WHPA-C1	Location Within a Wellhead Protection Area: WHPA-D
High	10	10	8	8	6
Medium	10	8	6	6	4
Low	10	6	2	2	2

84. The areas identified in accordance with rule 82 that are located in WHPA-E shall be assigned a vulnerability score in accordance with the rules in Part VIII that apply to an IPZ-2.

85. Removed.

Part VIII – Vulnerability: Surface Water Intake Protection Zones

Part VIII.1 - Vulnerability scores

86. A vulnerability score shall be assigned to each IPZ-1 and to each area of an IPZ-2 associated with a type A, B, C or D intake and to each area of an IPZ-3 associated with a type C or type D intake.

87. The vulnerability score assigned to each IPZ-1, each area of an IPZ-2 and each area of an IPZ-3 associated with a type C or type D intake shall be calculated in accordance with the following formula,

$$B \times C$$

Where,

B = the area vulnerability factor of the area of the surface water intake protection zone determined in accordance with rules 88 to 93; and

C = the source vulnerability factor of the surface water intake determined in accordance with rules 94 to 96.

Part VIII.2 - Area vulnerability factor

88. An IPZ-1 shall be assigned an area vulnerability factor of 10.

89. One or more area vulnerability factors that are not less than 7 and not greater than 9 shall be assigned to each area within an IPZ-2 based on the vulnerability of the area where a higher factor corresponds to a higher vulnerability.

90. One or more area vulnerability factors that are not less than 1 and not greater than 9 shall be assigned to each area within an IPZ-3 associated with a type C or type D intake based on the vulnerability of the area within the IPZ-3 where a higher factor corresponds to a higher vulnerability.

91. An area vulnerability factor that is assigned to an IPZ-3 or an area within an IPZ-3 shall not be greater than the area vulnerability factor assigned to the IPZ-2 within the surface water intake protection zone.

92. The following shall be considered and documented in determining the area vulnerability factor of an area within an IPZ-2 or IPZ-3 for the purpose of rule 89 or 90 and an explanation shall be provided on how each affected the determination of the area vulnerability factor of that area:

(1) The percentage of the area of the IPZ-2 or IPZ-3, as the case may be, that is composed of land.

(2) The land cover, soil type, permeability of the land and the slope of any setbacks.

(3) The hydrological and hydrogeological conditions of the area where the transport pathway is located.

(4) In respect of an IPZ-3, the proximity of the area of the IPZ-3 to the intake.

93. An area vulnerability factor assigned for the purpose of rule 89 or 90 shall be expressed as a whole number.

Part VIII.3 - Source vulnerability factor

94. A source vulnerability factor shall be assigned to each surface water intake related to a type I, II or III system in accordance with Table 3 where a factor of 1 corresponds to a higher vulnerability.

95. The following shall be considered and documented in determining the source vulnerability factor of a surface water intake and an explanation shall be provided on how each affected the determination of the source vulnerability factor for the surface water intake:

(1) The depth of the intake from the top of the water surface.

(2) The distance of the intake from land.

(3) The history of water quality concerns at the surface water intake.

Table 3 – Source Vulnerability Factors

Intake Type	Source Vulnerability Factor
type A intake	0.5 to 0.7
type B intake	0.7 to 0.9
type C intake	0.9 or 1
type D intake	0.8 to 1

95.1 If, in respect of a surface water intake described in rule 68 and having regard to the considerations set out in Rule 95 for assigning a source vulnerability factor for the intake, it is determined that the intake is in shallow waters, is in close proximity to the shoreline or there has been a history of water quality concerns at the surface water intake, the source vulnerability factor may, despite Table 3, vary from 0.5 to 1.

96. A source vulnerability factor assigned for the purpose of rule 94 may be expressed to one decimal place.

Part IX – Tier Three Water Budgets (Risk Level Assignment to Local Areas)

Part IX.1 Local Area, Evaluation of Scenarios

97. Every local area delineated in accordance with rule 26 of Part III in respect of one or more planned or existing intakes that relate to one or more type I, II or III systems shall be assigned a risk level of significant, moderate or low by evaluating the surface water scenarios identified in Table 4A.

(1) Removed.

(2) Removed.

98. Every local area delineated in accordance with rule 27 of Part III in respect of one or more planned or existing wells that relate to one or more type I, II or III systems shall be assigned a risk level of significant, moderate or low by evaluating the groundwater scenarios identified in Table 4B.

(1) Removed.

(2) Removed.

99. For the purposes of Part IX.2, a reference to “other water uses" means,

(a) waste water assimilation,

(b) other water takings including agricultural, commercial and industrial water takings,

(c) navigation,

(d) recreation,

(e) aquatic habitat, and

(f) a provincially significant wetland.

100. For the purposes of evaluating the surface water scenarios A and B in Table 4A and the groundwater scenarios C and D in Table 4B, a tolerance level shall be assigned to the existing type I, II or III system to which the local area relates that is the subject of evaluation in accordance with the following:

(1) A tolerance level of high if the existing system is capable of meeting peak demand during all assessment periods.

(2) A tolerance level of low if sub-rule (1) does not apply to the existing system.

Part IX.2 Assignment of Risk Level

101. Removed.

102. Removed.

103. When evaluating the surface water scenarios in Table 4A in accordance with rule 97, the local area shall be assigned a risk level of significant if any of the following determinations are made:

(1) In respect of scenarios A and B, the tolerance level assigned to the drinking water system in accordance with rule 100 would be low.

(2) In respect of scenarios A, B, E1, E2, E3, F1, F2 and F3 it is determined in any of these scenarios that a period of time would exist where the quantity of water that can be taken from the surface water bodies in the local area would be insufficient to meet the associated demand of the intakes.

(3) In respect of scenario E5, it is determined that a period of time would exist where the difference between the allocated quantity of water and the planned quantity of water would result in a reduction to flows or levels of water thereby creating an unacceptable impact to other water uses.

104. When evaluating the groundwater scenarios in Table 4B in accordance with rule 98, the local area shall be assigned a risk level of significant if any of the following determinations are made:

(1) In respect of scenarios C and D, the tolerance level assigned to the drinking water system in accordance with rule 100 would be low.

(2) In respect of scenarios C, D, G1, G2, G3, H1, H2 and H3 it is determined in any of these scenarios that a period of time would exist where the quantity of water that can be taken from the groundwater system in the local area would be insufficient to meet the associated demand of the wells.

(3) In respect of scenario G5, it is determined that a period of time would exist where,

(a) the difference between the allocated quantity of water and the planned quantity of water would result in a reduction to flows or levels of water thereby creating an unacceptable impact to other water uses, or

(b) the difference between the allocated quantity of water and the planned quantity of water would result in a reduction in groundwater discharge to aquatic habitat that is classified as a cold water stream by an amount that is greater than,

(i) 20 percent of the existing estimated stream flow that is exceeded 80 per cent of the time (Qp80), or

(ii) 20 percent of the existing estimated average monthly base flow of the stream

105. When evaluating the surface water scenarios E4 and E5 in Table 4A, in accordance with rule 97, the local area shall be assigned a risk level of moderate, if a determination is made that a period of time would exist where,

(1) in respect to scenario E4, the difference between the existing demand and the allocated quantity of water, would result in a reduction to flows or levels of water thereby creating a measurable and potentially unacceptable impact to other water uses, or

(2) in respect to scenario E5, the difference between the allocated quantity of water and the planned quantity of water would result in a reduction to flows or levels of water thereby creating a measurable and potentially unacceptable impact to other water uses

106. When evaluating the groundwater scenarios G4 and G5 in Table 4B in accordance with rule 98, the local area shall be assigned a risk level of moderate, if a determination is made that a period of time would exist where,

(1) in respect to scenario G4:

(a) the difference between the existing demand and the allocated quantity of water, would result in a reduction to flows or levels of water thereby creating a measurable and potentially unacceptable impact to other water uses, or

(b) the difference between the existing demand and the allocated quantity of water, would result in a reduction in groundwater discharge to aquatic habitat that is classified as a cold water stream by an amount that is,

(i) at least 10 per cent of the existing estimated stream flow that is exceeded 80 per cent of the time (Qp80), or

(ii) at least 10 per cent of the existing estimated average monthly base flow of the stream

(2) in respect to scenario G5:

(a) the difference between the allocated quantity of water and the planned quantity of water would result in a reduction to flows or levels of water thereby creating a measurable and potentially unacceptable impact to other water uses, or

(b) the difference between the allocated quantity of water and the planned quantity of water would result in a reduction in groundwater

discharge to aquatic habitat that is classified as a cold water stream by an amount that is,

(i) at least 10 per cent but not greater than 20 per cent of the existing estimated stream flow that is exceeded 80 per cent of the time (Qp80), or

(ii) at least 10 per cent but not greater than 20 per cent of the existing estimated average monthly base flow of the stream

107. If a local area is not assigned a risk level of significant or moderate in accordance with rule 103, 104, 105 or 106, a risk level of low shall be assigned to the local area.

Part IX.3 Uncertainty and Sensitivity Analysis:

108. After assigning a risk level to a local area, an uncertainty analysis shall be conducted that considers the following factors for the purpose of determining if the uncertainty underlying the risk assignment should be characterized as high or low:

(1) The distribution, variability, quality and relevance of the data used to evaluate the scenarios.

(2) The degree to which the methods and models used to evaluate the scenarios accurately reflects the hydrologic system of the local area for both steady state and transient conditions.

(3) The quality assurance and control procedures used in evaluating the scenarios.

109. Despite rules 105 and 106, a local area that is assigned a risk level of moderate in accordance with those rules shall be assigned a risk level of significant, if the uncertainty analysis conducted in accordance with rule 108 characterizes the uncertainty as high and a sensitivity analysis of the data used to prepare the water budget for the local area suggests that the risk level for the local area could be significant.

Table 4A (Rule 103) – Surface Water Risk Scenarios

Column 1	Column 2	Column 3	Column 4	Column 5	Column 6	Column 7	Column 8
Scenario	Time Period	Land Cover of the Local Area	Quantity of Water-Demand	Other Permitted Water Demand	Model Simulation	Determining Significant Risk	Determining Moderate Risk
A (Base)	Climate data period	Existing	Existing Demand	Existing Demand	Long term daily flow using hourly climate and monthly pumping	R 103(1) or R 103(2)	N/A
B	Two year or greater drought period	Existing	Existing Demand	Existing Demand	Long term daily flow using hourly climate and monthly pumping	R 103(1) or R 103(2)	N/A
E (1)	Climate data period	Recharge Reduction	Allocated plus Planned	Anticipated Demand	Long term daily flow using hourly climate and monthly pumping	R 103(2)	N/A
E (2)	Climate data period	Existing	Allocated plus Planned	Existing Demand	Long term daily flow using hourly climate and monthly pumping	R 103(2)	N/A
E (3)	Climate data period	Recharge Reduction	Existing Demand	Anticipated Demand	Long term daily flow using hourly climate and monthly pumping	R 103(2)	N/A
E (4)	Climate data period	Existing	Allocated	Existing Demand	Long term daily flow using hourly climate and monthly pumping	N/A	R 105(1)
E (5)	Climate data period	Existing	Planned	Existing Demand	Long term daily flow using hourly climate and monthly pumping	R 103(3)	R 105 (2)

F (1)	Two year or greater drought period	Recharge Reduction	Allocated plus Planned	Anticipated Demand	Long term daily flow using hourly climate and monthly pumping	R 103(2)	N/A
F (2)		Existing	Allocated plus Planned	Existing Demand	Long term daily flow using hourly climate and monthly pumping	R 103(2)	N/A
F (3)		Recharge Reduction	Existing Demand	Anticipated Demand	Long term daily flow using hourly climate and monthly pumping	R 103(2)	N/A

Table 4B (Rule 104) – Groundwater Risk Scenarios

Column 1	Column 2	Column 3	Column 4	Column 5	Column 6	Column 7	Column 8
Scenario	Time Period	Land Cover of the Local Area	Quantity of Water Demand	Other Permitted Water Demand	Model Simulation	Determining Significant Risk	Determining Moderate Risk
C (Base)	Climate data period	Existing	Existing Demand	Existing Demand	Steady state groundwater model should simulate water levels and flows using average annual recharge and monthly pumping	R 104(1) or R 104(2)	N/A
D	Two year or greater drought period	Existing	Existing Demand	Existing Demand	Transient groundwater model should simulate water levels and flows using monthly recharge and monthly pumping	R 104(1) or R 104(2)	N/A
G (1)	Climate data period	Recharge Reduction	Allocated plus Planned	Anticipated Demand	Steady state groundwater model should simulate water levels and flows using average annual recharge and monthly pumping	R 104(2)	N/A
G (2)	Climate data period	Existing	Allocated plus Planned	Existing Demand	Steady state groundwater model should simulate water levels and flows using average annual recharge and monthly pumping	R 104(2)	N/A

G (2)	Climate data period	Existing	Allocated plus Planned	Existing Demand	Steady state groundwater model should simulate water levels and flows using average annual recharge and monthly pumping	R 104(2)	N/A
G (3)	Climate data period	Recharge Reduction	Existing Demand	Anticipated Demand	Steady state groundwater model should simulate water levels and flows using average annual recharge and monthly pumping	R 104(2)	N/A
G (4)	Climate data period	Existing	Allocated	Existing Demand	Steady state groundwater model should simulate water levels and flows using average annual recharge and monthly pumping	N/A	R 106(1)
G (5)	Climate data period	Existing	Planned	Existing Demand	Steady state groundwater model should simulate water levels and flows using average annual recharge and monthly pumping	R 104(3)	R 106(2)
H (1)	Two year or greater drought period	Recharge Reduction	Allocated plus Planned	Anticipated Demand	Transient groundwater model should simulate water levels and flows using monthly recharge and monthly pumping	R 104(2)	N/A

H (2)	Two year or greater drought period	Existing	Allocated plus Planned	Existing Demand	Transient groundwater model should simulate water levels and flows using monthly recharge and monthly pumping	N/A	N/A
H (3)	Two year or greater drought period	Recharge Reduction	Existing Demand	Anticipated Demand	Transient groundwater model should simulate water levels and flows using monthly recharge and monthly pumping	N/A	N/A

Explanatory Notes on Table 4A and 4B

1. Column 1 sets out the name of the scenario

2. Column 2 sets out the period of time that each scenario is required to evaluate. The term “climate data period” means the historical period for which climate and stream flow data are available for.

3. Column 3 sets out how “land cover”, as defined in sub-rule 1(1), should be considered when evaluating a scenario. “Existing” indicates that the scenario should consider the existing amount and extent of impervious and non-impervious areas in the local area. “Recharge Reduction” indicates the scenario should consider the amount and extent of impervious and non-impervious areas in the local area assuming development occurred as projected in the municipal official plan or in accordance with class environmental assessments.

4. Column 4 sets out the “Quantity of Water” or “Demand” as defined in sub-rule 1(1) that should be determined and assessed for each scenario. “Existing Demand” means the quantity of water determined to be currently taken from an existing surface water intake or an existing well during the study period. “Allocated” means, in respect of an existing surface water intake or an existing well, the existing demand of the intake or well plus any additional quantity of water that would have to be taken by the intake or well to meet its committed demand, up to the maximum quantity of water that can lawfully be taken by the intake or well. “Planned” means in respect of an existing surface water intake or existing well, any amount of water that meets the definition of a planned system in O. Reg. 287/07 and any amount of water that is needed to meet a committed demand above the maximum quantity of water that can lawfully be taken by the intake or well, or, in respect of a new planned surface water intake or planned well, any amount of water that meets the definition of a planned system in O. Reg. 287/07.

5. Column 5 sets out how other water takings in the local area, as identified under sub-rule 99(b), should be considered when evaluating a scenario. However, for the purposes of the column, only water takers that are required to obtain a permit to take water under the Ontario Water Resources Act should be considered. “Existing” means determining for each permitted water taker the actual or estimated amounts of consumptive water taking. “Anticipated” means determining for those permitted water takers, where possible, the estimated amounts of consumptive water taking that may likely, or will occur in the near future.

6. Column 6 sets out the modelling mode and minimum climate and pumping time periods for the surface and groundwater models as defined in sub-rule 1(1). For surface water, the model should simulate long term daily flow using hourly climate and monthly pumping inputs. For groundwater, the model should

simulate both steady state (using average annual recharge and monthly pumping) and transient (using monthly recharge and monthly pumping) conditions.

7. Column 7 identifies the rules that set out the determinations for a risk level of “significant” for the corresponding scenario. Column 8 identifies the rules that set out the determinations for a risk level of “moderate” for the corresponding scenario. Where, after evaluating a scenario, no determination has been made for that scenario in accordance with a rule referred to in Column 7 or 8, the local area that is the subject of evaluation must be given a risk level of low.

Part X – Drinking Water Threats: Water Quantity

Part X.1 – Listing of drinking water threats

110. The activities prescribed to be drinking water threats for a vulnerable area in paragraphs 19 and 20 of subsection 1.1(1) of O. Reg. 287/07 (General) may be collectively listed in the assessment report as “the activities prescribed to be drinking water threats in paragraphs 19 and 20 of subsection 1.1(1) of O. Reg. 287/07 (General)”.

