January 8, 2015

Province of Ontario
Five-Year Review of Ontario's Water Management Programs

The following information is submitted by the Province of Ontario to the Great Lakes Regional Body Secretariat in response to the Questionnaire for Preliminary Submittals by States and Provinces, in fulfillment of the five-year review of Ontario's Water Management Programs, pursuant to the requirements in Article 300 of the *Great Lakes-St. Lawrence River Basin Sustainable Water Resources Agreement* (Agreement).

General Information

1. Lead agencies and contact(s):

The Ontario Ministry of Natural Resources and Forestry (MNRF) and the Ontario Ministry of the Environment and Climate Change (MOECC) share primary responsibility for water management at the provincial level. Generally, MNRF is responsible for certain aspects of Provincial water quantity management, including the administration of the *Great Lakes Charter* and the *Great Lakes – St. Lawrence River Basin Sustainable Water Resources Agreement* (Agreement). MOECC is responsible for water quality management and for the Permit to Take Water Program, which is being enhanced to implement key commitments of the Agreement.

Key Contacts:

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Biodiversity Branch
Ontario Ministry of Natural Resources and Forestry

Brian Nixon, Director
Land and Water Policy Branch
Ontario Ministry of the Environment and Climate Change

2. Provincial water management program implementing laws, regulations and policies –

Ontario is implementing its Agreement commitments through enhancement of existing water management programs. The commitments of the Agreement are being implemented primarily through changes to the Permit to Take Water Program under the Ontario Water Resources Act (OWRA), with contributions from a number of additional statutes, regulations and policies, as highlighted in the following table. A description of Ontario's key legislative and policy tools for water management follows the table.

Agreement Commitments (Articles)	Ontario Water Resources Act, Water Taking and Transfer Regulation (O. Reg. 387/04)	Additional Legislation, Regulation, Policy
Prohibition of diversions, regulation of exceptions based on Exception Standard (Article 200, 201)	☑ Ban on diversions out of Ontario's major water basins, including the Great Lakes Basin (OWRA s.34.3) ☑ Regulation of intra-basin transfers (OWRA s. 34.5-34.11; O. Reg 387/04)***** ☑ Environmental Compliance Approvals required for sewage works (return flow) (OWRA s. 53)	☑ Environmental Assessment Act - Technical Bulletin provides guidance for municipalities undertaking water, wastewater projects to meet spirit of Agreement standards, criteria for class EA projects involving an intra-basin transfer ☑ Lakes and Rivers Improvement Act – regulation of works forwarding, holding back, diverting water (location, design approval) ☑ Quality of return flow/effluent regulated under Environmental Protection Act, Clean Water Act, Environmental Assessment Act, Provincial Water Quality Objectives ☑ Clean Water Act provides for the completion of water quality and quantity risk assessments, water budgets
Regional review of significant diversion exceptions (Article 204)	☑ Regional review for significant intra-basin transfers (OWRA s. 34.6, 34.1)*	☑ Environmental Bill of Rights provides for public consultation on water taking proposals
Management, regulation of withdrawals, consumptive uses based on Decision-Making Standard (Article 200, par 3; 203; 206)	☑ Permitting criteria reflect Agreement Decision Making Standard (OWRA s. 34; O.Reg. 387/04) ☑ Environmental Compliance Approvals required for sewage works (return flow) (OWRA s. 53)	☑ Quality of return flow/effluent regulated under Environmental Protection Act, Clean Water Act, Environmental Assessment Act, Provincial Water Quality Objectives ☑ Clean Water Act provides for the completion of water quality and quantity risk assessments, water budgets ☑ Provincial Policy Statement under the Planning Act provides for the minimizing of negative impacts and planning for efficient, sustainable water use and conservation in planning and development decisions
Prior Notice and Comment for significant consumptive uses (Article 205)	☑ Prior Notice and Comment required for significant consumptive uses by regulation (s. 6; O.Reg 387/04)*	☑ Environmental Assessment Act - Technical Bulletin provides guidance for municipalities undertaking water, wastewater projects to meet spirit of Agreement for class EA projects ☑ Environmental Bill of Rights provides for public consultation on water taking proposals
Applicability, determining new/ increased diversions, consumptive uses, withdrawals (e.g. foundation for baseline setting, Agreement exemptions, regulation of bottled water) (Article 207)	☑ Exemptions from permitting for livestock watering, household use, unless a new or increased transfer is established (OWRA s. 34) ☑ Exceptions to Ontario ban on diversions/ transfers out of major water basins (OWRA s. 34.3) ☑ Regulation of bottled water under PTTW program, restriction of highly consumptive uses in defined high use watersheds (O.Reg.387/04) ☑ Setting of a baseline (OWRA s. 34.8; O. Reg. 387/04)*.	
Review, possible amendment of standards	☑ Posting of cumulative impact assessments for public input, ON government response (OWRA s. 34.6)*.	

Agreement Commitments (Articles)	Ontario Water Resources Act, Water Taking and Transfer Regulation (O. Reg. 387/04)	Additional Legislation, Regulation, Policy
based on periodic cumulative impact assessments (Article 209)		
Judicial Review (standing to other Parties to seek judicial review of Ontario decision under Agreement) (Articled 210)	☑ Reciprocating jurisdictions entitled to hearing of Environmental Review Tribunal with respect to specified decisions (OWRA s. 34.9-34.10, O. Reg 387/04)* ☑ Reciprocating jurisdictions entitled to seek judicial review of specified decisions (OWRA s. 34.9, 34.11, O. Reg. 387/04)*.	
Submission of water management, conservation program reviews every 5 years (Article 300)	☑ Program reviews submitted voluntarily	
Conservation goals, objectives, programs, annual assessment of conservation programs (Article 304) (Note: see Water Conservation & Efficiency Program Report for further description of contributing legislation, policies, programs)	☑ Water conservation among the criteria considered in making decisions on a Permit to Take Water (OWRA O.Reg. 387/04) ☑ Permit application requires applicant to identify existing conservation measures ☑ Annual Conservation Program Assessment, 5 year program reviews submitted voluntarily	☑ Water Opportunities Act, 2010 sets out a framework for water efficiency, conservation (e.g. Building Code amended to require regular review of water conservation standards, expand scope of Building Code Conservation Advisory Council) ☑ Ontario Water Conservation and Efficiency Goals, Objectives completed 2012 ☑ Broader water and ecosystem conservation commitments supported by a wide range of legislation, regulation, policies and programs e.g. Planning Act-Provincial Policy Statement, Canada-Ontario Agreement Respecting the Great Lakes Basin Ecosystem, Great Lakes Strategy
Information Management commitments (mandatory reporting by water users, annual reporting of water use data to regional database) (Article 301)	☑ O.Reg 387/04 requires annual reporting of water use by permit holders	

The primary provincial legislative and policy tools that contribute to Agreement implementation are listed below. Federal legislation and management activities may also apply (e.g. Fisheries Act) but are not outlined in this report.