Part X.2 – Listing of significant and moderate drinking water threats

111. An activity listed in Column 1 of Table 5 is a significant drinking water threat in the circumstances and the areas within a vulnerable area set out opposite to the activity in Columns 2 and 3 respectively.

112. An activity listed in Column 1 of Table 5 is a moderate drinking water threat in the circumstances and the areas within a vulnerable area set out opposite to the activity in Columns 2 and 4 respectively.

113. For the purposes of Table 5, “existing taking” in respect of an activity means the historical average annual quantity of water taken by that activity.

Table 5 – Water Quantity Drinking Water Threats and Significant Drinking Water Threats

Column 1 **Activity** **(Drinking Water Threat)**	**Column 2** **Circumstance**	**Column 3** **Area where Activity is a Significant Drinking Water Threat**	**Column 4** **Area where Activity is a Moderate Drinking Water Threat**
An activity that takes water from an aquifer or a surface water body without returning the water taken to the same aquifer or surface water body.	Reference 1 1. An existing taking, an increase to an existing taking or a new taking. 2. The water is or would be taken from within an IPZ-Q.	IPZ-Q where the water is or would be taken if the area relates to one or more surface water intakes and the local area was assessed to have a risk level of significant in accordance with Part IX.	IPZ-Q where the water is or would be taken if the area relates to one or more surface water intakes and the local area was assessed to have a risk level of moderate in accordance with Part IX.

An activity that takes water from an aquifer or a surface water body without returning the water taken to the same aquifer or surface water body.	Reference 2 1. An existing taking, an increase to an existing taking or a new taking. 2. The water is or would be taken from within a WHPA-Q1.	WHPA-Q1 where the water is or would be taken if the area relates to one or more wells and the local area was assessed to have a risk level of significant in accordance with Part IX.	WHPA-Q1 where the water is or would be taken if the area relates to one or more wells and the local area was assessed to have a risk level of moderate in accordance with Part IX.
An activity that takes water from an aquifer or a surface water body without returning the water taken to the same aquifer or surface water body.	Reference 3 1. An increase to an existing taking or a new taking. 2. Section 34 of the Ontario Water Resources Act requires a permit to take water in respect of the increase or new taking. 3. The water is or would be taken from within an IPZ-Q. 4. Despite the local area from which the water is or would be taken having been assessed for the purposes of the latest assessment report to have a risk level of moderate in accordance with Part IX, the local area would be assessed to have	IPZ-Q where the water is or would be taken if the area relates to one or more surface water intakes and the local area was assessed to have a risk level of moderate in accordance with Part IX.	N/A

	a risk level of significant if the increase to the existing taking or the new taking were factored into the risk level assessment.		

An activity that takes water from an aquifer or a surface water body without returning the water taken to the same aquifer or surface water body.	Reference 4 1. An increase to an existing taking or a new taking. 2. The water is or would be taken from within a WHPA-Q1. 3. Section 34 of the Ontario Water Resources Act requires a permit to take water in respect of the increase or new taking. 4. Despite the local area from which the water is or would be taken having been assessed for the purposes of the latest assessment report to have a risk level of moderate in accordance with Part IX, the local area would be assessed to have a risk level of significant if the increase to the existing taking or the new taking were factored into the risk level assessment.	WHPA-Q1 where the water is or would be taken if the area relates to one or more wells and the local area was assessed to have a risk level of moderate in accordance with Part IX.	N/A
An activity that reduces recharge to an aquifer.	Reference 5 1. An existing activity, a modified activity or a new activity.	IPZ-Q where the water is or would be taken if the area relates to one or more surface water intakes and the local	IPZ-Q where the water is or would be taken if the area relates to one or more surface

	2. The activity is or would be wholly or partly located within an IPZ-Q.	area was assessed to have a risk level of significant in accordance with Part IX.	water intakes and the local area was assessed to have a risk level of moderate in accordance with Part IX.
An activity that reduces recharge to an aquifer.	Reference 6 1. An existing activity, a modified activity or a new activity. 2. The activity is or would be wholly or partly located within a WHPA-Q2.	WHPA-Q2 where the water is or would be taken if the area relates to one or more wells and the local area was assessed to have a risk level of significant in accordance with Part IX.	WHPA-Q2 the water is or would be taken if the area relates to one or more wells and the local area was assessed to have a risk level of moderate in accordance with Part IX.

An activity that reduces recharge to an aquifer.	Reference 7 1. A modified activity or a new activity. 2. The activity is or would be wholly or partly located within an IPZ-Q. 3. Despite the local area from which the water is or would be taken having been assessed for the purposes of the latest assessment report to have a risk level of moderate in accordance with Part IX, the local area would be assessed to have a risk level of significant if the modified activity were factored into the risk level assessment.	IPZ-Q where the water is or would be taken if the area relates to one or more surface water intakes and the local area was assessed to have a risk level of moderate in accordance with Part IX.	N/A

An activity that reduces recharge to an aquifer	Reference 8 1. A modified activity or a new activity. 2. The activity is or would be wholly or partly located within a WHPA-Q2. 3. Despite the local area from which the water is or would be taken having been assessed for the purposes of the latest assessment report to have a risk level of moderate in accordance with Part IX, the local area would be assessed to have a risk level of significant if the modified activity were factored into the risk level assessment.	WHPA-Q2 where the water is or would be taken if the area relates to one or more wells and the local area was assessed to have a risk level of moderate in accordance with Part IX.	N/A

Part XI – Drinking Water Threats: Water Quality

Part XI.1 - Describing drinking water issues

114. If the source protection committee is aware of one of the following, the committee shall describe it as a drinking water issue under clause 15(2)(f) of the Act in accordance with rule 115:

(1) The presence of a parameter in water at a surface water intake or in a well, including a monitoring location related to a drinking water system to which clause 15(2)(e) of the Act applies, if the parameter is listed in Schedule 1, 2 or 3 of the Ontario Drinking Water Quality Standards or Table 4 of the Technical Support Document for Ontario Drinking Water Standards, Objectives and Guidelines and,

(a) the parameter is present at a concentration that may result in the deterioration of the quality of the water for use as a source of drinking water, or

(b) there is a trend of increasing concentrations of the parameter at the surface water intake, well or monitoring location and a continuation of that trend would result in the deterioration of the quality of the water for use as a source of drinking water.

(2) The presence of a pathogen in water at a surface water intake or in a well, including a monitoring location, related to a drinking water system to which clause 15(2)(e) of the Act does apply, if a microbial risk assessment undertaken in respect of the pathogen indicates that,

(a) the pathogen is present at a concentration that may result in the deterioration of the quality of the water for use as a source of drinking water, or

(b) there is a trend of increasing concentrations of the pathogen at the surface water intake or well and a continuation of that trend would result in the deterioration of the quality of the water for use as a source of drinking water.

(3) In respect of drinking water systems in the vulnerable area that are not mentioned in clause 15(2)(e) of the Act, there is evidence of the widespread presence of a parameter listed in Schedule 2 or 3 of the Ontario Drinking Water Quality Standards or Table 4 of the Technical Support Document for Ontario Drinking Water Standards, Objectives and Guidelines at surface water intakes or in wells, including monitoring locations, related to those systems, and

(a) the parameter is present at a concentration that may result in the deterioration of the water for use as a source of drinking water, or

(b) there is a trend of increasing concentrations of the parameter at the intake, well or monitoring location and a continuation of that trend would result in the deterioration of the quality of the water for use as a source of drinking water.

115. Only in respect of a drinking water issue identified in accordance with rule 114, where the drinking water issue is the result of, or partially the result of, anthropogenic causes, the description of the drinking water issue shall include the following information:

(1) The parameter or pathogen concerned.

(2) The surface water intake, well or monitoring location at which the presence of the parameter or pathogen has occurred.

(3) The issue contributing area delineated in accordance with subrules 47 (7) or 48 (7) or rule 78.1; and

(4) The identification of the drinking water threats listed in accordance with rules 118, 119 or 126 that contribute or may contribute to the parameter or pathogen of concern.

115.1 In respect of a drinking water issue that is not described under rule 115, the description of the drinking water issue shall include,

(1) the parameter or pathogen concerned; and

(2) an explanation of the nature of the issue and the possible causes of the issue.

116. Removed.

117. If the source protection committee is of the opinion that areas, activities or conditions referred to in subrules 115(3) or (4) are located outside the boundaries of the source protection area, the description of the drinking water issue shall include this information and shall identify the source protection area in which the source protection committee believes such areas and activities or conditions may be located.

Part XI.2 - Listing drinking water threats - Activities

Activities prescribed to be drinking water threats

118. The activities prescribed to be drinking water threats for a vulnerable area in paragraphs 1 through 18 and paragraphs 21 to 22 of subsection 1.1(1) of O. Reg. 287/07 (General) may be collectively listed in the assessment report as “the activities prescribed to be drinking water threats in paragraphs 1 through 18 and paragraphs 21 and 22 of subsection 1.1(1) of O. Reg. 287/07 (General)”.

118.1 When identifying the circumstances in which an activity is or would be a significant drinking water threat, a moderate drinking water threat, or a low drinking water threat in accordance with paragraphs 3 to 5 of subsection 13(1) of O. Reg 287/07 (General), the report may refer to the applicable parts of the Table of Drinking Water Threats that sets out the set of circumstances that makes an activity a significant, moderate or low drinking water threat.

Other activities

119. In addition to activities prescribed to be drinking water threats in paragraphs 1 through 18 and paragraphs 21 and 22 of subsection 1.1(1) of O. Reg. 287/07 (General), an activity shall be listed as a drinking water threat for a vulnerable area if,

(1) the activity has been identified by the source protection committee as an activity that may be a drinking water threat;

(2) an approval is not required to engage in the activity pursuant to any Act (Provincial or Federal);

(3) the Director has confirmed in writing that the activity is an activity that can be assessed and addressed as a drinking water threat under the Clean Water Act; and

(4) information provided by the Director indicates that,

(a) the chemical hazard rating of the activity is greater than 4; or

(b) the pathogen hazard rating of the activity is greater than 4.

(5) Removed.

120. The chemical hazard rating of an activity that is not prescribed to be a drinking water threat under O. Reg. 287/07 (General) shall be a rating that in the opinion of the Director reflects the hazard presented by the chemical parameter associated with the activity, if any, considering the following factors:

(1) Toxicity of the parameter.

(2) Environmental fate of the parameter.

(3) Quantity of the parameter.

(4) Method of release of the parameter to the natural environment.

(5) Type of vulnerable area in which the activity is or would be located.

121. The pathogen hazard rating of an activity that is not prescribed to be a drinking water threat under O. Reg. 287/07 (General) shall be a rating that in the opinion of the Director reflects the hazard presented by pathogens associated with the activity, if any, considering the following factors:

(1) The frequency of the presence of pathogens that may be associated with the activity.

(2) Method of release of the pathogen to the natural environment.

(3) Type of vulnerable area in which the activity is or would be located.

122. The risk score of an area within a vulnerable area in respect of an activity that is not listed in the Tables of Drinking Water Threats shall be calculated in accordance with the following formula:

$$A \times B$$

where,

A = the chemical hazard rating or pathogen hazard rating of the activity determined in accordance with rule 120 or 121**,** as the case may be; and

B = the vulnerability of the score of the area within the vulnerable area determined in accordance with Part VII or Part VIII, as the case may be.

123. Removed.

124. Removed.

125. If an activity that is not prescribed to be a drinking water threat under O. Reg. 287/07 (General) is listed as an activity that is or would be a drinking water threat, the following information shall be provided in a table format:

(1) The circumstances that make the activity a drinking water threat shall be specified opposite the activity.

(2) The hazard rating of the activity determined in accordance with rule 120 or 121 or both, as the case may be, shall be listed opposite the activity.

Part XI.3 - Listing drinking water threats - Conditions

Listing Conditions that result from past activities

126. If the source protection committee is aware of one of the following conditions that results from past activities, the committee shall list it as a drinking water threat under clause 15(2)(g)(ii) of the Act:

(1) The presence of a non-aqueous phase liquid in groundwater in a highly vulnerable aquifer or wellhead protection area.

(2) The presence of a single mass of more than 100 litres of one or more dense non-aqueous phase liquids in surface water in a surface water intake protection zone.

(3) The presence of a contaminant in groundwater in a highly vulnerable aquifer or a wellhead protection area, if the contaminant is listed in Table 2 of the Soil, Ground Water and Sediment Standards, is present at a concentration that exceeds the potable groundwater standard set out for the contaminant in that Table, and the presence of the contaminant in groundwater could result in the deterioration of the groundwater for use as a source of drinking water.

(4) The presence of a contaminant in surface soil in a surface water intake protection zone if, the contaminant is listed in Table 4 of the Soil, Ground Water and Sediment Standards is present at a concentration that exceeds the surface soil standard for industrial/commercial/community property use set out for the contaminant in that Table and the presence of the contaminant in surface soil could result in the deterioration of the surface water for use as a source of drinking water.

(5) The presence of a contaminant in sediment in an intake protection zone, if the contaminant is listed in Table 1 of the Soil, Ground Water and Sediment Standards and is present at a concentration that exceeds the sediment standard set out for the contaminant in that Table and the presence of the contaminant in sediment could result in the deterioration of the surface water for use as a source of drinking water.

(6) The presence of a contaminant in groundwater that is discharging into an intake protection zone, if the contaminant is listed in Table 2 of the Soil, Ground Water and Sediment Standards, the concentration of the contaminant exceeds the potable groundwater standard set out for that contaminant in the Table, and the presence of the contaminant in groundwater could result in the deterioration of the surface water for use as a source of drinking water.

Part XI.4 - Identifying areas for significant, moderate and low drinking water threats - Activities

Significant drinking water threats

127. An activity listed as a drinking water threat in accordance with rule 118 is or would be a significant drinking water threat in an area set out opposite to the activity in column 3 of Table 1 or Table 2 of the Tables of Drinking Water Threats if the area has a vulnerability score set out in column 4 of the respective Table and the set of circumstances set out in a cell of column 2 of the respective Table opposite to the area apply to the activity.

128. An activity listed as a drinking water threat in accordance with rule 118 is or would be a significant drinking water threat if rule 127 does not apply and the following apply:

(1) The chemical hazard rating or pathogen hazard rating for the chemical parameter or pathogen associated with the circumstances under which the

activity is or will be engaged in, determined in accordance with rule 120 or 121, is greater than 4.

(2) The area within a vulnerable area where the activity is or will be engaged in has a risk score calculated in accordance with rule 122 that is equal to or greater than 80.

129. An activity listed as a drinking water threat in accordance with rule 119 is or would be a significant drinking water threat in an area within a vulnerable area that has a risk score in respect of the activity calculated in accordance with rule 122 that is equal to or greater than 80.

130. An activity listed as a drinking water threat in accordance with rule 118 or 119 is or would be a significant drinking water threat in a surface water intake protection zone associated with a surface water intake to which rule 68 applies at the location where the activity is or would be engaged in, if modeling or another method demonstrates that a release of a chemical parameter or pathogen from the activity or the proposed activity would be transported through the surface water intake protection zone to the intake and result in the deterioration of the water for use as a source of drinking water for the intake.

131. Despite anything else in these rules, an activity is or would be a significant drinking water threat if,

(1) the activity is associated with a drinking water issue described in subrule 114(1) or (2);

(2) the activity is identified as a drinking water threat in accordance with subrule 115(4);

(3) the activity is located in an issue contributing area identified in accordance with subrule 115(3); and

(4) the circumstances described in rule 131.1 apply to the activity.

131.1 The circumstances for the purposes of subrule 131(4) are,

(1) if the activity is listed as a drinking water threat in accordance with rule 118, a set of circumstances set out in an applicable cell in Column 2 of the Table of Drinking Water Threats that contribute or may contribute to the drinking water issue mentioned in subrule 131(1); or

(2) if the activity is listed as a drinking water threat in accordance with rule 119, the circumstances for the activity specified in accordance with rule 125 that contribute or may contribute to the drinking water issue mentioned in subrule 131(1).

Moderate drinking water threats

132. An activity listed as a drinking water threat in accordance with rule 118 is or would be a moderate drinking water threat in an area set out opposite to the activity in column 3 of Table 1 or Table 2 of the Tables of Drinking Water if the area has a vulnerability score set out in column 5 of the respective Table and all of the circumstances set out in column 2 of the respective Table opposite to the area apply to the activity.

133. An activity listed in accordance with rule 118 is or would be a moderate drinking water threat if rule 132 does not apply and the following apply:

(1) The chemical hazard rating or pathogen hazard rating for the chemical parameter or pathogen associated with the circumstances under which the activity is or will be engaged in, determined in accordance with rule 120 or 121, is greater than 4.

(2) The area within a vulnerable area in which the activity is or will be engaged in has a risk score calculated in accordance with rule 122 that is equal to or greater than 60 but less than 80.