The *Ontario Water Resources Act* (OWRA) provides for the conservation, protection and management of Ontario's waters and for their efficient and sustainable use. The Act provides the authority for the Permit to Take Water Program administered by the Ministry of the Environment and Climate Change. Essentially, and subject to limited exceptions, any person who takes more than 50,000 litres of water in any day by means of a well, intake, or other works (a taking includes the diversion of water) is required to obtain a Permit to Take Water from the MOECC Director. In 2007 the OWRA was amended through the *Safeguarding and Sustaining Ontario's Water Act* (SSOWA) to incorporate key provisions of the Agreement. Some amendments came into force immediately (e.g. ban on out of basin diversions/transfers), others required supporting

regulations before they could be brought into force (e.g. regulation of intra-basin transfers, consumptive uses in accordance with the Agreement). All remaining provisions of the Act will be in force as of January 1, 2015, the date of proclamation.

- *Ontario Water Resources Act, R.S.O. 1990, c. O.40:* www.e-laws.gov.on.ca/html/statutes/english/elaws_statutes_90o40_e.htm
- *Safeguarding and Sustaining Ontario's Water Act,* S.O. 2007, c.12 – Bill 198: www.e-laws.gov.on.ca/html/source/statutes/english/2007/elaws_src_s07012_e.htm

The *Water Taking and Transfer Regulation* under the OWRA outlines matters that the Ministry of the Environment and Climate Change must consider when deciding upon an application for a Permit to Take Water. Amendments to the regulation have been developed to bring key Agreement commitments into force (e.g. ban on intra-basin transfer and regulation of exceptions; application of decision-making standard, prior notice and comment process that is required by the Agreement for very large withdrawals, consumptive uses)*

- Ontario Regulation 387/04 (Water Taking and Transfer): www.e-laws.gov.on.ca/html/regs/english/elaws_regs_040387_e.htm

The *Permit To Take Water Manual* (April 2005) sets out the decision-making process generally followed by the Ministry when evaluating a proposed or existing water taking.

- *Permit to Take Water Manual* (April 2005): https://archive.org/details/permittotakewa4932ontauoft

Other supporting Permit to Take Water application policies and guidance materials are outlined in section 5 of the Water Management Program report.

The Lakes and Rivers Improvement Act, 1990 (LRIA), administered by the Ministry of Natural Resources and Forestry, provides for the management, preservation and use of Ontario's lakes and rivers and the land under them, the protection of public rights and riparian interests, the management of fish and wildlife dependent on lakes and rivers, protection of natural amenities and the protection of people and property by ensuring that dams and diversions are suitably located, constructed and maintained.

- *Lakes and Rivers Improvement Act*, R.S.O. 1990, c. L.3*:* www.e-laws.gov.on.ca/html/statutes/english/elaws_statutes_90l03_e.htm
- Ontario Regulation 454/96 (Construction): www.e-laws.gov.on.ca/html/regs/english/elaws_regs_960454_e.htm

The Clean Water Act, 2006, administered by the Ministry of the Environment and Climate Change, protects existing and future sources of Ontario's drinking water. A key component of the legislation is the preparation of locally developed, science based risk assessment reports (quality and quantity risks) and source protection plans.

- *The Clean Water Act, 2006,* R. S.O. 2006, c. 22: www.e-laws.gov.on.ca/html/statutes/english/elaws_statutes_06c22_e.htm

The Ontario *Environmental Assessment Act*, 1990 (EA Act) provides for two types of environmental assessment planning and approval processes: Individual Environmental Assessments (EA) carried out and submitted to the Minister of the Environment and Climate Change for review and approval, or Class Environmental Assessments which are approved subject to compliance with an approved class environmental assessment process (e.g. Municipal Engineers Association Class EA for Municipal Infrastructure projects, including water and wastewater projects)

- *Ontario Environmental Assessment Act*, R.S.0. 1990, Chapter E.18
  www.e-laws.gov.on.ca/html/statutes/english/elaws_statutes_90e18_e.htm

Regulations under the *Environmental Protection Act* specify effluent monitoring requirements and effluent limits for nine industrial sectors: petroleum; pulp and paper; metal mining; industrial minerals; metal casting; organic chemical manufacturing; inorganic chemical manufacturing; iron and steel manufacturing; and electric power generation.

- *Environmental Protection Act*, R.S.O. 1990, CHAPTER E.19
  www.e-laws.gov.on.ca/html/statutes/english/elaws_statutes_90e19_e.htm

Water Opportunities and Water Conservation Act, 2010 was passed on November 29th, 2010 The Act contains five schedules. Schedule 1 enacts a stand-alone act, the *Water Opportunities Act*, 2010. Schedules 2 to 5 amend existing legislation in respect of water conservation and other matters. The Act builds upon Ontario's expertise in clean water technology and sets out a framework to make the province a North American leader in water innovation to help address global water challenges. Among other things, the Act sets the framework to encourage Ontarians to use water more efficiently by creating and implementing innovative approaches to protect water resources for current and future generations.

- *Water Opportunities and Water Conservation Act*, S.O. 2010, Chapter 19
  http://www.e-laws.gov.on.ca/html/source/statutes/english/2010/elaws_src_s10019_e.htm
- *Water Opportunities Act*, S.O. 2010, Chapter 19, Schedule 1
  http://www.e-laws.gov.on.ca/html/statutes/english/elaws_statutes_10w19_e.htm

The *Canada-Ontario Agreement* (COA) is the principal mechanism through which Ontario and Canada coordinate their work to address their respective and shared commitments to protect the Great Lakes. The first COA was signed in 1971. Ontario has negotiated with Canada the 8th Canada-Ontario Agreement on Great Lakes Water Quality and Ecosystem Health, 2014. The province has negotiated an agreement that supports implementation of Ontario's Great Lakes Strategy while Canada has focussed on aligning commitments with the 2012 Canada-U.S. Great Lakes Water Quality Agreement. The 8th COA is comprised of a framework agreement and 14 annexes. New annexes deal with climate change impacts, nutrients, aquatic invasive species, habitat and species, groundwater quality, discharges from vessels, promoting innovation and engaging communities, First Nations and Métis. Under Annex 5, Lakewide Management, of the 8th COA, Canada and Ontario have agreed to commitments that will result in improved understanding and implementation of adaptive management approaches to lake level regulation such as improving understanding of cumulative impacts of water withdrawals, diversions, and consumptive uses on the water resources and ecosystems of the Great Lakes basin.