134. An activity listed as a drinking water threat in accordance with rule 119 is or would be a moderate drinking water threat in an area within a vulnerable area that has a risk score in respect of the activity calculated in accordance with rule 122 equal to or greater than 60 but less than 80.

134.1 Despite anything else in these rules an activity is or would be a moderate drinking water threat if,

(1) The activity is not identified in accordance with rules 127 to 131.1 as an activity that is or would be a significant drinking water threat;

(2) the activity is associated with a drinking water issue described in subrule 114(3);

(3) the activity is identified as a drinking water threat in accordance with subrule 115(4);

(4) the activity is located in an issue contributing area identified in accordance with subrule 115(3); and

(5) the circumstances described in rule 134.2 apply to the activity.

134.2 The circumstances for the purposes of subrule 134.1(5) are,

(1) if the activity is listed as a drinking water threat in accordance with rule 118, a set of circumstances set out in an applicable cell in Column 2 of the Table of Drinking Water Threats that contribute or may contribute to the drinking issue mentioned in subrule 134.1(1); or

(2) if the activity is listed as a drinking water threat in accordance with rule 119, the circumstances for the activity specified in accordance with rule 125 that contribute or may contribute to the drinking water issue mentioned in subrule 134.1(1).

Low drinking water threats

135. An activity listed as a drinking water threat in accordance with rule 118 is or would be a low drinking water threat in an area set out opposite to the activity in column 3 of Table 1 or Table 2 of the Tables of Drinking Water if the area has a vulnerability score set out in column 6 of the respective Table and all of the circumstances set out in column 2 of the respective Table opposite to the area apply to the activity.

136. An activity listed as a drinking water threat in accordance with rule 118 is a low drinking water threat if rule 135 does not apply and the following apply:

(1) The chemical hazard rating or pathogen hazard rating for the chemical parameter or pathogen associated with the circumstances under which the activity is or will be engaged in, determined in accordance with rule 120 or 121, is greater than 4.

(2) The area within a vulnerable area in which the activity is or will be engaged in has a risk score calculated in accordance with rule 122 that is greater than 40 but less than 60.

137. An activity listed as a drinking water threat in accordance with rule 119 is or would be a low drinking water threat in an area within a vulnerable area that has a risk score in respect of the activity calculated in accordance with rule 122 to be greater than 40 but less than 60.

Part XI.5 - Identifying areas for significant, moderate and low drinking water threats - Conditions

138. The risk score of an area in respect of a condition that results from a past activity shall be calculated in accordance with the following formula:

A x B

where,

A = the hazard rating of the condition;

B = the vulnerability of the score of the area determined in accordance with Part VII or VIII, as the case may be.

139. For the purpose of rule 138, the hazard rating of a condition that results from a past activity is,

(1) if there is evidence that the contamination is migrating towards the well or intake and the contamination has the potential to deteriorate the quality of water of the aquifer drinking water source or the surface water drinking water source, the hazard rating is 10;

(2) if the condition is on a property where a well, intake or monitoring location related to a drinking water system to which clause 15(2)(e) of the Act applies is located, the hazard rating is 10; and

(3) if subrules (1) or (2) do not apply to the condition, the hazard rating is 6.

Identifying areas for significant conditions

140. An area within a vulnerable area is an area where a condition that results from a past activity listed in accordance with rule 126 is a significant drinking water threat if the risk score of the area in respect of the condition is equal to or greater than 80.

140.1 Removed.

141. Despite anything else in these rules, a condition that results from a past activity is a significant drinking water threat if,

(1) the condition is associated with a drinking water issue described in subrule 114(1) or (2);

(2) the condition is identified as a drinking water threat in accordance with subrule 115(4);

(3) the condition is located in an issue contributing area identified in accordance with subrule 115(3); and

(4) there is evidence the contamination is migrating towards the well or intake and the contamination has the potential to deteriorate the quality of water of the aquifer drinking water source or the surface water drinking water source or the condition is on the property where the surface water intake, well or monitoring location identified in accordance with subrule 115(2) is located.

Identifying areas for moderate conditions

142. Subject to rule 141, an area within a vulnerable area is an area where a condition that results from a past activity listed in accordance with rule 126 is a moderate drinking water threat if the risk score of the area in respect of the condition is equal to or greater than 60 but less than 80.

142.1 Despite anything else in these rules a condition that results from a past activity is a moderate drinking water threat if:

(1) The condition is not identified in accordance with rules 140 and 141 as a condition that is a significant drinking water threat;

(2) the condition is associated with a drinking water issue described in subrule 114(3);

(3) the condition is identified as a drinking water threat in accordance with subrule 115(4); and

(4) the activity is located in an issue contributing area identified in accordance with subrule 115(3).

Identifying areas for low conditions

143. Subject to rule 141, an area within a vulnerable area is an area where a condition that results from a past activity listed in accordance with rule 126 is a low drinking water threat if the risk score of the area in respect of the condition is greater than 40 but less than 60.

Proposed Amendments to the Tables of Drinking Water Threats

Proposed amendments to the tables of drinking water threats are divided into two sections:

Section 1: Amendments to the drinking water threats circumstances

Section 2: Amendments to the glossary of drinking water threats tables

Acronyms used in sections 1 and 2:
IPZ = Intake Protection Zone
WHPA = Wellhead Protection Area
HVA = Highly Vulnerable Aquifer
SDWT = Significant risk of Drinking Water Threat
MDWT = Moderate risk of Drinking Water Threat
LDWT = Low risk of Drinking Water Threat

Section 1: Amendments to the drinking water threats circumstances subcategories

1. Application of Road Salt

Current circumstances:
Percentages of impervious surface areas in 1x1km grid to make this activity a significant risk are 80% in WHPAs scored 10 and 8% in IPZs scored 10.

Proposed circumstances (details are the table below):
Percentages to identify significant risk will be 30% for WHPAs scored 10, 6% or greater for IPZ scored 10, and 8% for IPZ scored 9 or 10. The proposed amendment allows the calculation of percentages of imperviousness in a vulnerable area as a whole, or in a sub-area within the vulnerable area, where the road salt is applied.

Proposed Circumstances	**Areas of SDWT**	**Areas of MDWT**	**Areas of LDWT**
The road salt is applied in an area where the default percentage of impervious surface area, as set out on a total impervious surface area map, is not more than 1 percent.		IPZ/WHPA-E 9 – 10	IPZ/WHPA-E 6 – 8.1 WHPA 8 – 10
The road salt is applied in an area where the default percentage of impervious surface area, as set out on a total impervious surface area map, is more than 8, but not more than 30 percent in WHPA-A, B, C, C1, D or HVA; or more than 6, but not more than 8 percent in IPZ-1, 2, 3 and WHPA-E.	IPZ/WHPA-E 10	IPZ/WHPA-E 8 – 9 WHPA 8 – 10	IPZ/WHPA-E 4.9 – 7.2 WHPA 6 HVA 6
The road salt is applied in an area where the default percentage of impervious surface area, as set out on a total impervious surface area map, is 30 percent or more in WHPA-A, B, C, C1, D or HVA; or 8 percent or more in IPZ-1, 2, 3 and WHPA-E.	IPZ/WHPA-E 9 – 10 WHPA 10	IPZ/WHPA-E 7 – 8.1 WHPA 8	IPZ/WHPA-E 4.5 – 6.4 WHPA 6 HVA 6
The road salt is applied in an area where the default percentage of impervious surface area, as set out on a total impervious surface area map, is more than 1, but not more		IPZ/WHPA-E 8 – 10 WHPA 10	IPZ/WHPA-E 5.4 – 7.2 WHPA 6 – 8

than 8 percent in WHPA-A, B, C, C1, D or HVA; or more than 1, but not more than 6 percent in IPZ-1, 2, 3 and WHPA-E.			HVA 6

2. Handling and Storage of Road Salt

Current circumstances:
Depending upon the exposure of stored road salt to precipitation, the quantity of storage of road salt that can be significant is 500 tonnes and greater in IPZ scored 10, greater than 5000 tonnes in IPZ scored 9 and 10 and greater than 5000 tonnes in WHPA scored 10.

Proposed circumstances (details are the table below):
The exposure of stored road salt to precipitation, runoff, snowmelt is a function of how the road salt is stored, i.e. storage that is fully exposed, may be exposed and not exposed. The thresholds used to identify risks have been lowered from current thresholds as shown below.

Proposed Circumstances	**Areas of SDWT**	**Areas of MDWT**	**Areas of LDWT**
1. The storage of road salt in a manner that the road salt is exposed to precipitation or runoff from precipitation or snow melt. 2. The quantity stored is less than 10 kg.		IPZ/WHPA-E 8 – 10 WHPA 10	IPZ/WHPA-E 5.4 – 7.2 WHPA 6 – 8 HVA 6
1. The storage of road salt in a manner that the road salt is exposed to precipitation or runoff from precipitation or snow melt. 2. The quantity stored is at least 10, but not more than 20 kg.	IPZ/WHPA-E 10	IPZ/WHPA-E 8 – 9 WHPA 8-10	IPZ/WHPA-E 4.9 – 7.2 WHPA 6 HVA 6
1. The storage of road salt in a manner that the road salt is exposed to precipitation or runoff from precipitation or snow melt. 2. The quantity stored is more than 20 kg.	IPZ/WHPA-E 9-10 WHPA 10	IPZ/WHPA-E 7 – 8.1 WHPA 8	IPZ/WHPA-E 4.5 – 6.4 WHPA 6 HVA 6
1. The storage of road salt in an enclosure such as outdoor bins, salt boxes, tarps or containers, 3-sided storage sheds or domes, or by any other means where it has the potential to be exposed to precipitation, or runoff from precipitation or snow melt. 2. The quantity stored is less than 50 kg.		IPZ/WHPA-E 9 – 10 WHPA 10	IPZ/WHPA-E 6 – 8.1 WHPA 6 – 8 HVA 6
1. The storage of road salt in an enclosure such as outdoor bins,		IPZ/WHPA-E 8 – 10	IPZ/WHPA-E 5.5 – 7.2

salt boxes, tarps or containers, 3-sided storage sheds or domes, or by any other means where it has the potential to be exposed to precipitation, or runoff from precipitation or snow melt. 2. The quantity stored is at least 50, but not more than 100 kg.		WHPA 8-10	WHPA 6 HVA 6
1. The storage of road salt in an enclosure such as outdoor bins, salt boxes, tarps or containers, 3-sided storage sheds or domes, or by any other means where it has the potential to be exposed to precipitation, or runoff from precipitation or snow melt. 2. The quantity stored is more than 100 kg.	IPZ/WHPA-E 10 WHPA 10	IPZ/WHPA-E 8 – 9 WHPA 8	IPZ/WHPA-E 4.9 – 7.2 WHPA 6 HVA 6
1. The storage of road salt inside an area, facility or structure in which the storage or (un)loading are roofed, walled, with an impermeable floor, where it does not have the potential to be exposed to precipitation, or runoff from precipitation or snow melt. 2. The quantity stored is less than 250,000 kg.			IPZ/WHPA-E 7 – 10 WHPA 8 – 10
1. The storage of road salt inside an area, facility or structure in which the storage or (un)loading are roofed, walled, with an impermeable floor, where it does not have the potential to be exposed to precipitation, or runoff from precipitation or snow melt. 2. The quantity stored is at least 250,000 kg, but not more than 500,000 kg.		IPZ/WHPA-E 9 – 10 WHPA 10	IPZ/WHPA-E 6 – 8.1 WHPA 6 – 8 HVA 6
1. The storage of road salt inside an area, facility or structure in which the storage or (un)loading are roofed, walled, with an impermeable floor, where it does not have the potential to be exposed to precipitation, or runoff from precipitation or snow melt.		IPZ/WHPA-E 8 – 10 WHPA 8-10	IPZ/WHPA-E 5.4 – 7.2 WHPA 6 HVA 6

2. The quantity stored is more than 500,000 kg.			

3. Wastewater Collection Facilities and Associated Parts

Current circumstances:
Sanitary sewers and related pipes

(1) The system is part of a wastewater collection facility that collects or transmits sewage containing human waste but does not include a sewage storage tank or a designed bypass.
(2) The system is designed to convey not more than 250 (more than 250, but not more than 1,000; more than 1,000 but not more than 10,000; more than 10,000 but not more than 100,000; more than 100,000) cubic metres of sewage per day.

Combined sewer discharge from a stormwater outlet to surface water

(1) The system is a combined sewer that may discharge sanitary sewage containing human waste to surface water other than by way of a designed bypass.
(2) The combined sewer is part of a system that includes a wastewater treatment facility designed to discharge treated sanitary sewage at an average daily rate that is not more than 500 (more than 500 but not more than 2,500; more than 2,500 but not more than 17,500; more than 17,5000 but not more than 50,000; more than 50,000) cubic metres on an annual basis.

Proposed circumstances (details are the table below):
Circumstances for the following sub-category of waste collection facilities to recognise the risks of:

(1) Waste collection facility pipes that run under gravity or pressure. Significant risk would be identified in IPZs/WHPAs scored 10; due to the contribution of chemical / pathogen parameters.
(2) Pumping stations associated with wet wells storing sewage. Significant risk would be identified in IPZs/WHPA-E scored 9 to 10 and WHPAs scored 10; due to the contribution of chemical / pathogen parameters.
(3) Holding tanks associated with waste collection facilities. Significant risk would be identified in IPZs/WHPA-E scored 9 to 10 and WHPAs scored 10; due to the contribution of chemical / pathogen parameters.
(4) Overflows and discharges from combined and sanitary sewers. Significant risk would be identified in IPZs/WHPA-Es scored 8 to 10 and WHPAs scored 10; due to the contribution of chemical / pathogen parameters.

Proposed Circumstances (chemical)	**Areas of SDWT**	**Areas of MDWT**	**Areas of LDWT**
1. A forcemain or rising main that forms part of a wastewater collection facility, not including its appurtenances.		WHPA 10	WHPA 8

2. The wastewater collection facility is designed to convey not more than 250 cubic metres of sewage per day.			
1. A forcemain or rising main that forms part of a wastewater collection facility, not including its appurtenances. 2. The wastewater collection facility is designed to convey more than 250, but not more than 1,000 cubic metres of sewage per day.		WHPA 10	IPZ/WHPA-E 9 – 10 WHPA 6 – 8 HVA 6
1. A forcemain or rising main that forms part of a wastewater collection facility, not including its appurtenances. 2. The wastewater collection facility is designed to convey more than 1,000, but not more than 10,000 cubic metres of sewage per day.		WHPA 8 – 10	IPZ/WHPA-E 7.2 – 10 WHPA 6 HVA 6
1. A forcemain or rising main that forms part of a wastewater collection facility, not including its appurtenances. 2. The wastewater collection facility is designed to convey more than 10,000, but not more than 100,000 cubic metres of sewage per day.	WHPA 10	IPZ/WHPA-E 10 WHPA 8	IPZ/WHPA-E 6.3 – 9 WHPA 6 HVA 6
1. A forcemain or rising main that forms part of a wastewater collection facility, not including its appurtenances. 2. The wastewater collection facility is designed to convey more than 100,000 cubic metres of sewage per day.	WHPA 10	IPZ/WHPA-E 9 – 10 WHPA 8	IPZ/WHPA-E 5.6 – 8.1 WHPA 6 HVA 6
1. A gravity sanitary sewer that forms part of a wastewater collection facility, not including its appurtenances. 2. The wastewater collection facility is designed to convey not more than 250 cubic metres of sewage per day.			WHPA 10
1. A gravity sanitary sewer that forms part of a wastewater collection facility, not including its appurtenances.			IPZ/WHPA-E 9 – 10

2. The wastewater collection facility is designed to convey more than 250, but not more than 1,000 cubic metres of sewage per day.			WHPA 8 – 10
1. A gravity sanitary sewer that forms part of a wastewater collection facility, not including its appurtenances. 2. The wastewater collection facility is designed to convey more than 1,000, but not more than 10,000 cubic metres of sewage per day.		WHPA 10	IPZ/WHPA-E 7.2 – 10 WHPA 8
1. A gravity sanitary sewer that forms part of a wastewater collection facility, not including its appurtenances. 2. The wastewater collection facility is designed to convey more than 10,000, but not more than 100,000 cubic metres of sewage per day.		IPZ/WHPA-E 10 WHPA 10	IPZ/WHPA-E 6.3 – 9 WHPA 6 – 8 HVA 6
1. A gravity sanitary sewer that forms part of a wastewater collection facility, not including its appurtenances. 2. The wastewater collection facility is designed to convey more than 100,000 cubic metres of sewage per day.		IPZ/WHPA-E 9 – 10 WHPA 8 - 10	IPZ/WHPA-E 5.6 – 8.1 WHPA 6 HVA6
1. A combined sewer or partially separated sanitary sewer outfall that discharges combined sewer overflow, or the sanitary sewer overflow from a manhole or wet well that forms part of a wastewater collection facility and may discharge to land or surface water. 2. The wastewater collection facility is designed to convey not more than 250 cubic metres of sewage per day.		IPZ/WHPA-E 9 – 10	IPZ/WHPA-E 6 – 8.1
1. A combined sewer or partially separated sanitary sewer outfall that discharges combined sewer overflow, or the sanitary sewer overflow from a manhole or wet well that forms part of a wastewater collection facility and may discharge to land or surface water.		IPZ/WHPA-E 8 – 10	IPZ/WHPA-E 5.4 – 7.2 WHPA 10