- *Canada-Ontario Agreement on Great Lakes Water Quality and Ecosystem Health, 2014*
http://www.downloads.ene.gov.on.ca/envision/env_reg/er/documents/2014/011-9290_d.pdf

The *Provincial Policy Statement* (PPS, 2014), under the authority of Section 3 of the *Planning Act*, administered by the Ministry of Municipal Affairs and Housing, provides policy direction on matters relating to land use planning that are of provincial interest, including protecting and restoring water quality and quantity, promoting efficient and sustainable use of water resources, including practices for water conservation and sustaining water quality, and protection from water-related natural hazards. Planning authorities that have authority to make decisions under the Planning Act must ensure their decisions are consistent with the Provincial Policy Statement.

- *Provincial Policy Statement*
http://www.mah.gov.on.ca/AssetFactory.aspx?did=10463

Water Management (1994, update 1998) establishes the Policies, Guidelines and Provincial Water Quality Objectives of the Ministry of the Environment and Climate Change and is based on the guiding principles related to the protection, preservation, and sustainability of the province's water resources for future generations. In order to effectively implement these principles, ecosystem and watershed management, how pollutants are controlled, and the inter-relationship of air, water and land management are all important considerations.

- *Water Management (1994, update 1998)*
https://www.ontario.ca/environment-and-energy/water-management-policies-guidelines-provincial-water-quality-objectives

Ontario's Great Lakes Strategy, released in December 2012, provides a roadmap for how Ontario will focus action to protect the Great Lakes. The Strategy summarizes environmental conditions of the Great Lakes and Ontario's actions taken to date, and identifies priorities for future action. Priorities for future action are described with respect to the six Great Lakes goals of engaging and empowering communities; protecting water for human and ecological health; improving wetlands, beaches, shorelines and coastal areas; protecting habitats and species; enhancing understanding and adaptation; and ensuring environmentally sustainable economic opportunities and innovation. For example, the mayors of the Great Lakes and St. Lawrence Cities Initiative launched the Municipal Adaptation and Resiliency Service (MARS) in January, 2014 to which Ontario (MOECC) provided funding to help municipalities accelerate local adaptation to climate change in the Great Lakes Region.

- *Ontario's Great Lakes Strategy*, 2012
http://www.ontario.ca/environment-and-energy/ontarios-great-lakes-strategy

Water Management Programs Overview (Five-Year Review)

The information is limited to the provincial water management programs which contribute to the achievement of Ontario's Agreement commitments.

1. Summary description of Ontario's Water management program scope and thresholds – The focus of the following summary is on the water use regulation elements of Ontario's water management programs.

Water Use Regulation Overview

The *Ontario Water Resources Act* and its companion regulations are directed at the protection of the quality and quantity of Ontario's surface and groundwater resources. The purpose of the Act is to provide for the conservation, protection and management of Ontario's waters and for their efficient and sustainable use, in order to promote Ontario's long-term environmental, social and economic well-being. The legislation provides for:

- prohibitions related to the discharging of pollutants to surface or groundwater and the regulation of discharges from sewage works; and
- a permit system that governs the taking of surface or groundwater (>50,000 litres per day [over 13,000 U.S. Gallons per day]).

Water Quality (return flow) – Section 53 of the *Ontario Water Resources Act,* requires Ministry of the Environment and Climate Change approval to establish, alter extend or replace new or existing sewage works. Environmental Compliance Approvals are issued for approved works. Sewage works means any works for the collection, transmission, treatment and disposal of sewage or any part of any such works. Sewage includes drainage, storm water, commercial wastes and industrial wastes and any such other matter or substance that is specified by regulation.

It is the responsibility of the proponent to assess the assimilative capacity of the receiver, and determine the actual and potential uses of the intended receiver of the effluent from the proposed works, and derive from this analysis the effluent quality and discharge regimen criteria for the proposed works. Terms and conditions of the approval deal with the criteria for operation and performance of the sewage works, requirements for monitoring and recording of specific indicators of the environmental impact of the works, reporting on incidents, and provision of contingencies to prevent and deal with accidental spills or upsets.

Water Takings – Section 34 of the *Ontario Water Resources Act,* prohibits water takings over 50,000 litres per day without a permit subject to some specified exceptions. The Permit to Take Water Program applies to all water use sectors. Ontario does not have a separate water registration program as water use is monitored through a water use reporting mechanism under the Permit to Take Water program where permit holders are required to report annually the amounts of their takings.

Exemptions from the requirement to obtain a permit include water takings for ordinary household purposes, watering of livestock or poultry and firefighting purposes. If a new or increased transfer of water of 379,000 litres (100,000 U.S. gallons) per day or more is

established for household purposes or watering of livestock or poultry, a permit would be required*

Water withdrawals from all Ontario water sources, including withdrawals from the Great Lakes, other surface waters, and groundwater, are regulated in Ontario.

Dams and water diversions (e.g. for hydroelectric power production) are also regulated through the *Lakes and Rivers Improvement Act*, which regulates works forwarding, holding back or diverting water and is administered through the Ministry of Natural Resources and Forestry. Proposed diversions do not require approval under the *Lakes and Rivers Improvement Act* when they are located within the jurisdiction of a conservation authority, are subject to approval under the *Drainage Act*, or are not expected to harmfully alter fish habitat or impede the movement of fish in a river, stream or lake.

Water Withdrawals and Consumptive Uses

Considerations – In making decisions on an application for a Permit to Take Water the following factors are considered:

- Protection of the natural functions of the ecosystem – e.g. potential impact of the natural variability of water flow or water levels, minimum stream flow, habitat that depends on water flow or water levels, interrelationships between groundwater and surface water, and the potential to restore source watershed hydrologic conditions and functions*
- Water availability – e.g. impact on water balance and sustainable aquifer yield, existing water uses, low water conditions, whether the taking is in a high use or medium use watershed (certain highly consumptive water uses are restricted in these watersheds), any planned municipal use approved under the *Environmental Assessment Act* or under a Municipal Official Plan
- Issues related to the use of water – e.g. whether water conservation is implemented in accordance with best water management standards for the relevant sector, the purpose for the water use including the amount of water lost through consumptive use*, the manner and location to which the water will be returned*, and other issues, including compliance with the Boundary Waters Treaty and the International Boundary Waters Treaty Act of Canada*

Water Taking Risk Classification – To assist in the evaluation of proposed water takings, permit applications are classified based on their potential risk to the environment or potential to interfere with other water users.

- Category 1 proposals have a lower risk of causing adverse environmental impacts or interference. They meet the following criteria:
    - Renewal of a previously issued permit that will expire, to allow the continuance of an existing taking with no changes and for which no past interference or impact problems have been reported.
    - Groundwater takings from dugout ponds not connected to or receiving water from surface water; the dugouts must satisfy depth and separation distance from other water sources.
    - Surface water takings from small ponds that collect only surface run-off or takings from a Great Lake or connecting channel less than 1 million litres (260,000 US gallons) per day.

- Category 2 and Category 3 proposals have a greater potential to cause adverse environmental impact or interference.
    - Applications for Category 2 takings require accreditation by a qualified person.
    - Applications for Category 3 takings are required to be supported by a detailed ecological/hydrological/hydrogeological study prepared by a qualified person. Among the water takings classified as a Category 3 are new or increased withdrawals from the Great Lakes or connecting channels which exceed 19 million litres per day consumptive use (5 million U.S. gallons per day), the threshold which triggers obligations under the Agreement*.

Public Involvement – In Ontario, notifications of permit applications are required to be posted to the *Environmental Bill of Rights Registry* for public review and comment for a minimum of 30 days unless exempted from the registry posting requirement (e.g. exceptions include: proposals for which an equivalent public consultation process has been provided, such as through an Environmental Assessment, water takings that are less than one year, and agricultural irrigation, unless a new or increased water transfer is proposed*). As well, municipalities and conservation authorities are given notice of Environmental Registry postings for permit proposals within their area of jurisdiction. The proponent of a water taking has the right to appeal the Ministry decision on their permit application. In addition, the public may seek leave to appeal Ministry decisions on proposals that are subject to registry posting.

Water Use Reporting – Ontario's *Water Taking and Transfer Regulation* requires every permit holder to collect and record data on the volume of water taken daily and to report the previous year's data to the Ministry before March 31 of the following year. This requirement applies to all permitted water takers in Ontario. Water use data are submitted and stored in the internet-based Water Taking Reporting System established to facilitate compliance and to inform provincial water management.

*Great Lakes – St. Lawrence River Basin Sustainable Water Resources Agreement (Agreement)** – Ontario's *Water Taking and Transfer R*egulation requires that Ontario's obligations under the Agreement be met when considering a permit application. More specifically, this requirement relates to the need to ensure that Prior Notice and an opportunity to comment on the proposal is provided to Great Lakes jurisdictions before a decision is made for new or increased consumptive uses of Great Lakes – St. Lawrence River Basin water of over 19 million litres (5 million U.S. gallons) per day average over any 90 day period. In keeping with Agreement Article 205, comments will be considered from the other parties to the Agreement that address whether the proposal is consistent with the Decision-Making Standard established under Article 203 of the Agreement. A detailed analysis of how the provisions of the Decision-Making Standard are applied is provided under question 3 of the questionnaire.

To meet this requirement, estimated consumptive use associated with proposed new or increased water takings are screened using generally accepted consumptive use coefficients for 34 water use sectors/activities, developed through a Ministry of Natural Resources and Forestry commissioned study in 2009. Proposed uses that may exceed the Agreement threshold are encouraged to conduct a site specific consumptive use evaluation to confirm whether Prior Notice is required. Additional guidance will be provided as required to assist in determining the amount of water lost through consumptive use.

In determining whether a proposed new or increased water taking from the Great Lakes – St. Lawrence River Basin would result in a consumptive use of water in an amount that triggers obligations to provide Prior Notice and an opportunity to comment under Article 205 of the Agreement, consideration is given to:

- The baseline of the existing water withdrawal approval limits, as per the Agreement; and
- The volume of the proposed new or increased water taking and the associated consumptive use, including the amount of any related water taking supplying the same facility or common distribution system, approved within the ten years prior to the application.

Water Diversions, Transfers

Ban on Out of Basin Diversions/Transfers – In 1999, Ontario introduced a regulation under the Ontario Water Resources Act banning water diversions/transfers out of the province's three major water basins (Great Lakes – St. Lawrence River Basin, Hudson Bay Basin, and Nelson River Basin). This ban was elevated to legislation (i.e. placed into the *Ontario Water Resources Act)* through the *Safeguarding and Sustaining Ontario's Water Act*, 2007. The only exceptions to Ontario's ban on diversions are for transfers of water in containers 20 litres or less, water incorporated into a product that is transferred out of the basin, water required for the operation of a vehicle or vessel, water for firefighting or other emergency purposes, existing transfers commenced before January 1, 1998, and the transfer of water pursuant to the order of the Lieutenant Governor in Council dated October 2, 1913 respecting the Greater Winnipeg Water District. In Ontario there are no exceptions to the ban on diversions for straddling communities or straddling counties.

Intra-Basin Transfers* – The intra-basin transfer commitments of the Agreement have been integrated into Permit to Take Water decision-making through amendments to the *Ontario Water Resources Act* in 2007 which introduced the ban on intra-basin water transfers from one Great Lake watershed to another and the regulation of exceptions, consistent with the straddling community and intra-basin transfer provisions of the Agreement and the Exception Standard criteria*. A detailed analysis of how the provisions of the Exception Standard criteria are applied is provided under question 3 of the questionnaire.

In keeping with the Agreement, the intra-basin transfer provisions apply to new or increased transfers 379,000 litres (100,000 U.S. gallons) per day or more, average in any 90 day period, termed "the threshold amount" in the legislation. Permits for transfers involving a consumptive use of 19 million litres (5 million U.S. gallons) per day or more will be issued by the Minister of the Environment and Climate Change (as opposed to a Director delegated authority under the *Ontario Water Resources Act*) following Regional Review, taking into consideration the declaration of finding issued by the Regional Body.

The legislation encourages municipal water uses that transfer 379,000 litres (100,000 U.S. gallons) of water per day or more to return water to the source Great Lake watershed and requires any new or increased transfers involving a consumptive use of 19 million litres (5 million U.S. gallons) per day or more to return water to the source Great Lake watershed, in keeping with the Agreement.