2. The wastewater collection facility is designed to convey more than 250, but not more than 1,000 cubic metres of sewage per day.			
1. A combined sewer or partially separated sanitary sewer outfall that discharges combined sewer overflow, or the sanitary sewer overflow from a manhole or wet well that forms part of a wastewater collection facility and may discharge to land or surface water. 2. The wastewater collection facility is designed to convey more than 1,000, but not more than 10,000 cubic metres of sewage per day.	IPZ/WHPA-E 10	IPZ/WHPA-E 7.2 – 9	IPZ/WHPA-E 4.8 – 7 WHPA 8 – 10
1. A combined sewer or partially separated sanitary sewer outfall that discharges combined sewer overflow, or the sanitary sewer overflow from a manhole or wet well that forms part of a wastewater collection facility and may discharge to land or surface water. 2. The wastewater collection facility is designed to convey more than 10,000, but not more than 100,000 cubic metres of sewage per day.	IPZ/WHPA-E 9 – 10	IPZ/WHPA-E 7 – 8.1 WHPA 10	IPZ/WHPA-E 4.5 – 6.4 WHPA 8
1. A combined sewer or partially separated sanitary sewer outfall that discharges combined sewer overflow, or the sanitary sewer overflow from a manhole or wet well that forms part of a wastewater collection facility and may discharge to land or surface water. 2. The wastewater collection facility is designed to convey more than 100,000 cubic metres of sewage per day.	IPZ/WHPA-E 8 – 10	IPZ/WHPA-E 6 – 7.2 WHPA 10	IPZ/WHPA-E 4.2 – 5.6 WHPA 6 – 8 HAV 6
1. A wet well that forms part of a wastewater collection facility as part of a sewage pumping station or lift station and stores sanitary sewage containing human waste. 2. The wastewater collection facility is designed to convey not more than 250 cubic metres of sewage per day.			WHPA 10

1. A wet well that forms part of a wastewater collection facility as part of a sewage pumping station or lift station and stores sanitary sewage containing human waste. 2. The wastewater collection facility is designed to convey more than 250, but not more than 1,000 cubic metres of sewage per day.			IPZ/WHPA-E 9 – 10 WHPA 8 – 10
1. A wet well that forms part of a wastewater collection facility as part of a sewage pumping station or lift station and stores sanitary sewage containing human waste. 2. The wastewater collection facility is designed to convey more than 1,000, but not more than 10,000 cubic metres of sewage per day.		WHPA 10	IPZ/WHPA-E 7.2 – 10 WHPA 8
1. A wet well that forms part of a wastewater collection facility as part of a sewage pumping station or lift station and stores sanitary sewage containing human waste. 2. The wastewater collection facility is designed to convey more than 10,000, but not more than 100,000 cubic metres of sewage per day.		IPZ/WHPA-E 10 WHPA 10	IPZ/WHPA-E 6.3 – 9 WHPA 6 – 8 HVA 6
1. A wet well that forms part of a wastewater collection facility as part of a sewage pumping station or lift station and stores sanitary sewage containing human waste. 2. The wastewater collection facility is designed to convey more than 100,000 cubic metres of sewage per day.		IPZ/WHPA-E 9 – 10 WHPA 8 – 10	IPZ/WHPA-E 5.6 – 8.1 WHPA 6 HVA 6
1. A holding tank or a tunnel that forms part of a wastewater collection facility not including a wet well, and stores sanitary sewage containing human waste. 2. The wastewater collection facility is designed to convey not more than 250 cubic metres of sewage per day.			WHPA 8 - 10
1. A holding tank or a tunnel that forms part of a wastewater collection facility not including a wet well, and		WHPA 10	IPZ/WHPA-E 9 – 10

stores sanitary sewage containing human waste. 2. The wastewater collection facility is designed to convey more than 250, but not more than 1,000 cubic metres of sewage per day.			WHPA 8
1. A holding tank or a tunnel that forms part of a wastewater collection facility not including a wet well, and stores sanitary sewage containing human waste. 2. The wastewater collection facility is designed to convey more than 1,000, but not more than 10,000 cubic metres of sewage per day.		WHPA 10	IPZ/WHPA-E 7.2 – 10 WHPA 6 – 8 HVA 6
1. A holding tank or a tunnel that forms part of a wastewater collection facility not including a wet well, and stores sanitary sewage containing human waste. 2. The wastewater collection facility is designed to convey more than 10,000, but not more than 100,000 cubic metres of sewage per day.		IPZ/WHPA-E 10 WHPA 8 – 10	IPZ/WHPA-E 6.3 – 9 WHPA 6 HVA 6
1. A holding tank or a tunnel that forms part of a wastewater collection facility not including a wet well, and stores sanitary sewage containing human waste. 2. The wastewater collection facility is designed to convey more than 100,000 cubic metres of sewage per day.	WHPA 10	IPZ/WHPA-E 9 – 10 WHPA 8	IPZ/WHPA-E 5.6 – 8.1 WHPA 6 HVA 6
Proposed Circumstances (pathogen)	**Areas of SDWT**	**Areas of MDWT**	**Areas of LDWT**
1. A forcemain, a combined sewer or partially separated sanitary sewer, a rising main or a gravity sanitary sewer that forms part of a wastewater collection facility, not including its appurtenances. 2. The discharge from the system may result in the presence of one or more pathogens in groundwater or surface water.	IPZ/WHPA-E 10 WHPA-A/B 10	IPZ/WHPA-E 8 – 9 WHPA-A/B 8	IPZ/WHPA-E 5 – 7.2 WHPA-A/B 6

1. A combined sewer or partially separated sanitary sewer outfall that discharges combined sewer overflow, or the sanitary sewer overflow from a manhole or wet well that forms part of a wastewater collection facility and may discharge to land or surface water. 2. The discharge may result in the presence of one or more pathogens in surface water.	IPZ/WHPA-E 8 – 10 WHPA-A/B 10	IPZ/WHPA-E 6 – 7.2 WHPA-A/B 8	IPZ/WHPA-E 4.2 – 5.6 WHPA-A/B 6
1. A wet well, a holding tank or a tunnel that forms part of a wastewater collection facility, and stores sanitary sewage containing human waste. 2. A spill may result in the presence of one or more pathogens in groundwater or surface water.	IPZ/WHPA-E 9 – 10 WHPA-A/B 10	IPZ/WHPA-E 7 – 8.1 WHPA-A/B 8	IPZ/WHPA-E 4.5 – 6.4 WHPA-A/B 6

4. Storm Water Management Facilities and Drainage Systems

Current circumstances:
Discharge from a Stormwater Management Facility (SWMF)

(1) The system is a storm water management facility designed to discharge storm water to land or surface water.
(2) The drainage area associated with the storm water management facility is (not more than 1; more than 1 but not more than 10 hectares; more than 10 hectares) and the predominant land uses in the area are (rural, agricultural, or low density residential; high density residential; industrial or commercial).

Proposed circumstances (details are the table below):
Circumstances that differentiate between the impact of SWMFs on surface water & groundwater sources considering different land use types and impervious areas served by the SWMFs, i.e.:

(1) The outfall discharges into surface water:
Significant risk would be identified in IPZs/WHPA-E scored 8 to 10 and WHPA scored 10; due to the contribution of chemical parameters.
(2) Infiltration facilities to groundwater:
Significant risk would be identified in WHPAs scored 10; due to the contribution of chemical parameters only.

Proposed circumstances (chemical)	**Areas of SDWT**	**Areas of MDWT**	**Areas of LDWT**
1. A storm water management facility outfall or a storm water drainage system outfall that serves land where the predominant land use is rural, agricultural, outdoor recreational or parkland, excluding greenhouses. 2. The percentage of impervious areas of the lands served by the facility (including roads, sidewalks and parking surfaces - aisles and driveways but excluding roofs) draining to the storm water management facility is not more than 20% of the drainage area.		IPZ/WHPA-E 8 – 10 WHPA 10	IPZ/WHPA-E 5.4 – 7.2 WHPA 6 – 8 HVA 6
1. A storm water management facility outfall or a storm water drainage system outfall that serves land where the predominant land use is rural, agricultural, outdoor recreational or parkland, excluding greenhouses.	IPZ/WHPA-E 10	IPZ/WHPA-E 7.2 – 9 WHPA 8 – 10	IPZ/WHPA-E 4.8 – 7 WHPA 6 HVA 6

2. The percentage of impervious areas of the lands served by the facility (including roads, sidewalks and parking surfaces - aisles and driveways but excluding roofs) draining to the storm water management facility is more than 20 but not more than 50% of the drainage area.			
1. A storm water management facility outfall or a storm water drainage system outfall that serves land where the predominant land use is rural, agricultural, outdoor recreational or parkland, excluding greenhouses. 2. The percentage of impervious areas of the lands served by the facility (including roads, sidewalks and parking surfaces - aisles and driveways but excluding roofs) draining to the storm water management facility is more than 50% of the drainage area.	IPZ/WHPA-E 9 – 10 WHPA 10	IPZ/WHPA-E 7 – 8.1 WHPA 8	IPZ/WHPA-E 4.5 – 6.4 WHPA 6 HVA 6
1. A storm water management facility outfall or a storm water drainage system outfall that serves land where the predominant land use is residential or institutional or community use. 2. The percentage of impervious areas of the lands served by the facility (including roads, sidewalks and parking surfaces - aisles and driveways but excluding roofs) draining to the storm water management facility is not more than 20% of the drainage area.	IPZ/WHPA-E 10	IPZ/WHPA-E 8 – 9 WHPA 10	IPZ/WHPA-E 4.9 – 7.2 WHPA 6 – 8 HVA 6
1. A storm water management facility outfall or a storm water drainage system outfall that serves land where the predominant land use is residential or institutional or community use. 2. The percentage of impervious areas of the lands served by the facility (including roads, sidewalks and parking surfaces - aisles and	IPZ/WHPA-E 9 – 10	IPZ/WHPA-E 7 – 8.1 WHPA 8 – 10	IPZ/WHPA-E 4.5 – 6.4 WHPA 6 HVA 6

driveways but excluding roofs) draining to the storm water management facility is more than 20 but not more than 50% of the drainage area.			
1. A storm water management facility outfall or a storm water drainage system outfall that serves land where the predominant land use is residential or institutional or community use. 2. The percentage of impervious areas of the lands served by the facility (including roads, sidewalks and parking surfaces - aisles and driveways but excluding roofs) draining to the storm water management facility is more than 50% of the drainage area.	IPZ/WHPA-E 9 – 10 WHPA 10	IPZ/WHPA-E 6.3 – 8.1 WHPA 8	IPZ/WHPA-E 4.2 – 6 WHPA 6 HVA 6
1. A storm water management facility outfall or a storm water drainage system outfall that serves land where the predominant land use is commercial or industrial land uses including greenhouses. 2. The percentage of impervious areas of the lands served by the facility (including roads, sidewalks and parking surfaces - aisles and driveways but excluding roofs) draining to the storm water management facility is not more than 20% of the drainage area.	IPZ/WHPA-E 10	IPZ/WHPA-E 7.2 – 9 WHPA 10	IPZ/WHPA-E 4.8 – 7 WHPA 6 – 8 HVA 6
1. A storm water management facility outfall or a storm water drainage system outfall that serves land where the predominant land use is commercial or industrial land uses including greenhouses. 2. The percentage of impervious areas of the lands served by the facility (including roads, sidewalks and parking surfaces - aisles and driveways but excluding roofs) draining to the storm water management facility is more than 20 but not more than 50% of the drainage area.	IPZ/WHPA-E 9 – 10 WHPA 10	IPZ/WHPA-E 7 – 8.1 WHPA 8	IPZ/WHPA-E 4.5 – 6.4 WHPA 6 HVA 6

1. A storm water management facility outfall or a storm water drainage system outfall that serves land where the predominant land use is commercial or industrial land uses including greenhouses. 2. The percentage of impervious areas of the lands served by the facility (including roads, sidewalks and parking surfaces - aisles and driveways but excluding roofs) draining to the storm water management facility is more than 50% of the drainage area.	IPZ/WHPA-E 8 – 10 WHPA 10	IPZ/WHPA-E 6 – 7.2 WHPA 8	IPZ/WHPA-E 4.2 – 5.6 WHPA 6 HVA 6
1. A storm water infiltration facility that serves land where the predominant land use is rural, agricultural, outdoor recreational or parkland, excluding greenhouses. 2. The sum of impervious areas of the lands served by the facility (including roads, sidewalks and parking surfaces - aisles and driveways but excluding roofs) draining to the storm water infiltration facilities in the site is not more than 200 m^2.		IPZ/WHPA-E 9 – 10 WHPA 8 – 10	IPZ/WHPA-E 6 – 8.1 WHPA 6 HVA 6
1. A storm water infiltration facility that serves land where the predominant land use is rural, agricultural, outdoor recreational or parkland, excluding greenhouses. 2. The sum of impervious areas of the lands served by the facility (including roads, sidewalks and parking surfaces - aisles and driveways but excluding roofs) draining to the storm water infiltration facilities in the site is more than 200 but not more than 2000 m^2.	WHPA 10	IPZ/WHPA-E 8 – 10 WHPA 8	IPZ/WHPA-E 5.4 – 7.2 WHPA 6 HVA 6
1. A storm water infiltration facility that serves land where the predominant land use is rural, agricultural, outdoor recreational or parkland, excluding greenhouses. 2. The sum of impervious areas of the lands served by the facility	IPZ/WHPA-E 10 WHPA 10	IPZ/WHPA-E 7.2 – 9 WHPA 8	WHPA 6 HVA 6

(including roads, sidewalks and parking surfaces - aisles and driveways but excluding roofs) draining to the storm water infiltration facilities in the site is more than 2000 m^2.			
1. A storm water infiltration facility that serves land where the predominant land use is residential or institutional or community use. 2. The sum of impervious areas of the lands served by the facility (including roads, sidewalks and parking surfaces - aisles and driveways but excluding roofs) draining to the storm water infiltration facilities in the site is not more than 200 m^2.		IPZ/WHPA E 9 – 10 WHPA 8 – 10	IPZ/WHPA E 6 – 8.1 WHPA 6 HVA 6
1. A storm water infiltration facility that serves land where the predominant land use is residential or institutional or community use. 2. The sum of impervious areas of the lands served by the facility (including roads, sidewalks and parking surfaces - aisles and driveways but excluding roofs) draining to the storm water infiltration facilities in the site is more than 200 but not more than 2000 m^2.	WHPA 10	IPZ/WHPA E 8 – 10 WHPA 8	IPZ/WHPA E 5.4 – 7.2 WHPA 6 HVA 6
1. A storm water infiltration facility that serves land where the predominant land use is residential or institutional or community use. 2. The sum of impervious areas of the lands served by the facility (including roads, sidewalks and parking surfaces - aisles and driveways but excluding roofs) draining to the storm water infiltration facilities in the site is more than 2000 m^2.	IPZ/WHPA E 10 WHPA 10	IPZ/WHPA E 7 -9 WHPA 8	IPZ/WHPA E 4.8 – 6.4 WHPA 6 HVA 6
1. A storm water infiltration facility that serves land where the predominant land use is commercial or industrial land uses including greenhouses.	WHPA 10	IPZ/WHPA E 9 – 10 WHPA 8	IPZ/WHPA E 5.6-8.1 WHPA 6

2. The sum of impervious areas of the lands served by the facility (including roads, sidewalks and parking surfaces - aisles and driveways but excluding roofs) draining to the storm water infiltration facilities in the site is not more 200 m^2.			HVA 6
1. A storm water infiltration facility that serves land where the predominant land use is commercial or industrial land uses including greenhouses. 2. The sum of impervious areas of the lands served by the facility (including roads, sidewalks and parking surfaces - aisles and driveways but excluding roofs) draining to the storm water infiltration facilities in the site is more than 200 but not more than 2000 m^2.	IPZ/WHPA E 10 WHPA 10	IPZ/WHPA E 8 – 9 WHPA 8	IPZ/WHPA E 4.9 – 7.2 WHPA 6 HVA 6
1. A storm water infiltration facility that serves land where the predominant land use is commercial or industrial land uses including greenhouses. 2. The sum of impervious areas of the lands served by the facility (including roads, sidewalks and parking surfaces - aisles and driveways but excluding roofs) draining to the storm water infiltration facilities in the site is more than 2000 m^2.	IPZ/WHPA E 9 – 10 WHPA 10	IPZ/WHPA E 7 – 8.1 WHPA 8	IPZ/WHPA E 4.5 – 6.4 WHPA 6 HVA 6
Proposed Circumstances (pathogen)	**Areas of SDWT**	**Areas of MDWT**	**Areas of LDWT**
1. A storm water management facility outfall or a storm water drainage system outfall. 2. The discharge may result in the presence of one or more pathogens in groundwater or surface water.		IPZ/WHPA E 9 – 10 WHPA-A/B 10	IPZ/WHPA E 6 – 8.1 WHPA-A/B 8
1. A storm water infiltration facility. 2. The release may result in the presence of one or more pathogens in groundwater or surface water.		IPZ/WHPA E 10 WHPA-A/B 10	IPZ/WHPA E 7 – 9 WHPA-A/B 8

5. Wastewater Treatment Facilities and Associated Parts

Current circumstances:

(1) Sewage Treatment Plant Bypass Discharge to Surface Water
1. The system is a wastewater treatment facility that may discharge sanitary sewage containing human waste to surface water by way of a designed bypass.
2. The wastewater treatment facility is designed to discharge treated sanitary sewage at an average daily rate that is not more than 500 (more than 500 but not more than 2,500; more than 2,500 but not more than 17,500; more than 17,500 but not more than 50,000; more than 50,000) cubic metres on an annual basis.