The legislative framework for regulating new or increased intra-basin transfers of water is outlined in the following table – all thresholds are based on a 90 day running average*:

<table>
<tr><td>19+ MLD
Consumptive Use</td><td colspan="2">• Meets exception criteria, including return flow to source GL watershed
• No feasible alternatives to transfer, including conservation
• Proposal undergoes Regional Review & the Minister considers the Declaration of Finding by Regional Body before making a decision</td></tr>
<tr><td>379,000+ L/Day
(Consumptive Use less than 19 MLD)</td><td>Municipal Drinking Water Systems:
• Meets exception criteria, including return flow to source Great Lake watershed</td><td>All Uses (including Municipal Drinking Water Systems if return flow to source watershed cannot be met):
• Meets exception criteria, except return flow may be to another Great Lake watershed – if demonstrated that it is not feasible, environmentally sound or cost effective to return water to the source Great Lake watershed
• No feasible, environmentally sound, cost effective alternatives to transfer, including conservation
• Ontario gives prior notice to other Parties to the Agreement</td></tr>
<tr><td>50,000 L/Day to 379,000 L/Day</td><td colspan="2">• Subject to Permit to Take Water requirements; not prohibited</td></tr>
</table>

In determining whether a proposed new or increased intra-basin transfer requires regulation under the above framework, consideration will be given to:

- The volume of water deemed to currently be transferred (baseline), according to approval limits, as per the Agreement;
- Whether the proposed transfer is from a Great Lakes watershed to the watershed of a downstream connecting channel of that Great Lake (exempt);
- Whether the proposed transfer is from the watershed of a downstream connecting channel of a Great Lake to the watershed of that Great Lake (exempt);
- Whether the proposed transfer involves water taken from a location within 10 kilometres (approximately 6 miles) of the point at which Lake Ontario flows into the St. Lawrence River and transferred to the St. Lawrence River watershed or the Lake Ontario watershed (exempt); and
- The volumes of any new or increased water transfers by the permit holder between the same Great Lakes watersheds to which the application relates that were approved within the ten years prior to the application.

In determining whether a proposed new or increased intra-basin transfer triggers the 19 million litre per day consumptive use threshold, estimated consumptive use associated with proposed new or increased water transfers will be screened using generally accepted consumptive use coefficients for 34 water use sectors/activities, developed through a Ministry of Natural Resources and Forestry commissioned study in 2009. Proposals that may exceed the Agreement threshold will be encouraged to conduct a site specific consumptive use evaluation to confirm whether Regional Review is required. Additional guidance will be provided as required to assist in determining the amount of water lost through consumptive use.

2. Description of how Ontario manages Water Withdrawals by sector, water source, quantity and location

Permitted water takings are managed by sector, source, quantity and location.

Sector:
The following table identifies the existing general purpose and specific purpose water taking categories under the Permit to Take Water program. Any management requirements specific to a particular sector are noted.

Sector	Description	Management
ALL Sectors		• Permit to Take Water required for water takings over 50,000 litres per day by ALL water use sectors, with the exception of ordinary household purposes and watering of livestock or poultry (unless a new or increased intra-basin transfer 379,000 litres/day or more is proposed*) and firefighting purposes.
Agriculture	Irrigation of (includes frost protection): field and pasture crop; fruit orchard; market garden/flowers; nursery; sod farm; tender fruits; tobacco	
Commercial	Aquaculture, bottled water, golf course irrigation, mall/business; snowmaking	• Highly consumptive water uses are restricted in defined "high use watersheds". This restriction applies to bottled water. • Bottled water transported in containers 20 litres or less are exempt from the prohibition of water transfers
Construction	Dredging, road building	
Dewatering	Pits and quarries, construction	
Industrial	Aggregate washing, brewing/soft drinks, cooling water, food processing, manufacturing; pipeline testing; power generation	• Highly consumptive water uses are restricted in defined "high use watersheds". This restriction applies to beverage manufacturing, fruit or vegetable canning, aggregate processing where water is incorporated into a slurry, product manufacturing if more than 50,000 litres/day of water is incorporated into the manufactured product(s).
Recreation	Aesthetic, fish pond, wetland	
Remediation	Groundwater	
Water Supply	Campground, communal, municipal	
Miscellaneous	Dam/reservoir, heat pump, wildlife conservation, pump test	
each sector has the option of identifying 'other', with a requirement to specify use		

Source:
Water takings are also categorized according to the source – as surface water or ground water and by name of the source (e.g. watercourse name and tributary). Permits are required for water takings over 50,000 litres per day from a lake, stream, river, pond or groundwater.

To assist in evaluating proposed water takings, applications are classified based on their potential risk to the environment or potential to interfere with other water users.
The table below outlines how applications are classified for groundwater and surface water takings. Applications for Category 2 takings would require a scoped hydrogeological (groundwater) or hydrological/ecological study (surface water), and applications for Category 3 takings would require a detailed hydrogeological (groundwater) or hydrological/ecological study due to their potential for greater environmental risk.

Classification Criteria for Categories for Groundwater and Surface Water Takings

Groundwater	Surface Water
Category 1	**Category 1**
Renewal (same or lesser amount, same purpose, same location, same source, no past interference/ impacts, and no scientific study required as part of renewal). •	**Renewal** (same or lesser amount, same purpose, same location, same source, no past interference/ impacts, and no scientific study required as part of renewal).
Ponds (e.g. irrigation and agriculture) • Not connected to nor receiving water from surface water; and • <4m deep and >1000m from the nearest stream or wetland; or • <7m deep and >250m from the nearest stream or wetland	**Ponds** <1,500 cubic metres in volume that collect runoff and that are not drawing from groundwater, watercourses, wetlands, other lakes or ponds
	Great Lakes or connecting channel takings <1,000,000 litres/day
Category 2	**Category 2**
Short-term, non-recurring taking less than 7 days (e.g. pumping test or hydrostatic test). **Short-term, non-recurring taking less than 30 consecutive days and less than 400,000 litres/day** (e.g. construction dewatering and dust suppression).	**Great Lakes** or connecting channels taking less than 19 million litres per day
	Takings from sources with previous assessments (i.e. further to a previous study and implementing previously established controls)
	River and Streams (3rd order or higher order) taking ,5% of $7Q_{20}$
	Transitional Permits where the Director previously required upgrades/modifications to water taking
	Takings and Returns where water is removed for a short time only and water is returned to a nearby point with no significant change to water quantity or quality (i.e. for cooling, hydrostatic testing, hydraulic lake dredging)
	Lakes and Ponds takings < 1,000,000 L/day twice per week or less from water bodies >10ha in size that are not on-stream and not part of the headwaters of any watercours. More frequent takings require supporting studies.
Category 3	**Category 3**
All groundwater takings that do not meet Category 1 or Category 2 criteria.	All surface water takings that do not meet Category 1 or Category 2 criteria and new takings from 1st or 2nd order watercourses, wetlands, intermittent streams, new on-stream reservoirs, impoundments and ponds, groundwater sources that potentially affect surface waters.

Quantity:

When granted, a Permit to Take Water imposes terms and conditions that limit the amount of water the person can take by specifying a maximum rate for the water taking (litres per minute), duration (hours per day), and amount (litres per day).

In support of the Agreement, thresholds requiring regulation of new or increased intra-basin transfers in accordance with Agreement criteria and standards, and thresholds for consumptive uses requiring prior notice with Great Lakes jurisdictions are based on the average consumptive use in any 90 day period (rolling 90 day average)*.