(2) Sewage Treatment Plant Effluent Discharges (Includes Lagoons)
1. The system is a wastewater treatment facility that discharges directly to land or surface water through a means other than a designed bypass.
2. The system is designed to discharge treated sanitary sewage at average daily rate that is not more than 500 (more than 500 but not more than 2,500; more than 2,500 but not more than 17,500; more than 17,500 but not more than 50,000; more than 50,000) cubic metres on an annual basis.

(3) Sewage Works Storage - Treatment or Holding Tanks
1. The system is a treatment tank or storage tank that is part of a sewage works within the meaning of the Ontario Water Resources Act, the tank treats or stores sanitary sewage containing human waste and is at or above grade (below grade; a part of the tank, but not all, is below grade).
2. The system is associated with a wastewater treatment facility that is designed to discharge treated sanitary sewage at an average daily rate that is not more than 500 (more than 500 but not more than 2,500; more than 2,500 but not more than 17,500; more than 17,500 but not more than 50,000; more than 50,000) cubic metres on an annual basis.

Proposed circumstances (details are the table below):

Circumstances that clearly differentiate between the risks of different parts of wastewater treatment facilities, as

(1) Overflows (including bypasses) and effluent discharges all together (including Lagoons) that discharge to Surface Water. Significant risk would be identified in IPZs/WHPA-E scored 8 to 10 and WHPAs scored 10; due to the contribution of chemical / pathogen parameters.

(2) Lagoons associated with wastewater treatment facilities that do <u>not</u> discharge to Surface Water. Significant risk would be identified in IPZs/WHPA-E scored 9 to 10 and WHPAs scored 10; due to the contribution of chemical / pathogen parameters.

(3) Process tanks associated with holding tanks of sewage. Significant risk would be identified in IPZs/WHPA-E scored 9 to 10 and WHPAs scored 10; due to the contribution of chemical / pathogen parameters.

Proposed circumstances (chemical)	Areas of SDWT	Areas of MDWT	Areas of LDWT
1. A final effluent outfall or a sewage treatment plant overflow outfall that is part of a wastewater treatment facility. 2. The wastewater treatment facility is designed to discharge treated sanitary sewage at an average daily rate that is not more than 500 cubic metres on an annual basis.		IPZ/WHPA-E 9 – 10	IPZ/WHPA-E 6 – 8.1 WHPA 10
1. A final effluent outfall or a sewage treatment plant overflow outfall that is part of a wastewater treatment facility. 2. The wastewater treatment facility is designed to discharge treated sanitary sewage at an average daily rate that is more than 500 but not more than 2,500 cubic metres on an annual basis.		IPZ/WHPA-E 8 – 10	IPZ/WHPA-E 5.4 – 7.2 WHPA 8 - 10
1. A final effluent outfall or a sewage treatment plant overflow outfall that is part of a wastewater treatment facility. 2. The wastewater treatment facility is designed to discharge treated sanitary sewage at an average daily rate that is more than 2,500 but not more than 17,500 cubic metres on an annual basis.	IPZ/WHPA-E 10	IPZ/WHPA-E 7.2 – 9 WHPA 10	IPZ/WHPA-E 4.8 – 7 WHPA 8
1. A final effluent outfall or a sewage treatment plant overflow outfall that is part of a wastewater treatment facility. 2. The wastewater treatment facility is designed to discharge treated sanitary sewage at an average daily rate that is more than 17,500 but not more than 50,000 cubic metres on an annual basis.	IPZ/WHPA-E 9 – 10	IPZ/WHPA-E 7 – 8.1 WHPA 10	IPZ/WHPA-E 4.5 – 6.4 WHPA 6 – 8 HVA 6
1. A final effluent outfall or a sewage treatment plant overflow outfall that is part of a wastewater treatment facility. 2. The wastewater treatment facility is designed to discharge treated sanitary sewage at an average daily	IPZ/WHPA-E 8 – 10 WHPA 10	IPZ/WHPA-E 6 – 7.2 WHPA 8	IPZ/WHPA-E 4.2 – 5.6 WHPA 6 HVA 6

rate that is more than 50,000 cubic metres on an annual basis.			
1. A sewage lagoon that forms part of a wastewater treatment facility and that may discharge sewage to groundwater. 2. The wastewater treatment facility is designed to discharge treated sanitary sewage at an average daily rate that is not more than 500 cubic metres on an annual basis.		WHPA 10	IPZ/WHPA-E 8 – 10 WHPA 8
1. A sewage lagoon that forms part of a wastewater treatment facility and that may discharge sewage to groundwater. 2. The wastewater treatment facility is designed to discharge treated sanitary sewage at an average daily rate that is more than 500 but not more than 2,500 cubic metres on an annual basis.		IPZ/WHPA-E 10 WHPA 10	IPZ/WHPA-E 7 – 9 WHPA 6 – 8 HVA 6
1. A sewage lagoon that forms part of a wastewater treatment facility and that may discharge sewage to groundwater. 2. The wastewater treatment facility is designed to discharge treated sanitary sewage at an average daily rate that is more than 2,500 but not more than 17,500 cubic metres on an annual basis.	WHPA 10	IPZ/WHPA-E 9 – 10 WHPA 8	IPZ/WHPA-E 6 – 8.1 WHPA 6 HVA 6
1. A sewage lagoon that forms part of a wastewater treatment facility and that may discharge sewage to groundwater. 2. The wastewater treatment facility is designed to discharge treated sanitary sewage at an average daily rate that is more than 17,500 but not more than 50,000 cubic metres on an annual basis.	WHPA 10	IPZ/WHPA-E 8 – 10 WHPA 8	IPZ/WHPA-E 5.4 – 7.2 WHPA 6 HVA 6
1. A sewage lagoon that forms part of a wastewater treatment facility and that may discharge sewage to groundwater. 2. The wastewater treatment facility is designed to discharge treated	IPZ/WHPA-E 10 WHPA 10	IPZ/WHPA-E 7.2 – 9 WHPA 8	IPZ/WHPA-E 4.8 – 7 WHPA 6 HVA 6

sanitary sewage at an average daily rate that is more than 50,000 cubic metres on an annual basis.			
1. A sewage treatment plant process tank or a sewage treatment plant holding tank that is part of a wastewater treatment facility and that may discharge sewage to groundwater. 2. The wastewater treatment facility is designed to discharge treated sanitary sewage at an average daily rate that is not more than 500 cubic metres on an annual basis.			IPZ/WHPA-E 8 – 10 WHPA 8 – 10
1. A sewage treatment plant process tank or a sewage treatment plant holding tank that is part of a wastewater treatment facility and that may discharge sewage to groundwater. 2. The wastewater treatment facility is designed to discharge treated sanitary sewage at an average daily rate that is more than 500 but not more than 2,500 cubic metres on an annual basis.		IPZ/WHPA-E 10 WHPA 10	IPZ/WHPA-E 7 – 9 WHPA 8
1. A sewage treatment plant process tank or a sewage treatment plant holding tank that is part of a wastewater treatment facility and that may discharge sewage to groundwater. 2. The wastewater treatment facility is designed to discharge treated sanitary sewage at an average daily rate that is more than 2,500 but not more than 17,500 cubic metres on an annual basis.		IPZ/WHPA-E 9 – 10 WHPA 10	IPZ/WHPA-E 6 – 8.1 WHPA 6 – 8 HVA 6
1. A sewage treatment plant process tank or a sewage treatment plant holding tank that is part of a wastewater treatment facility and that may discharge sewage to groundwater. 2. The wastewater treatment facility is designed to discharge treated sanitary sewage at an average daily rate that is more than 17,500 but not	WHPA 10	IPZ/WHPA-E 8 – 10 WHPA 8	IPZ/WHPA-E 5.4 – 7.2 WHPA 6 HVA 6

more than 50,000 cubic metres on an annual basis.			
1. A sewage treatment plant process tank or a sewage treatment plant holding tank that is part of a wastewater treatment facility and that may discharge sewage to groundwater. 2. The wastewater treatment facility is designed to discharge treated sanitary sewage at an average daily rate that is more than 50,000 cubic metres on an annual basis.	IPZ/WHPA-E 10 WHPA 10	IPZ/WHPA-E 7.2 – 9 WHPA 8	IPZ/WHPA-E 4.8 – 7 WHPA 6 HVA 6
Proposed circumstances (pathogen)	**Areas of SDWT**	**Areas of MDWT**	**Areas of LDWT**
1. A final effluent outfall or a sewage treatment plant overflow outfall that is part of a wastewater treatment facility. 2. A discharge may result in the presence of one or more pathogens in surface water.	IPZ/WHPA-E 8 – 10 WHPA-A/B 10	IPZ/WHPA-E 6 – 7.2 WHPA-A/B 8	IPZ/WHPA-E 4.2 – 5.6 WHPA-A/B 6
1. A sewage lagoon that forms part of a wastewater treatment facility and that may discharge sewage to groundwater. 2. A discharge may result in the presence of one or more pathogens in surface water.	WHPA A/B 10	WHPA A/B 8	WHPA A/B 6
1. A sewage treatment plant process tank or a sewage treatment plant holding tank, or a sewage lagoon that does not discharge to surface water, and that forms part of a wastewater treatment facility. 2. A spill may result in the presence of one or more pathogens in groundwater or surface water.	IPZ/WHPA-E 9 – 10 WHPA-A/B 10	IPZ/WHPA-E 7 – 8.1 WHPA-A/B 8	IPZ/WHPA-E 4.5 – 6.4 WHPA-A/B 6

6. Industrial Effluent Discharges

Current circumstances:
A wastewater system that discharges to surface water and has as its primary function the collection, transmission or treatment of industrial sewage.

Proposed circumstances (details are the table below):
The discharge to land will be added to recognise risks to groundwater sources. Significant risk would be identified in IPZs/WHPA-E scored 8 to 10 due to the contribution of chemical / pathogen parameters.

Proposed circumstances (chemical)	**Areas of SDWT**	**Areas of MDWT**	**Areas of LDWT**
1. A wastewater system that discharges to surface water or land and has as its primary function the collection, transmission or treatment of industrial sewage. 2. The system is part of a facility for which the NPRI Notice requires a person to report and the report must include information in relation to a substance listed in Group 1, 2, 3 or 4 of Part 1 of Schedule 1 or Part 2 of Schedule 1 of the notice.	IPZ/WHPA-E 8 – 10 WHPA 10	IPZ/WHPA-E 6 – 7.2 WHPA 8	IPZ/WHPA-E 4.2 – 5.6 WHPA 6 HVA 6
1. A wastewater system that discharges to surface water or land and has as its primary function the collection, transmission or treatment of industrial sewage. 2. The system is not part of a facility for which the NPRI Notice requires a person to report.	IPZ/WHPA-E 10	IPZ/WHPA-E 7 – 9 WHPA 10	IPZ/WHPA-E 4.8 – 6.4 WHPA 6 – 8 HVA 6
Proposed circumstances (pathogen)	**Areas of SDWT**	**Areas of MDWT**	**Areas of LDWT**
1. The system discharges to surface water or land and its primary functions include conveying sewage from a seafood processing operation, a dairy producer, a dairy product manufacturing operation, an animal food manufacturing operation that manufactures food from animal sources, or a pulp and paper mill.		IPZ/WHPA-E 9 – 10 WHPA-A/B 10	IPZ/WHPA-E 6 – 8.1 WHPA-A/B 8

2. The discharge may result in the presence of one or more pathogens in surface water or groundwater.			
1. The system discharges to surface water or land and its primary functions include conveying sewage from a meat plant. 2. The discharge may result in the presence of one or more pathogens in surface water or groundwater.	IPZ/WHPA-E 8 – 10 WHPA-A/B 10	IPZ/WHPA-E 6 – 7.2 WHPA-A/B 8	IPZ/WHPA-E 4.2 – 5.6 WHPA-A/B 6

7. Storage of Snow

Current circumstances:

(1) The snow is stored at or above (below) grade.

(2) The area upon which snow is stored is at least 0.01, but not more than 0.5 (more than 0.5, but not more than 1; more than 1, but not more than 5; more than 5) hectares.

Proposed circumstances (details are the table below):

Circumstances clarify the activities at a snow storage site that may pose a risk, including activities that are regulated under Ontario Water Resources Act (OWRA). Significant risk would be identified in IPZs/WHPA-E scored 8 to 10 and WHPAs scored 10 due to the contribution of chemical parameters.

Proposed circumstances (chemical)	**Areas of SDWT**	**Areas of MDWT**	**Areas of LDWT**
1. The infiltration or discharge of snowmelt from the storage of snow on a site. 2. The area upon which snow is stored is not more than 200 m^2.	IPZ/WHPA-E 10 WHPA 10	IPZ/WHPA-E 7.2 – 9 WHPA 8	IPZ/WHPA-E 4.8 – 7 WHPA 6 HVA 6
1. The infiltration or discharge of snowmelt from the storage of snow on a site. 2. The area upon which snow is stored is more than 200 m^2 but not more than 2000 m^2.	IPZ/WHPA-E 9 – 10 WHPA 10	IPZ/WHPA-E 7 – 8.1 WHPA 8	IPZ/WHPA-E 4.5 – 6.4 WHPA 6 HVA 6
1. The infiltration or discharge of snowmelt from the storage of snow on a site. 2. The area upon which snow is stored is more than 2000 m^2.	IPZ/WHPA-E 8 – 10 WHPA 10	IPZ/WHPA-E 6 – 7.2 WHPA 8	IPZ/WHPA-E 4.2 – 5.6 WHPA 6 HVA 6
1. A storm water drainage system outfall that serves a Snow Disposal Facility or Snow Disposal Area. 2. The area upon which snow is stored is not more than 200 m^2.	IPZ/WHPA-E 10	IPZ/WHPA-E 7.2 – 9 WHPA 10	IPZ/WHPA-E 4.8 – 7 WHPA 8 – 6 HVA 6
1. A storm water drainage system outfall that serves a Snow Disposal Facility or Snow Disposal Area. 2. The area upon which snow is stored is more than 200 m^2 but not more than 2000 m^2.	IPZ/WHPA-E 9 – 10 WHPA 10	IPZ/WHPA-E 7 – 8.1 WHPA 8	IPZ/WHPA-E 4.5 – 6.4 WHPA 6 HVA 6

1. A storm water drainage system outfall that serves a Snow Disposal Facility or Snow Disposal Area. 2. The area upon which snow is stored is more than 2000 m^2.	IPZ/WHPA-E 8 – 10 WHPA 10	IPZ/WHPA-E 6 – 7.2 WHPA 8	IPZ/WHPA-E 4.2 – 5.6 WHPA 6 HVA 6

8. Handling and Storage of DNAPLs

Current circumstances:
Circumstances where the type of storage/handle of Non-Aqueous Phase Liquids (DNAPLs) and the chemicals associated with storage or handling are defined.

Proposed circumstances (details are the table below):
Circumstance no.1 will provide a list of activities adopted from O. Reg. 153 (brownfields) where DNAPL is likely stored/handled, see below. Circumstance no. 2 will define the type of storage (above, below grade).
Significant risk would be identified in IPZs/WHPA-E scored 9 to 10 and WHPA A to C scored 2 to 10; due to the contribution of chemical parameters.

Proposed circumstances (chemical)	**Areas of SDWT**	**Areas of MDWT**	**Areas of LDWT**
1. The engagement of an activity that may include, but not limited to, those provided in List 1 of Section 11 of the Glossary of Terms in the Table of Drinking Water Threats. 2. Storage of a DNAPL at or above grade.	IPZ/WHPA-E 9 – 10 WHPA A-C 2 – 10	IPZ/WHPA-E 7 – 8.1	IPZ/WHPA-E 4.5 – 6.4 WHPA D 6 HVA 6
1. The engagement of an activity that may include, but not limited to, those provided in List 1 of Section 11 of the Glossary of Terms in the Table of Drinking Water Threats. 2. Storage of a DNAPL partially below grade.	IPZ/WHPA-E 9 –10 WHPA A-C 2 – 10	IPZ/WHPA-E 7 – 8.1	IPZ/WHPA-E 4.5 – 6.4 WHPA D 6 HVA 6
1. The engagement of an activity that may include, but not limited to, those provided in List 1 of Section 11 of the Glossary of Terms in the Table of Drinking Water Threats. 2. Storage of a DNAPL below grade.	WHPA A-C 2 – 10	IPZ/WHPA-E 9 – 10	IPZ/WHPA-E 5.6 – 8.1 WHPA D 6 HVA 6

9. Storage and Handling of NASM

Current circumstances:
Circumstances associated with the storage and handling of NASM categories that represent risks to water quality were not explicitly mentioned.