Proposed water taking volumes are assessed against a series of considerations relating to the protection of natural ecosystem functions, water availability, the use of water (i.e. water conservation measures, the need and purpose for the water, the amount of water that may be lost through consumptive use*), the return of water after use* and other interests.

The risk classification criteria for permits also reflect the quantity of water requested. For example, new or increased takings above 19 million litres/day from the Great Lakes or connecting channels are classified as a Category 3 taking, requiring more rigorous analysis than smaller takings.

Location:
The locations of takings are identified by their geographic coordinates (Datum NAD83) including UTM zone, easting and northing. An interactive map of all active Ontario permits can be found at http://www.ontario.ca/environment-and-energy/map-permits-take-water

To assist in meeting the requirements of the Agreement a Great Lakes Watershed locator map tool is also available and can be accessed at http://www.ontario.ca/environment-and-energy/great-lakes-watershed-locator

The Water Taking and Transfer Regulation restricts new and increased water takings for highly consumptive uses (e.g. bottled water, aggregate processing) in specific watersheds identified as "high use watersheds", where the cumulative demand for water within the watershed is high relative to available supply.

3. Description of how the provisions of the Standard of Review and Decision are applied. The description should include information on how each criterion of the Decision Making Standard and Exception Standard is addressed.

The tables below highlight how the criteria of the Agreement Decision-Making Standard and Exception Standard are being implemented 1) through the current Permit to Take Water Program under the *Ontario Water Resources Act* and 2) through the Permit to Take Water Program once amendments to the *Ontario Water Resources Act* passed under the *Safeguarding and Sustaining Ontario's Water Act* come into force.

In addition to the Permit to Take Water Program under the *Ontario Water Resources Act*, implementation of Agreement standards is also supported by other Ontario statutes, policies and programs, including, for example:

- Environmental impact assessment under the ***Environmental Assessment Act*** , which provides for the completion of individual assessments or class assessments, such as the Class Environmental Assessment for Municipal Water and Wastewater Treatment projects. The municipal class environmental assessment references compliance with the *Ontario Water Resources Act* and the Agreement and in 2009 a Technical Bulletin was released to further guide municipalities in meeting the Great Lakes Charter and the spirit of the Agreement in conducting environmental assessments for projects involving an intra-basin transfer or large consumptive use of Great Lakes – St. Lawrence River Basin water;
- Completion of water budgets and water quantity risk assessments to support the development of Drinking Water Source Protection plans under the ***Clean Water Act;***
- Location and design approval for works forwarding, holding back, or diverting water in accordance with the ***Lakes and Rivers Improvement Act***;
- Promotion of water conservation under the ***Water Opportunities Act***.

a. Decision-Making Standard (Water Withdrawals, Consumptive Uses)

Decision-Making Standard Criteria Article 203	**Permit to Take Water Program (PTTW) (Ontario Water Resources Act, As Amended by the Safeguarding & Sustaining Ontario's Water Act, 2005, Water Taking and Transfer Regulation O. Reg. 387/04)***
General	Under the OWRA a Permit to Take Water is required for water takings over 50,000 litres / day (over 13,000 U.S. gallons / day) (s. 34) The criteria which form the foundation for issuing permits to take water in Ontario (which are enshrined in O.Reg 387/04) are generally consistent with the Decision Making Standard criteria of the Agreement. Yet, OWRA section 75(1.2, 1.3) provides authority to make regulations as required to augment existing PTTW criteria to further support the Agreement, [e.g. Articles 203 (Decision-Making Standard), 205 (proposals subject to Prior Notice)] Amendments to the Water Taking and Transfer Regulation (O. Reg. 387/04) augment the matters considered in the issuance of water taking permits to meet the Agreement standard (s. 4) and ensure compliance with the Prior Notice provisions of the Agreement for new or increased consumptive uses 19 million litres (5 million U.S. gallons) per day or more (s. 6). OWRA amendments (s.34.1 (9),(10) also provide a permitting Director with authority to set additional terms and conditions on a permit e.g. limiting use, related to the return of water after use (location, quantity, quality), and the conservation of water including a conservation audit and/or plan
1. Return flow to source watershed	OWRA requires separate Environmental Compliance Approval (ECA) for wastewater discharge. No explicit requirement to return water to source Great Lake watershed, although most water uses do not remove water from a Great Lake watershed. In certain cases, the Ministry of the Environment and Climate Change may consider issues related to return flow (quality, location) when reviewing and issuing permits. In addition to regulation-making authority, OWRA amendments (s.34.1 (9),(10) provide a permitting Director with authority to set additional terms and conditions on a permit governing the return of water after use (location, quantity, quality) Issues related to the return of water after use (i.e. manner returned, location of return) and the amount of water that may be lost through consumptive use have been added to permitting considerations in the regulation*

Decision-Making Standard Criteria Article 203	Permit to Take Water Program (PTTW) (Ontario Water Resources Act, As Amended by the Safeguarding & Sustaining Ontario's Water Act, 2005, Water Taking and Transfer Regulation O. Reg. 387/04)*
2. No significant adverse impacts	The regulation requires the permitting Director to consider issues related to protecting the natural functions of the ecosystem, water availability (e.g. water balance and sustainable aquifer yield, existing or planned uses of water, low water conditions or whether taking is in a high use or medium use watershed). (s. 4(2), par. 1,2) Section 5 of the regulation restricts new or increased water takings for highly consumptive uses (e.g. bottled water, aggregate processing) in watersheds identified as "high use watersheds" where the cumulative demand for water within a watershed is high relative to available supply. PTTW Directors may also impose terms and conditions related to mitigating adverse impacts related to the water taking. PTTW Manual: Consideration of cumulative impacts of water takings is a principle of the PTTW program & water takings are classified into 3 categories according to the risk of environmental impact, with Category 3 takings subject to greater rigour including submission of supporting scientific studies. New or increased water Takings from the Great Lakes or connecting channels that exceed 19 million litres --5 million U.S. gallons per day are Category 3 takings In addition to regulation-making authority, OWRA amendments (s.34.1 (9),(10) provide a permitting Director with authority to set additional terms and conditions on a permit limiting use, governing the return of water after use or requiring implementation of measures to prevent or remedy interference with other uses
3. Conservation measures	The regulation requires the permitting Director to consider whether water conservation is, or will be implemented, based on best management standards & practices of the sector (s. 4(2), par. 3i) Director may set terms and conditions on a permit requiring implementation of conservation measures In addition to regulation-making authority, OWRA amendments (s.34.1 (9) provide a permitting Director with authority to set additional terms and conditions on a permit e.g. limiting use, related to the conservation of water including a conservation audit and/or plan
4. Compliance with applicable laws, agreements, treaties	PTTW Directors will not issue a permit if an application is not in compliance with other laws (e.g. PTTW issuance follows other processes, e.g. completion of an environmental assessment under the Environmental Assessment Act) The regulation (s.6) requires that Ontario's obligations under the Agreement are complied with (i.e. Prior Notice to Agreement Parties and an opportunity to comment for new or increased consumptive uses 19 million litres-5 million U.S. gallons per day or more)* Regulation amendments require consideration of whether a proposed water taking is in compliance with the Boundary Waters Treaty or the International Boundary Waters Treaty Act of Canada (s. 4 (4ii)* Regulation amendments require compliance with the Prior Notice commitments of the Agreement for new or increased consumptive uses 19 million litres/day (5 million U.S. gallons/day) or more, replacing the Prior Notice and Consultation obligations of the Great Lakes Charter.*
5. Reasonable use, with consideration of: a. Planned to provide for efficient use b. Efficient use of	The purpose of the OWRA is to "…*provide for the conservation, protection and management of Ontario's waters and for their efficient and sustainable use, in order to promote Ontario's long-term environmental, social and economic well-being.*" The regulation requires the permitting Director to consider issues related to protecting the natural functions of the ecosystem, water availability (e.g. water balance and sustainable aquifer yield, existing or planned uses of water, low water conditions or whether taking is in a high use or