Proposed circumstances:
Circumstances that explicitly describe the NASM categories 1 (“non-farm herbivorous animal”), 2 and 3 that pose risks to drinking water sources. From the pathogen perspective, Compost B category has a very low pathogen risk to drinking water sources and hence is not captured as a risk. Significant risk would be identified in IPZs/WHPA-E scored 8 to 10 and WHPA scored; due to the contribution of chemical / pathogen parameters. Current scores in the drinking water threats tables remain as is.

Proposed circumstances (chemical)	**Areas of SDWT**	**Areas of MDWT**	**Areas of LDWT**
1. The material from non-farm herbivorous animals (Category 1), Category 2 or Category 3 non-agricultural source material is stored at or above grade in or on a permanent or a temporary nutrient storage facility. 2. The mass of nitrogen in the non-agricultural source material stored is less than 0.5 tonnes.		IPZ/WHPA-E 8 – 10 WHPA 10	IPZ/WHPA-E 5.4 – 7.2 WHPA 6 – 8 HVA 6
1. The material from non-farm herbivorous animals (Category 1), Category 2 or Category 3 non-agricultural source material is stored partially below grade in a permanent nutrient storage facility. 2. The mass of nitrogen in the non-agricultural source material stored is less than 0.5 tonnes.		IPZ/WHPA-E 8 – 10 WHPA 8 – 10	IPZ/WHPA-E 5.4 – 7.2 WHPA 6 HVA 6
1. The material from non-farm herbivorous animals (Category 1), Category 2 or Category 3 non-agricultural source material is stored below grade in or on a permanent nutrient storage facility. 2. The mass of nitrogen in the non-agricultural source material stored is less than 0.5 tonnes.		WHPA 8 – 10	IPZ/WHPA-E 8 – 10 WHPA 6 HVA 6

1. The material from non-farm herbivorous animals (Category 1), Category 2 or Category 3 non-agricultural source material is stored at or above grade in or on a permanent or a temporary nutrient storage facility. 2. The mass of nitrogen in the non-agricultural source material stored is at least 0.5 tonnes but not more than 5 tonnes.	IPZ/WHPA-E 10	IPZ/WHPA-E 7.2 – 9 WHPA 8 – 10	IPZ/WHPA-E 4.8 – 7 WHPA 6 HVA 6
1. The material from non-farm herbivorous animals (Category 1), Category 2 or Category 3 non-agricultural source material is stored partially below grade in a permanent nutrient storage facility. 2. The mass of nitrogen in the non-agricultural source material stored is at least 0.5 tonnes but not more than 5 tonnes.	IPZ/WHPA-E 10 WHPA 10	IPZ/WHPA-E 7.2 – 9 WHPA 8	IPZ/WHPA-E 4.8 – 7 WHPA 6 HVA 6
1. The material from non-farm herbivorous animals (Category 1), Category 2 or Category 3 non-agricultural source material is stored below grade in or on a permanent nutrient storage facility. 2. The mass of nitrogen in the non-agricultural source material stored is at least 0.5 tonnes but not more than 5 tonnes.	WHPA 10	IPZ/WHPA-E 10 WHPA 8	IPZ/WHPA-E 7 – 9 WHPA 6 HVA 6
1. The material from non-farm herbivorous animals (Category 1), Category 2 or Category 3 non-agricultural source material is stored at or above grade in or on a permanent or a temporary nutrient storage facility. 2. The mass of nitrogen in the non-agricultural source material stored is more than 5 tonnes.	IPZ/WHPA-E 9 – 10 WHPA 10	IPZ/WHPA-E 7 – 8.1 WHPA 8	IPZ/WHPA-E 4.5 – 6.4 WHPA 6 HVA 6
1. The material from non-farm herbivorous animals (Category 1), Category 2 or Category 3 non-agricultural source material is stored partially below grade in a permanent nutrient storage facility.	IPZ/WHPA-E 9 – 10 WHPA 10	IPZ/WHPA-E 7 – 8.1 WHPA 8	IPZ/WHPA-E 4.5 – 6.4 WHPA 6 HVA 6

2. The mass of nitrogen in the non-agricultural source material stored is more than 5 tonnes.			
1. The material from non-farm herbivorous animals (Category 1), Category 2 or Category 3 non-agricultural source material is stored below grade in or on a permanent nutrient storage facility. 2. The mass of nitrogen in the non-agricultural source material stored is more than 5 tonnes.	WHPA 10	IPZ/WHPA-E 9 – 10 WHPA 8	IPZ/WHPA-E 6 – 8.1 WHPA 6 HVA 6
Proposed circumstances (pathogen)	**Areas of SDWT**	**Areas of MDWT**	**Areas of LDWT**
1. Category 3 non-agricultural source material other than Category B compost and excluding materials from organic waste matter derived from the production of biodiesel, organic waste matter from grease traps and interceptors, a meat plant or sewage biosolid, and any portion of the material is stored at or above grade. 2. A spill of the material or runoff from an area where the material is stored may result in the presence of one or more pathogens in groundwater or surface water.		IPZ/WHPA-E 9 – 10 WHPA-A/B 10	IPZ/WHPA-E 6 – 8.1 WHPA-A/B 8
1. Category 3 non-agricultural source material other than Category B compost and that contains material from a meat plant or sewage biosolid, or material from non-farm herbivorous animals (Category 1), and any portion of the material is stored at or above grade. 2. A spill of the material or runoff from an area where the material is stored may result in the presence of one or more pathogens in groundwater or surface water.	IPZ/WHPA-E 8 – 10 WHPA-A/B 10	IPZ/WHPA-E 6 – 7.2 WHPA-A/B 8	IPZ/WHPA-E 4.2 – 5.6 WHPA-A/B 6
1. Category 3 non-agricultural source material other than Category B compost and excluding material from organic waste matter derived from the production of biodiesel, organic waste matter from grease		WHPA-A/B 10	IPZ/WHPA-E 8 – 10 WHPA-A/B 8

traps and interceptors, a meat plant or sewage biosolid, and the material is stored entirely below grade. 2. A spill of the material or runoff from an area where the material is stored may result in the presence of one or more pathogens in groundwater or surface water.			
1. Category 3 non-agricultural source material other than Category B compost and that contains material from a meat plant or sewage biosolid, or material from non-farm herbivorous animals (Category 1), and the material is stored entirely below grade. 2. A spill of the material or runoff from an area where the material is stored may result in the presence of one or more pathogens in groundwater or surface water.	IPZ/WHPA-E 10 WHPA-A/B 10	IPZ/WHPA-E 8 – 9 WHPA-A/B 8	IPZ/WHPA-E 5 – 7.2 WHPA-A/B 6

10. Application of NASM

Current circumstances:
Circumstances associated with the application of NASM categories that represent risks to water quality were not explicitly mentioned.

Proposed circumstances:
Circumstances that explicitly describe the NASM categories 1 (limited to "non-farm herbivorous animal"), 2 and 3 that pose risks to drinking water sources. From the pathogen perspective, Compost B category has a very low pathogen risk to drinking water sources and hence is not captured as a risk. Significant risk would be identified in IPZs/WHPA-E scored 8 to 10 and WHPA scored 10 due to the contribution of chemical / pathogen parameters. Current scores in the drinking water threats tables remain as is.

Proposed circumstances (chemical)	**Areas of SDWT**	**Areas of MDWT**	**Areas of LDWT**
1. The material from non-farm herbivorous animals (Category 1), Category 2 or Category 3 non-agricultural source material is applied to land located in a vulnerable area, where the managed land map shows a managed land percentage for the applicable area that is less than 40% and the livestock density map shows a livestock density for the applicable area that is sufficient to annually apply agricultural source material at a rate that is less than 0.5 nutrient units per acre.		IPZ/WHPA-E 9 – 10 WHPA 10	IPZ/WHPA-E 6 – 8.1 WHPA 8 HVA 6
1. The material from non-farm herbivorous animals (Category 1), Category 2 or Category 3 non-agricultural source material is applied to land located in a vulnerable area, where the managed land map shows a managed land percentage for the applicable area that is less than 40% and the livestock density map shows a livestock density for the applicable area that is sufficient to annually apply agricultural source material at a rate that is at least 0.5 nutrient units per acre but not		IPZ/WHPA-E 8 – 10 WHPA 10	IPZ/WHPA-E 5.4 – 7.2 WHPA 6 – 8 HVA 6

more than 1.0 nutrient unit per acre.			
1. The material from non-farm herbivorous animals (Category 1), Category 2 or Category 3 non-agricultural source material is applied to land located in a vulnerable area, where the managed land map shows a managed land percentage for the applicable area that is less than 40% and the livestock density map shows a livestock density for the applicable area that is sufficient to annually apply agricultural source material at a rate that is more than 1.0 nutrient units per acre.	IPZ/WHPA-E 10 WHPA 10	IPZ/WHPA-E 7 – 9 WHPA 8	IPZ/WHPA-E 4.8 – 6.4 WHPA 6 HVA 6
1. The material from non-farm herbivorous animals (Category 1), Category 2 or Category 3 non-agricultural source material is applied to land located in a vulnerable area, where the managed land map shows a managed land percentage for the applicable area that is at least 40%, but not more than 80% and the livestock density map shows a livestock density for the applicable area that is sufficient to annually apply agricultural source material at a rate that is less than 0.5 nutrient units per acre.		IPZ/WHPA-E 8 – 10 WHPA 10	IPZ/WHPA-E 5.4 – 7.2 WHPA 6 – 8 HVA 6
1. The material from non-farm herbivorous animals (Category 1), Category 2 or Category 3 non-agricultural source material is applied to land located in a vulnerable area, where the managed land map shows a managed land percentage for the applicable area that is at least 40%, but not more than 80% and the livestock density map shows a livestock density for the applicable area that is sufficient to annually apply agricultural source material at a rate that is at least 0.5 nutrient	IPZ/WHPA-E 10	IPZ/WHPA-E 7.2 – 9 WHPA 8 – 10	IPZ/WHPA-E 4.8 – 7 WHPA 6 HVA 6

units per acre but not more than 1.0 nutrient unit per acre.			
1. The material from non-farm herbivorous animals (Category 1), Category 2 or Category 3 non-agricultural source material is applied to land located in a vulnerable area, where the managed land map shows a managed land percentage for the applicable area that is at least 40%, but not more than 80% and the livestock density map shows a livestock density for the applicable area that is sufficient to annually apply agricultural source material at a rate that is more than 1.0 nutrient units per acre.	IPZ/WHPA-E 9 – 10 WHPA 10	IPZ/WHPA-E 7 – 8.1 WHPA 8	IPZ/WHPA-E 4.5 – 6.4 WHPA 6 HVA 6
1. The material from non-farm herbivorous animals (Category 1), Category 2 or Category 3 non-agricultural source material is applied to land located in a vulnerable area, where the managed land map shows a managed land percentage for the applicable area that is more than 80% and the livestock density map shows a livestock density for the applicable area that is sufficient to annually apply agricultural source material at a rate that is less than 0.5 nutrient units per acre.	IPZ/WHPA-E 10 WHPA 10	IPZ/WHPA-E 7 – 9 WHPA 8	IPZ/WHPA-E 4.8 – 6.4 WHPA 6 HVA 6
1. The material from non-farm herbivorous animals (Category 1), Category 2 or Category 3 non-agricultural source material is applied to land located in a vulnerable area, where the managed land map shows a managed land percentage for the applicable area that is more than 80% and the livestock density map shows a livestock density for the applicable area that is sufficient to annually apply agricultural source material at a rate that is at least 0.5 nutrient units per acre but not	IPZ/WHPA-E 9 – 10 WHPA 10	IPZ/WHPA-E 7 – 8.1 WHPA 8	IPZ/WHPA-E 4.5 – 6.4 WHPA 6 HVA 6

more than 1.0 nutrient unit per acre.			
1. The material from non-farm herbivorous animals (Category 1), Category 2 or Category 3 non-agricultural source material is applied to land located in a vulnerable area, where the managed land map shows a managed land percentage for the applicable area that is more than 80% and the livestock density map shows a livestock density for the applicable area that is sufficient to annually apply agricultural source material at a rate that is more than 1.0 nutrient units per acre.	IPZ/WHPA-E 9 – 10 WHPA 10	IPZ/WHPA-E 7 – 8.1 WHPA 8	IPZ/WHPA-E 4.5 – 6.4 WHPA 6 HVA 6
Proposed circumstances (pathogen)	**Areas of SDWT**	**Areas of MDWT**	**Areas of LDWT**
1. The land application of any quantity of Category 3 non-agricultural source material other than Category B compost and excluding materials from organic waste matter derived from the production of biodiesel, organic waste matter from grease traps and interceptors, a meat plant or sewage biosolid. 2. The application may result in the presence of one or more pathogens in groundwater or surface water.		IPZ/WHPA-E 9 – 10 WHPA-A/B 10	IPZ/WHPA-E 6 – 8.1 WHPA-A/B 8
1. The land application of any quantity of Category 3 non-agricultural source material other than Category B compost and that contains material from a meat plant or sewage biosolids, or material from non-farm herbivorous animals (Category 1). 2. The application may result in the presence of one or more pathogens in groundwater or surface water.	IPZ/WHPA-E 8 – 10 WHPA-/B 10	IPZ/WHPA-E 6 – 7.2 WHPA-A/B 8	IPZ/WHPA-E 4.2 – 5.6 WHPA-A/B 6

11. Handling and Storage of Fuel

Current circumstances:
Circumstances of both handling and storage of fuel. Risks of both handling and storage are separate, despite the fact they are associated with each other.

Proposed circumstances (details are the table below):
Both circumstances of handling and storage under one set of threat sub-category as they are associated with each other. Significant risks as currently identified remain same. Storage of fuel aboveground in WHPA 10 is significant risk for quantities greater than 250 litre.

Proposed circumstances (chemical)	**Areas of SDWT**	**Areas of MDWT**	**Areas of LDWT**
1. The storage of liquid fuel in a tank at or above grade at a facility as defined in section 1 of O. Reg. 213/01 (Fuel Oil) made under the Technical Standards and Safety Act, 2000, a facility as defined in section 1 of O. Reg. 217/01 (Liquid Fuels) made under the Technical Standards and Safety Act, 2000, or a facility that manufactures or refines fuel. 2. The fuel is stored or handled in a quantity that is not more than 25 litres.		IPZ/WHPA-E 9 –10 WHPA 10	IPZ/WHPA-E 6 – 8.1 WHPA 8
1. The storage of liquid fuel in a tank partially below grade at a facility as defined in section 1 of O. Reg. 213/01 (Fuel Oil) made under the Technical Standards and Safety Act, 2000, a facility as defined in section 1 of O. Reg. 217/01 (Liquid Fuels) made under the Technical Standards and Safety Act, 2000, or a facility that manufacturers or refines fuel. 2. The fuel is stored or handled in a quantity that is not more than 25 litres.		IPZ/WHPA-E 9 – 10 WHPA 10	IPZ/WHPA-E 6 – 8.1 WHPA 6 – 8 HVA 6
1. The storage of liquid fuel in a tank below grade at a facility as defined in section 1 of O. Reg. 213/01 (Fuel Oil) made under the Technical Standards and Safety		WHPA 10	IPZ/WHPA-E 9 –10

Act, 2000, a facility as defined in section 1 of O. Reg. 217/01 (Liquid Fuels) made under the Technical Standards and Safety Act, 2000, or a facility that manufactures or refines fuel. 2. The fuel is stored or handled in a quantity that is not more than 25 litres.			WHPA 6 – 8 HVA 6
1. The storage of liquid fuel in a tank at or above grade at a facility as defined in section 1 of O. Reg. 213/01 (Fuel Oil) made under the Technical Standards and Safety Act, 2000, a facility as defined in section 1 of O. Reg. 217/01 (Liquid Fuels) made under the Technical Standards and Safety Act, 2000, or a facility that manufactures or refines fuel. 2. The fuel is stored or handled in a quantity that is more than 25, but not more than 250 litres.		IPZ/WHPA-E 8 – 10 WHPA 10	IPZ/WHPA-E 5.4 – 7.2 WHPA 6 – 8 HVA 6
1. The storage of liquid fuel in a tank partially below grade at a facility as defined in section 1 of O. Reg. 213/01 (Fuel Oil) made under the Technical Standards and Safety Act, 2000, a facility as defined in section 1 of O. Reg. 217/01 (Liquid Fuels) made under the Technical Standards and Safety Act, 2000, or a facility that manufactures or refines fuel. 2. The fuel is stored or handled in a quantity that is more than 25, but not more than 250 litres.		IPZ/WHPA-E 8 – 10 WHPA 8 – 10	IPZ/WHPA-E 5.4 – 7.2 WHPA 6 HVA 6
1. The storage of liquid fuel in a tank below grade at a facility as defined in section 1 of O. Reg. 213/01 (Fuel Oil) made under the Technical Standards and Safety Act, 2000, a facility as defined in section 1 of O. Reg. 217/01 (Liquid Fuels) made under the Technical Standards and Safety Act, 2000, or a facility that manufactures or refines fuel.		WHPA 8 – 10	IPZ/WHPA-E 8 – 10 WHPA 6 HVA 6

2. The fuel is stored or handled in a quantity that is more than 25, but not more than 250 litres			
1. The storage of liquid fuel in a tank at or above grade at a facility as defined in section 1 of O. Reg. 213/01 (Fuel Oil) made under the Technical Standards and Safety Act, 2000, a facility as defined in section 1 of O. Reg. 217/01 (Liquid Fuels) made under the Technical Standards and Safety Act, 2000, or a facility that manufactures or refines fuel. 2.The fuel is stored or handled in a quantity that is more than 250, but not more than 2,500 litres.	IPZ/WHPA-E 10 WHPA 10	IPZ/WHPA-E 7 – 9 WHPA 8	IPZ/WHPA-E 4.8 – 6.4 WHPA 6 HVA 6
1. The storage of liquid fuel in a tank partially below grade at a facility as defined in section 1 of O. Reg. 213/01 (Fuel Oil) made under the Technical Standards and Safety Act, 2000, a facility as defined in section 1 of O. Reg. 217/01 (Liquid Fuels) made under the Technical Standards and Safety Act, 2000, or a facility that manufactures or refines fuel. 2. The fuel is stored or handled in a quantity that is more than 250, but not more than 2,500 litres.	IPZ/WHPA-E 10 WHPA 10	IPZ/WHPA-E 7 – 9 WHPA 8	IPZ/WHPA-E 4.8 – 6.4 WHPA 6 HVA 6
1. The storage of liquid fuel in a tank below grade at a facility as defined in section 1 of O. Reg. 213/01 (Fuel Oil) made under the Technical Standards and Safety Act, 2000, a facility as defined in section 1 of O. Reg. 217/01 (Liquid Fuels) made under the Technical Standards and Safety Act, 2000, or a facility that manufactures or refines fuel. 2. The fuel is stored or handled in a quantity that is more than 250, but not more than 2,500 litres.	WHPA 10	IPZ/WHPA-E 10 WHPA 8	IPZ/WHPA-E 7 – 9 WHPA 6 HVA 6
1. The storage of liquid fuel in a tank at or above grade at a facility as defined in section 1 of O. Reg.	IPZ/WHPA-E 9 – 10	IPZ/WHPA-E 6.4 – 8.1	IPZ/WHPA-E 4.5 – 6.3

213/01 (Fuel Oil) made under the Technical Standards and Safety Act, 2000, a facility as defined in section 1 of O. Reg. 217/01 (Liquid Fuels) made under the Technical Standards and Safety Act, 2000, or a facility that manufactures or refines fuel. 2. The fuel is stored or handled in a quantity that is more than 2,500 litres.	WHPA 10	WHPA 8	WHPA 6 HVA 6
1. The storage of liquid fuel in a tank partially below grade at a facility as defined in section 1 of O. Reg. 213/01 (Fuel Oil) made under the Technical Standards and Safety Act, 2000, a facility as defined in section 1 of O. Reg. 217/01 (Liquid Fuels) made under the Technical Standards and Safety Act, 2000, or a facility that manufactures or refines fuel. 2. The fuel is stored or handled in a quantity that is more than 2,500 litres.	IPZ/WHPA-E 9 – 10 WHPA 10	IPZ/WHPA-E 6.4 – 8.1 WHPA 8	IPZ/WHPA-E 4.5 – 6.3 WHPA 6 HVA 6
1. The storage of liquid fuel in a tank below grade at a facility as defined in section 1 of O. Reg. 213/01 (Fuel Oil) made under the Technical Standards and Safety Act, 2000, a facility as defined in section 1 of O. Reg. 217/01 (Liquid Fuels) made under the Technical Standards and Safety Act, 2000, or a facility that manufactures or refines fuel. 2. The fuel is stored or handled in a quantity that is more than 2,500 litres.	WHPA 10	IPZ/WHPA-E 9 – 10 WHPA 8	IPZ/WHPA-E 6 – 8.1 WHPA 6 HVA 6

12. Handling and Storage of Commercial Fertilizer

Current circumstances:

(1) The commercial fertilizer is stored for retail sale or in relation to its application

(2) The commercial fertilizer is stored at a facility where it is manufactured or processed, or from which it is wholesaled, excluding storage related solely to retail sale or in relation to the application of the fertilizer

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Proposed circumstances (details are the table below):

Circumstances that define storage of fertilizer to be assessed based on that storage on the same property. Significant risk would be identified in IPZs/WHPAs scored 10; due to the contribution of chemical parameters.

Proposed circumstances (chemical)	**Areas of SDWT**	**Areas of MDWT**	**Areas of LDWT**
1. The storage of commercial fertilizer on a site is not more than 25 kg.		IPZ/WHPA-E 10 WHPA 10	IPZ/WHPA-E 7 – 9 WHPA 8
1. The storage of commercial fertilizer on a site is more than 25 but not more than 250 kg.		IPZ/WHPA-E 9 – 10 WHPA 10	IPZ/WHPA-E 6 – 8.1 WHPA 6 – 8 HVA 6
1. The storage of commercial fertilizer on a site is more than 250 but not more than 2,500 kg.		IPZ/WHPA-E 8 – 10 WHPA 8 – 10	IPZ/WHPA-E 5.4 – 7.2 WHPA 6 HVA 6
1. The storage of commercial fertilizer on a site is more than 2,500 kg.	IPZ/WHPA-E 10 WHPA 10	IPZ/WHPA-E 7.2 – 9 WHPA 8	IPZ/WHPA-E 4.8 – 7 WHPA 6 HVA 6

13. Waste Transfer/Processing Sites

Current circumstances:

(1) Waste Disposal Site - Storage Of Hazardous Waste At Disposal Sites

1. Hazardous waste or liquid industrial waste is stored at or above (below; a portion, but not all of the waste is stored below) grade.

(2) Waste Disposal Site - Storage of wastes described in clauses (p), (q), (r), (s), (t) or (u) of the definition of hazardous waste. Must be at a licensed site.

1. A site that is not approved to accept hazardous waste or liquid industrial waste but 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 in that regulation, and stores the waste at or above (below; a portion of the waste, but not all, below) grade.

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Proposed circumstances (details are the table below):

Circumstances will clearly identify transfer/processing sites that are approved to receive subject waste and municipal waste.

Significant risks would be identified for both sub-categories in IPZs / WHPAs scored 8; due to the contributing chemicals.

Proposed circumstances (chemical)	**Areas of SDWT**	**Areas of MDWT**	**Areas of LDWT**
1. The hazardous waste or liquid industrial waste is stored above grade at a transfer/processing site approved to receive waste under Part V of the Environmental Protection Act, that includes hazardous waste or liquid industrial waste.	IPZ/WHPA-E 8 – 10 WHPA 8 – 10	IPZ/WHPA-E 6 – 7.2 WHPA 6 HVA 6	IPZ/WHPA-E 4.2 – 5.6
1. The hazardous waste or liquid industrial waste is stored partially below grade at a transfer/processing site approved to receive waste under Part V of the Environmental Protection Act, that includes hazardous waste or liquid industrial waste.	IPZ/WHPA-E 8 – 10 WHPA 8 – 10	IPZ/WHPA-E 6 – 7.2 WHPA 6 HVA 6	IPZ/WHPA-E 4.2 – 5.6
1. The hazardous waste or liquid industrial waste is stored below grade at a transfer/processing site approved to receive waste under	WHPA 8 – 10	IPZ/WHPA-E 8 – 10	IPZ/WHPA-E 5.4 – 7.2

Part V of the Environmental Protection Act, that includes hazardous waste or liquid industrial waste.		WHPA 6 HVA 6	
1. The municipal waste is stored at or above grade at a transfer/processing site approved to receive only municipal waste under Part V of the Environmental Protection Act.	IPZ/WHPA-E 9 – 10 WHPA 10	IPZ/WHPA-E 7 – 8.1 WHPA 8	IPZ/WHPA-E 4.5 – 6.4 WHPA 6 HVA 6
1. The municipal waste is stored partially below grade site at a transfer/processing site approved to receive only municipal waste under Part V of the Environmental Protection Act.	IPZ/WHPA-E 9 – 10 WHPA 8 – 10	IPZ/WHPA-E 7 – 8.1 WHPA 6 HVA 6	IPZ/WHPA-E 4.5 – 6.4
1. The municipal waste is stored below grade at a transfer/processing site approved to receive only municipal waste under Part V of the Environmental Protection Act.	WHPA 8 – 10	IPZ/WHPA-E 8 – 10 WHPA 6 HVA 6	IPZ/WHPA-E 5.4 – 7.2

14. Waste Generating Facilities

Current circumstances:
Waste Disposal Site - Storage of wastes described in clauses (p), (q), (r), (s), (t) or (u) of the definition of hazardous waste. Must be at a licensed site.

1. A site that is not approved to accept hazardous waste or liquid industrial waste but 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 in that regulation, and stores the waste at or above (below; a portion of the waste, but not all, below) grade.

Proposed circumstances (details are the table below):
Circumstances that explicitly recognize the risks of both sites that require generator registration under the Environmental Protection Act and those that do not.
Significant risks would be identified for sites requiring generator registration in IPZs/WHPAs scored 10. For sites excluded from generator registration significant risks would be identified in WHPA 10.

Proposed circumstances (chemical)	**Areas of SDWT**	**Areas of MDWT**	**Areas of LDWT**
1. The subject waste is stored at or above grade, or partially below grade, at a waste generation facility requiring generator registration as prescribed in Regulation 347 (General - Waste Management) R.R.O. 1990 made under the Environmental Protection Act, excluding a waste disposal site that requires an ECA under Part V of the EPA.	IPZ/WHPA-E 10 WHPA 10	IPZ/WHPA-E 7.2 – 9 WHPA 8	IPZ/WHPA-E 4.8 – 7 WHPA 6 HVA 6
1. The subject waste is stored below grade at a waste generation facility requiring generator registration as prescribed in Regulation 347 (General - Waste Management) R.R.O. 1990 made under the Environmental Protection Act, excluding a waste disposal site that requires an ECA under Part V of the EPA.	WHPA 10	IPZ/WHPA-E 9 – 10 WHPA 8	IPZ/WHPA-E 6 – 8.1 WHPA 6 HVA 6
1. Any of the following wastes described in the specified provisions of Regulation 347 and are stored at		IPZ/WHPA-E 8 – 10	IPZ/WHPA-E 5.4 – 7.2

or above grade at a waste generation facility: a) A waste excluded from the definition of subject waste as described in subsection 1 (3). b) A subject waste that is exempt from Part V because it meets the requirements set out in paragraph 1 of subsection 3 (2). c) A subject waste that is exempt from Part V and is described in paragraphs 3, 6, 7, 8, 10, 13, and 17, 18 and 19 of subsection 3 (2).		WHPA 10	WHPA 6 – 8 HVA 6
1. Any of the following wastes described in the specified provisions of Regulation 347 and are stored partially below grade at a waste generation facility: a) A waste excluded from the definition of subject waste as described in subsection 1 (3). b) A subject waste that is exempt from Part V because it meets the requirements set out in paragraph 1 of subsection 3 (2). c) A subject waste that is exempt from Part V and is described in paragraphs 3, 6, 7, 8, 10, 13, and 17, 18 and 19 of subsection 3 (2).	WHPA 10	IPZ/WHPA-E 8 – 10 WHPA 8	IPZ/WHPA-E 5.4 – 7.2 WHPA 6 HVA 6
1. Any of the following wastes described in the specified provisions of Regulation 347 and are stored below grade at a waste generation facility: a) A waste excluded from the definition of subject waste as described in subsection 1 (3). b) A subject waste that is exempt from Part V because it meets the requirements set out in paragraph 1 of subsection 3 (2). c) A subject waste that is exempt from Part V and is described in paragraphs 3, 6,	WHPA 10	IPZ/WHPA-E 10 WHPA 8	IPZ/WHPA-E 7 – 9 WHPA 6 HVA 6

7, 8, 10, 13, and 17, 18 and 19 of subsection 3 (2).			

15. Waste: Application and Storage of Processed Organic Waste or Waste Biomass

Current circumstances:
The concept of that this subcategory can be identified using the existing NASM threat circumstances.

Proposed circumstances (details are the table below):
Circumstances for both application and storage processed organic waste (POW) and waste biomass to recognize their risks as waste and not as NASM activity, by:

(1) For application: use percentage of managed land and livestock density calculations in every vulnerable area.
(2) For storage: use mass of nitrogen stored and type of storage (below, at or above grade).

Significant risks would be identified for both sub-categories in IPZs scored 9 to 10 and WHPAs scored 10 due to the contribution of chemical / pathogen parameters.

Application of POW

Proposed circumstances (chemical)	**Areas of SDWT**	**Areas of MDWT**	**Areas of LDWT**
1. The processed organic waste or waste biomass is applied to a land located in a vulnerable area, where the managed land map shows a managed land percentage for the applicable area that is less than 40% and the livestock density map shows a livestock density for the applicable area that is sufficient to annually apply agricultural source material at a rate that is less than 0.5 nutrient units per acre.		IPZ/WHPA-E 9 – 10 WHPA 10	IPZ/WHPA-E 6 – 8.1 WHPA 8
1. The processed organic waste or waste biomass is applied to a land located in a vulnerable area, where the managed land map shows a managed land percentage for the applicable area that is less than 40% and the livestock density map shows a livestock density for the applicable area that is sufficient to annually apply agricultural source material at a rate that is at least 0.5 nutrient units per acre but not		IPZ/WHPA-E 8 – 10 WHPA 10	IPZ/WHPA-E 5.4 – 7.2 WHPA 6 – 8 HVA 6

more than 1.0 nutrient unit per acre.			
1. The processed organic waste or waste biomass is applied to a land located in a vulnerable area, where the managed land map shows a managed land percentage for the applicable area that is less than 40% and the livestock density map shows a livestock density for the applicable area that is sufficient to annually apply agricultural source material at a rate that is more than 1.0 nutrient units per acre.	IPZ/WHPA-E 10 WHPA 10	IPZ/WHPA-E 7 – 9 WHPA 8	IPZ/WHPA-E 4.8 – 6.4 WHPA 6 HVA 6
1. The processed organic waste or waste biomass is applied to a land located in a vulnerable area, where the managed land map shows a managed land percentage for the applicable area that is at least 40%, but not more than 80% and the livestock density map shows a livestock density for the applicable area that is sufficient to annually apply agricultural source material at a rate that is less than 0.5 nutrient units per acre.		IPZ/WHPA-E 8 – 10 WHPA 10	IPZ/WHPA-E 5.4 – 7.2 WHPA 6 – 8 HVA 6
1. The processed organic waste or waste biomass is applied to a land located in a vulnerable area, where the managed land map shows a managed land percentage for the applicable area that is at least 40%, but not more than 80% and the livestock density map shows a livestock density for the applicable area that is sufficient to annually apply agricultural source material at a rate that is at least 0.5 nutrient units per acre but not more than 1.0 nutrient unit per acre.	IPZ/WHPA-E 10	IPZ/WHPA-E 7.2 – 9 WHPA 8 – 10	IPZ/WHPA-E 4.8 – 7 WHPA 6 HVA 6
1. The processed organic waste or waste biomass is applied to a land located in a vulnerable area, where the managed land map shows a managed land percentage for the applicable area that is at least 40%, but not more than 80% and	IPZ/WHPA-E 9 – 10 WHPA 10	IPZ/WHPA-E 7 – 8.1 WHPA 8	IPZ/WHPA-E 4.5 – 6.4 WHPA 6 HVA 6

the livestock density map shows a livestock density for the applicable area that is sufficient to annually apply agricultural source material at a rate that is more than 1.0 nutrient units per acre.			
1. The processed organic waste or waste biomass is applied to a land located in a vulnerable area, where the managed land map shows a managed land percentage for the applicable area that is more than 80% and the livestock density map shows a livestock density for the applicable area that is sufficient to annually apply agricultural source material at a rate that is less than 0.5 nutrient units per acre.	IPZ/WHPA-E 10 WHPA 10	IPZ/WHPA-E 7 – 9 WHPA 8	IPZ/WHPA-E 4.8 – 6.4 WHPA 6 HVA 6
1. The processed organic waste or waste biomass is applied to a land located in a vulnerable area, where the managed land map shows a managed land percentage for the applicable area that is more than 80% and the livestock density map shows a livestock density for the applicable area that is sufficient to annually apply agricultural source material at a rate that is at least 0.5 nutrient units per acre but not more than 1.0 nutrient unit per acre.	IPZ/WHPA-E 9 – 10 WHPA 10	IPZ/WHPA-E 7 – 8.1 WHPA 8	IPZ/WHPA-E 4.5 – 6.4 WHPA 6 HVA 6
1. The processed organic waste or waste biomass is applied to a land located in a vulnerable area, where the managed land map shows a managed land percentage for the applicable area that is more than 80% and the livestock density map shows a livestock density for the applicable area that is sufficient to annually apply agricultural source material at a rate that is more than 1.0 nutrient units per acre.	IPZ/WHPA-E 9 – 10 WHPA 10	IPZ/WHPA-E 7 – 8.1 WHPA 8	IPZ/WHPA-E 4.5 – 6.4 WHPA 6 HVA 6
Proposed Circumstances (pathogen)	**Areas of SDWT**	**Areas of MDWT**	**Areas of LDWT**