Decision-Making Standard Criteria Article 203	Permit to Take Water Program (PTTW) (Ontario Water Resources Act, As Amended by the Safeguarding & Sustaining Ontario's Water Act, 2005, Water Taking and Transfer Regulation O. Reg. 387/04)*
existing supply c. Balance between economic, social development, environmental, protection d. Supply potential of water source (quantity, quality, reliability, safe yield) e. Degree, duration of any adverse impacts & their avoidance/mitigation f. Restoration of hydrologic conditions, functions of source watershed	medium use watershed), and issues related to the use of water (e.g. water conservation measures, plan and/or audit) (s. 4(2), par. 1,2, 3) Together, these considerations are consistent with the "reasonable use" considerations of the Agreement. The PTTW Manual provides further guidance in the balancing of these interests e.g. through considerations and guidance in evaluating PTTW from surface water and groundwater sources, assessing the water balance and sustainability, addressing low water conditions, addressing aquatic habitat and restricting water use in high and medium use watersheds. Amendments to the regulation include consideration of the potential to restore hydrologic conditions and functions of the source watershed, the amount of water that may be lost through consumptive use, issues related to the return of water after use, and compliance with the Boundary Waters Treaty and the International Boundary Waters Treaty Act of Canada to the matters a permitting Director shall consider when reviewing a PTTW application*.

b. Exception Standard (Water Diversions, Transfers)

Exception Standard Criteria Article 201, par. 4	Permit to Take Water Program (PTTW) (Ontario Water Resources Act, as Amended by the Safeguarding & Sustaining Ontario's Water Act, 2005, Water Taking and Transfer Regulation O. Reg. 387/04)*
General	Under the OWRA a Permit to Take Water is required for water takings over 50,000 litres / day (over 13,000 U.S .gallons / day) (s. 34) Water transfers out of the Great Lakes – St. Lawrence River Basin, or Ontario's other major water basins, are prohibited (s. 34.3) Ontario has no exception to the ban for straddling communities or straddling counties. Therefore, Ontario is fully implementing the minimum standards in Article 201, par. 1, 3, 4 as they pertain to diversions <u>out of</u> the Great Lakes – St. Lawrence River Basin. Amendments to the OWRA passed in 2007 provide for the regulation of new or increased intra-basin transfers 379,000 litres/day or more, consistent with the criteria in Article 201 par. 1, 2, 4. (OWRA s.34.4-34.11)* The Act also provides authority to make regulations to support these provisions. Amendments to the regulation provide further support to the regulation of intra-basin transfers (e.g. definition of Great Lakes watersheds and connecting channels, exemptions, determination of consumptive use amounts, setting the baseline for existing transfers)* The legislation also requires that permit applications for large transfers (i.e. with consumptive use of 19 million litres [5 million U.S. gallons] per day or more) are to be referred to the Minister of the Environment and Climate Change, who shall notify the Regional Body of the proposal and consider any Declaration of Finding issued by the Regional Body following Regional Review of the proposal.(s.34.1 (12-14)*

Exception Standard Criteria Article 201, par. 4	Permit to Take Water Program (PTTW) (Ontario Water Resources Act, as Amended by the Safeguarding & Sustaining Ontario's Water Act, 2005, Water Taking and Transfer Regulation O. Reg. 387/04)*
1. Efficient use, conservation of existing supplies	The regulation requires the permitting Director to consider whether water conservation is being implemented, based on best management standards & practices of the sector. (s. 4(2), par. 3i) Director may set terms and conditions on a permit requiring implementation of conservation measures. Exception Standard criteria explicitly referenced in OWRA s. 34.6(3) for new or increased intra-basin transfers 379,000 litres/day or more* OWRA amendments (s.34.7) also provide a permitting Director with authority to set additional terms and conditions on a permit to regulate a transfer (e.g., governing return of water after use, the use and conservation of transferred water, monitoring and reporting)
2. Limited to reasonable quantities for proposed purpose	The regulation requires the permitting Director to consider issues related to protecting the natural functions of the ecosystem, water availability and the use of water (e.g. water conservation measures, plan and/or audit). (s. 4(2), par. 1,2, 3) Together, these considerations are consistent with the "reasonable use" considerations of the Agreement. The PTTW Manual provides further guidance in the balancing of these interests. Exception Standard criteria explicitly referenced in OWRA s. 34.6(3) for new or increased intra-basin transfers 379,000 litres/day or more* OWRA amendments (s.34.7) also provide a permitting Director with authority to set additional terms and conditions on a permit to regulate a transfer (e.g., governing return of water after use, the use and conservation of transferred water, monitoring and reporting)*
3. Return flow to source watershed (no water from outside basin except if part of combined system, treated to prevent invasive species)	OWRA requires separate Environmental Compliance Approval (ECA) for wastewater discharge. The legislative framework encourages return flow for municipal transfers below the 19 million litres/day consumptive use threshold. All transfer proposals above the threshold require return flow to the source Great Lakes watershed. (s. 34.6)* Exception Standard criteria explicitly referenced in OWRA s. 34.6(3) for new or increased intra-basin transfers 379,000 litres/day or more* OWRA amendments (s.34.7) also provide a permitting Director with authority to set additional terms and conditions on a permit to regulate a transfer (e.g., governing return of water after use, the use and conservation of transferred water, monitoring and reporting)* Amendments to the regulation also include consideration of issues related to the return of water after use to the matters considered by a permitting Director.*
4. No significant adverse impacts	The regulation requires the permitting Director to consider issues related to protecting the natural functions of the ecosystem, water availability (e.g. water balance and sustainable aquifer yield, existing or planned uses of water, low water conditions or whether taking is in a high use or medium use watershed). (s. 4(2), par. 1,2) Section 5 restricts new or increased water takings by highly consumptive uses (e.g. bottled water, aggregate processing) in watersheds identified as "high use watersheds". PTTW Directors may also impose terms and conditions on a permit. OWRA amendments (s.34.7) also provide a permitting Director with authority to set additional terms and conditions on a permit to regulate a transfer (e.g., governing return of water after use, the use and