1. Land application of any quantity of processed organic waste or waste biomass. 2. The application may result in the presence of one or more pathogens in groundwater or surface water.	IPZ/WHPA-E 8 – 10 WHPA-A/B 10	IPZ/WHPA-E 6 – 7.2 WHPA-A/B 8	IPZ/WHPA-E 4.2 – 5.6 WHPA-A/B 6

Storage of POW

Proposed circumstances (chemical)	**Areas of SDWT**	**Areas of MDWT**	**Areas of LDWT**
1. The processed organic waste or waste biomass is stored at or above grade. 2. The mass of nitrogen in the processed organic waste stored is less than 0.5 tonne.		IPZ/WHPA-E 8 – 10 WHPA 10	IPZ/WHPA-E 5.4 – 7.2 WHPA 6 – 8 HVA 6
1. The processed organic waste or waste biomass is stored partially below grade. 2. The mass of nitrogen in the processed organic waste stored is less than 0.5 tonne.		IPZ/WHPA-E 8 – 10 WHPA 8 – 10	IPZ/WHPA-E 5.4 – 7.2 WHPA 6 HVA 6
1. The processed organic waste or waste biomass is stored below grade. 2. The mass of nitrogen in the processed organic waste stored is less than 0.5 tonne.		WHPA 8 – 10	IPZ/WHPA-E 8 – 10 WHPA 6 HVA 6
1. The processed organic waste or waste biomass is stored at or above grade. 2. The mass of nitrogen in the processed organic waste stored is at least 0.5 tonne but not more than 5 tonnes.	IPZ/WHPA-E 10	IPZ/WHPA-E 7.2 – 9 WHPA 8 – 10	IPZ/WHPA-E 4.8 – 7 WHPA 6 HVA 6
1. The processed organic waste or waste biomass is stored partially below grade. 2. The mass of nitrogen in the processed organic waste stored is at least 0.5 tonne but not more than 5 tonnes.	IPZ/WHPA-E 10 WHPA 10	IPZ/WHPA-E 7.2 – 9 WHPA 8	IPZ/WHPA-E 4.8 – 7 WHPA 6 HVA 6

Proposed circumstances (chemical)	Areas of SDWT	Areas of MDWT	Areas of LDWT
1. The processed organic waste or waste biomass is stored below grade. 2. The mass of nitrogen in the processed organic waste stored is at least 0.5 tonne but not more than 5 tonnes.	WHPA 10	IPZ/WHPA-E 10 WHPA 8	IPZ/WHPA-E 7 – 9 WHPA 6 HVA 6
1. The processed organic waste or waste biomass is stored at or above grade. 2. The mass of nitrogen in the processed organic waste stored is more than 5 tonnes.	IPZ/WHPA-E 9 – 10 WHPA 10	IPZ/WHPA-E 7 – 8.1 WHPA 8	IPZ/WHPA-E 4.5 – 6.4 WHPA 6 HVA 6
1. The processed organic waste or waste biomass is stored partially below grade. 2. The mass of nitrogen in the processed organic waste stored is more than 5 tonnes.	IPZ/WHPA-E 9 – 10 WHPA 10	IPZ/WHPA-E 7 – 8.1 WHPA 8	IPZ/WHPA-E 4.5 – 6.4 WHPA 6 HVA 6
1. The processed organic waste or waste biomass is stored below grade. 2. The mass of nitrogen in the processed organic waste stored is more than 5 tonnes.	WHPA 10	IPZ/WHPA-E 9 – 10 WHPA 8	IPZ/WHPA-E 6 – 8.1 WHPA 6 HVA 6
Proposed circumstances (pathogen)	**Areas of SDWT**	**Areas of MDWT**	**Areas of LDWT**
1. The processed organic waste or waste biomass is stored on a site, and any portion of the material is stored at or above grade. 2. The application may result in the presence of one or more pathogens in groundwater or surface water.	IPZ/WHPA-E 8 – 10 WHPA-A/B 10	IPZ/WHPA-E 6 – 7.2 WHPA-A/B 8	IPZ/WHPA-E 4.2 – 5.6 WHPA-A/B 6
1. The processed organic waste or waste biomass is stored on a site entirely below grade. 2. The application may result in the presence of one or more pathogens in groundwater or surface water.	IPZ/WHPA-E 10 WHPA-A/B 10	IPZ/WHPA-E 8 – 9 WHPA-A/B 8	IPZ/WHPA-E 5 – 7.2 WHPA-A/B 6

16. Waste: Application and Storage of Hauled Sewage

Current circumstances:

Application of Hauled Sewage to Land

1. The application of hauled sewage to land.
2. The application area is less than 1 (at least 1, but not more than 10; more than 10) hectare.

Proposed circumstances (details are the table below):

Circumstances for the application of hauled sewage contain the term ‘disposal’ to better reflect it being captured under the waste threat category.

The circumstances for the storage of hauled sewage align with the risk posed by the application (i.e. disposal) of hauled sewage.

Significant risks would be identified for both sub-categories in IPZs scored 8 to 10 and WHPAs scored 10 due to the contribution of chemical / pathogen parameters.

Application of Hauled Sewage

Proposed circumstances (chemical)	**Areas of SDWT**	**Areas of MDWT**	**Areas of LDWT**
1. The disposal of hauled sewage to land by any method. 2. The application area is less than 1 hectare.		IPZ/WHPA-E 8 – 10 WHPA 10	IPZ/WHPA-E 5.4 – 7.2 WHPA 6 – 8 HVA 6
1. The disposal of hauled sewage to land by any method. 2. The application area is at least 1, but not more than 10 hectares.	IPZ/WHPA-E 10	IPZ/WHPA-E 7.2 – 9 WHPA 8 – 10	IPZ/WHPA-E 4.8 – 7 WHPA 6 HVA 6
1. The disposal of hauled sewage to land by any method. 2. The application area is more than 10 hectares.	IPZ/WHPA-E 9 – 10 WHPA 10	IPZ/WHPA-E 7 – 8.1 WHPA 8	IPZ/WHPA-E 4.5 – 6.4 WHPA 6 HVA 6
Proposed circumstances (pathogen)	**Areas of SDWT**	**Areas of MDWT**	**Areas of LDWT**

Proposed circumstances (chemical)	Areas of SDWT	Areas of MDWT	Areas of LDWT
1. Land disposal of hauled sewage in any quantity. 2. The disposal may result in the presence of one or more pathogens in groundwater or surface water.	IPZ/WHPA-E 8 – 10 WHPA-A/B 10	IPZ/WHPA-E 6 – 7.2 WHPA-A/B 8	IPZ/WHPA-E 4.2 – 5.6 WHPA-A/B 6

Storage of Hauled Sewage

Proposed circumstances (chemical)	Areas of SDWT	Areas of MDWT	Areas of LDWT
1. The hauled sewage is stored in a tank at a site in a stationary means of containment for hauled sewage, not including a site where it is produced before its collection by a hauled sewage system.	WHPA 10	IPZ/WHPA-E 9 – 10 WHPA 8	IPZ/WHPA-E 6 – 8.1 WHPA 6 HVA 6
1. The hauled sewage is stored in a lagoon at a site in a stationary means of containment for hauled sewage, not including a site where it is produced before its collection by a hauled sewage system.	IPZ/WHPA-E 9 – 10 WHPA 10	IPZ/WHPA-E 7 – 8.1 WHPA 8	IPZ/WHPA-E 4.5 – 6.4 WHPA 6 HVA 6
Proposed circumstances (pathogen)	**Areas of SDWT**	**Areas of MDWT**	**Areas of LDWT**
1. The hauled sewage is stored in a tank or in a lagoon on site in a stationary means of containment for hauled sewage.	IPZ/WHPA-E 8 – 10 WHPA-A/B 10	IPZ/WHPA-E 6 – 7.2 WHPA-A/B 8	IPZ/WHPA-E 4.2 – 5.6 WHPA-A/B 6

17. General Editorial Amendments

Currently, under the Director's Technical Rules, threats and their circumstances are listed in a numbering system that differ from the numbering system (for the same threats) under the O. Reg. 287/07 of the Clean Water Act, which creates confusion when referencing threats or circumstances in source protection plans and assessment reports.

Also, the threats and their circumstances are prescribed by listing the scientific names and symbols of all associating chemicals which make it difficult for non-technical readers to understand the threats.

The proposed change will use the same numbering system for listing threats in the Tables as listed in the O. Reg. 287 and will not display the scientific names of the chemicals, but rather use more straightforward language to describe the threats, their circumstances and their risks to drinking water sources.

Section 2: Amendments to the glossary of drinking water threats tables

Adding the following to the different sections of the glossary of the Tables of Drinking Water Threats:

2. In this document, the following words and expressions have the same meaning as in Regulation 347 (General – Waste Management), R.R.O. 1990, made under the Environmental Protection Act:

f. “waste generation facility”
g. “landfilling”
h. “subject waste”
i. “processed organic waste”
j. “waste biomass”

3. In this document, the following words and expressions have the same meaning as in section 1 of O. Reg. 525/98 (Approval Exemptions) made under the Ontario Water Resources Act:

d. “storm water”;
e. “storm sewer”;
f. “sewer”; and
g. “appurtenance”.

7. In this document, the following words and expressions have the same meaning as in section 1 of O. Reg. 267/03 (General) made under the Nutrient Management Act, 2002:

d. “Category 2 non-agricultural source materials” or “Category 2 NASM”;
e. “Category 3 non-agricultural source materials” or “Category 3 NASM”;
f. “sewage biosolids”;
g. “non-agricultural source materials” or “NASM”; and
h. “Category 1 non-agricultural source materials” or “Category 1 NASM”, e.g. “non-farm herbivorous animal”

8. The following words and expressions are defined as follows for the purpose of this document:

“Category B compost” means compost that meets the requirements for Category B compost in Part II of the Ontario Compost Quality Standards.

“Combined Sewer Overflow (CSO)” means a discharge of untreated sewage to the land or surface water.

“Default percentage of impervious surface area" means the percentage of total impervious surface area that shall be used in identifying if the application of road salt is a low, moderate or significant drinking water threat in an IPZ or WHPA or

HVA. Under Rule 15.1 of the Director's Technical Rules, another default percentage of impervious area may be used where a rationale is given for the departure and the rationale explains why the departure is necessary in the circumstances to provide equivalent or better protection of the drinking water source.

"Forcemain or rising main" means a "sanitary sewer", which conveys sewage under pressure from a pump or pneumatic ejector to a point where the system is either combined with other parts of the "wastewater collection facility" or discharged to a "wastewater treatment facility

"Final Effluent Outfall" means the approved discharge point of a sewage treatment plant effluent, including final effluent from lagoons, to surface water, and includes any discharges of sewage as a result of any by-passes that occur in the sewage treatment plant processes upstream of the final effluent sampling points.

"Gravity Sanitary Sewer" means a "sanitary sewer", which relies on gravity to convey sewage to other parts of the "wastewater collection facility" or discharge sewage to a "wastewater treatment facility

"Handling" means using, moving, loading and unloading of chemical(s) on a site that could result in the release of the chemical(s) into the groundwater or surface water, and includes handling areas, as well as any pipes, fittings, valves, controls, and pumps connected to the storage.

"Liquid hydrocarbon" means a mixture containing hydrogen and carbon and is liquid at the temperature and pressure under which its volume is measured or estimated.

"Manhole" means an access point to a sewer from the surface to allow a person to enter the sewer for inspection, survey or maintenance.

"Outfall" means a structure designed and built to direct stormwater, snow meltwater, sanitary sewage, industrial waste and cooling water into surface water for dispersion and dilution.

"Partially Separated Sanitary Sewer" means a "sanitary sewer in which either only a portion of an original "Combined Sewer" was retrofitted to "separated sanitary sewers", or in which a new development area served by separate sanitary sewers was added to an area served by a Combined Sewer.

"Sanitary Sewer Overflow (SSO)" means a discharge of untreated sewage to the land or surface water from a sanitary sewer at designed locations, other than the final discharge to a wastewater treatment plant or at a combined sewer outfall.

"Separated Sanitary Sewer" means a sanitary sewer in which there is no

contribution from stormwater inflow, and all runoff from precipitation and snowmelt is separately collected and conveyed by “storm sewers”

“Sewage Pumping Station or Lift Station” means a facility that forms part of a “wastewater collection facility”, including pumps, wet well and equipment used to lift the sewage upward through a sewer forcemain or rising main to higher elevations in order to allow further conveyance by gravity flow.

“Sewage Treatment Plant Overflow outfall” means any alternate discharge point of sewage at designed locations other than the approved sewage treatment plant final effluent outfall.

“Sewage Treatment Plant (STP) Holding Tank” means any tank that is not a sewage treatment plant process tank and has the primary function to store or blend sewage or sludge and is a part of the sewage treatment plant.

“Sewage Treatment Plant (STP) Process Tank” means any tank that has a specific treatment purpose and is part of the sewage treatment plant (for example sedimentation tanks, aeration tanks).

“Snow Disposal Facility” means a snow meltwater management facility as part of a sewage work that requires approval under section 53 of the Ontario Water Resources Act (OWRA, 1990), or a facility in lieu of requiring an approval is regulated by an Environmental Activity and Sector Registry (EASR).

“Stationary means of containment for hauled sewage” means a means for storing hauled sewage on-site temporarily, including a tank or lagoon, that is designed not to discharge the hauled sewage into the natural environment and that may be governed by an environmental compliance approval in respect of a waste management system or a waste disposal site.

"Storage", as it relates to DNAPLs, Pesticides, Commercial Fertilizers, Organic Solvents and Road Salt, includes the "handling" of the chemical(s) taking place on the same site as the storage.

“Storage of Snow” means a Snow Disposal Facility, or any other area that is designed or used for the retention and control of snow for further discharging or infiltrating the meltwater to ground, land, surface water or sewage work.

“Storm water drainage system” means a system designed for the collection and transmission of "storm water” or snow meltwater from a “Snow Disposal Facility”, including where storm water or snow meltwater is discharged from a “storm sewer”, a ditch or a swale.

“Storm water drainage system outfall” means the discharge point at which “storm water” or snow meltwater from a “Snow Disposal Facility” is discharged to a surface water body from a storm water drainage system.

“Storm Water Management Facility” Outfall means the discharge point at which “storm water” is discharged to a surface water body from a “stormwater management facility”, including where stormwater is discharged from a spillway, a perforated riser, or a weir.

“Storm water Infiltration Facility” means a “stormwater management facility” that is designed to infiltrate or exfiltrate part or all of the “storm water” runoff into the ground, including a greenway terrace, a soak way, an infiltration trench, an infiltration chamber, a bioretention structure, a vegetated filter strip, a permeable pavement, a grass swale, a dry swale, a perforated pipe system, a pervious catch basin, an infiltration basin, an infiltration gallery.

“Transmit” has the same meaning as in Section 1 of Ontario Regulation 210/01.

“Wet Well” means an underground pit as part of a sewage pumping station or lift station, where sanitary sewage is stored in until it is pumped out of the station.

9. In this document, the following List 1 is applicable to the circumstances related to the prescribed threat “handling and storage of DNAPLs”

List 1

Adhesives and resins manufacturing and processing
Airstrips and hangars operations
Asphalt and bitumen manufacturing
Boat manufacturing
Coal gasification and coal tar manufacturing and processing
Commercial autobody shops
Commercial port activities, including operation and maintenance of wharves and docks
Cosmetics manufacturing and processing
Dye manufacturing and processing
Electroplating
Electronic, computer, photographic and printing equipment manufacturing
Garages (including automotive and other motor vehicles) and maintenance and repair of railcars, marine vehicles and aviation vehicles
Glass manufacturing and production
Iron and steel manufacturing and production
Metal fabrication
Metal treatment, coating, plating and finishing
Operation of dry-cleaning equipment (where chemicals are used)
Paints manufacturing and processing
Pesticides (including herbicides, fungicides and anti-fouling agents) manufacturing and processing
Pharmaceutical manufacturing and processing
Plastics (including fibreglass) manufacturing and processing

Pulp, paper and paperboard manufacturing and processing
Rail yards, tracks and spurs
Rubber manufacturing and processing
Solvent manufacturing and processing
Vehicles and associated parts manufacturing
Tanneries
Textile manufacturing and processing
Wood treating and preservative facility