Exception Standard Criteria Article 201, par. 4	Permit to Take Water Program (PTTW) (Ontario Water Resources Act, as Amended by the Safeguarding & Sustaining Ontario's Water Act, 2005, Water Taking and Transfer Regulation O. Reg. 387/04)*
	conservation of transferred water, monitoring and reporting)* PTTW Manual: Consideration of cumulative impacts of water takings is a principle of the PTTW program & water takings are classified into 3 categories according to the risk of environmental impact, with Category 3 takings subject to greater rigour including submission of supporting scientific studies. Water transfers from the Great Lakes or connecting channels 19 million litres -5 million U.S. gallons per day or more fall under Category 3 . Exception Standard criteria explicitly referenced in OWRA s. 34.6(3) for new or increased intra-basin transfers 379,000 litres/day or more*
5. Conservation measures	The regulation requires the permitting Director to consider whether water conservation is, or will be implemented, based on best management standards & practices of the sector (s. 4(2), par. 3i) PTTW Directors may set terms and conditions on a permit requiring implementation of conservation measures. OWRA amendments (s.34.7) also provide a permitting Director with authority to set additional terms and conditions on a permit to regulate a transfer (e.g., governing return of water after use, the use and conservation of transferred water, monitoring and reporting)* Exception Standard criteria explicitly referenced in OWRA s. 34.6(3) for new or increased intra-basin transfers 379,000 litres/day or more*
6. Compliance with applicable laws, agreements, treaties	PTTW Directors will not issue a permit if an application is not in compliance with other laws (e.g. PTTW issuance follows other processes, e.g. completion of an environmental assessment under the Environmental Assessment Act) Exception Standard criteria explicitly referenced in OWRA s. 34.6(3) for new or increased intra-basin transfers 379,000 litres/day or more, including compliance with the Boundary Waters Treaty and the International Boundary Waters Treaty Act (Canada).* Amendments to the regulation have replaced compliance with Great Lakes Charter obligations with those under the Agreement. New or increased intra-basin transfers are regulated in accordance with OWRA s.34.4-34.8 and s. 34.1 (12-14) which reflect the Agreement.*
7. All applicable criteria	OWRA s. 34.6 (2) sets out the criteria that must be met for new or increased intra-basin transfers 379,000 litres/day or more, consistent with Article 201, par. 2 of the Agreement. Some provisions of par. 1 pertaining to straddling communities are also reflected (e.g. return flow for smaller transfers encouraged) The Act also provides authority to make regulations to support these provisions. Regulatory amendments provide further support to the management of intra-basin transfers (e.g. definition of Great Lakes watersheds and connecting channels, exemptions, determination of consumptive use amounts, setting the baseline for existing transfers) OWRA amendments (s.34.7) also provide a permitting Director with authority to set additional terms and conditions on a permit to regulate a transfer (e.g., governing return of water after use, the use and conservation of transferred water, monitoring and reporting)*

4. Overview of Provincial reporting and database of Withdrawals, Consumptive Uses and Diversions

Annual Submission to Regional Water Use Database

Provincial reporting of withdrawals, consumptive uses and diversions to the Great Lakes Commission's *Regional Water Use Database* is coordinated by the Ontario Ministry of Natural Resources and Forestry with the support of the Ontario Ministry of the Environment and Climate Change.

To estimate water withdrawals and consumption in its 2013 submission, Ontario applied the reporting methodology developed for its 2012 submission which incorporates aggregated annual water withdrawal information primarily obtained from its water taking permitting program (see next section for more information). Estimates of water consumption were developed using a comprehensive set of consumptive use coefficients which can be found at http://waterbudget.ca/consumptiveuse . Aggregated withdrawal values reported for the hydropower sector were augmented by historical information collected through owner and operator surveys.

Water User Reporting under Ontario's Water Taking and Transfer Regulation

By regulation, permit to take water holders province-wide are required to report daily water taking amount. Phase-in of this requirement for all water use sectors was completed in 2008. Since then, all permit to take water holders are expected to submit daily water taking volumes, electronically to the provincial *Water Taking Reporting System* through an internet-based interface https://www.lrcsde.lrc.gov.on.ca/wtrs/ or via hard copy prior to March 31 of the following year. The Water Taking Reporting System database represents the provincial warehouse for reported actual volumes of water taken by all permitted users in the province.

In addition, the *Permit to Take Water Database* is the primary warehouse of permit holder information (permit number, owner name, address, water taking source information: water use sector, source coordinates, taking type and source name and maximum permitted volumes). A searchable map of active permits can be found at http://www.ontario.ca/environment-and-energy/map-permits-take-water. Enhancements to both databases may be required to warehouse information specifically related to applications that involve intra-basin transfers, return flow, and calculated or measured consumptive uses.

By regulation, permit to take water holders are required to measure water taking/use by flow meter, or calculate it using a method acceptable to the program Director.

Permit holders are also required to comply with any additional data collection or monitoring and reporting conditions required by a permit such as specific monitoring methods, collection of information at a greater frequency, recording a daily maximum flow, and a requirement that all water taking information be analyzed by a qualified professional.

5. Ontario's Provincial withdrawal application documents

As part of the Permit to Take Water program, Ontario's *Application for Permit to Take Water* (September 2007) collects information from applicants under the authority of the *Ontario Water Resources Act*, the *Environmental Bill of Rights*, C. 28, Statutes of Ontario, 1993, and is used by the Province to evaluate applications under Section 34 of the Act (Water Taking). The application can be found at:
https://www.ontario.ca/environment-and-energy/application-permit-take-water

Assistance is provided to applicants in completing the Application Form through local Regional Offices of the Ministry of the Environment and Climate Change, along with a published *Guide to Permit to Take Water Application Form* found at:
http://www.ene.gov.on.ca/stdprodconsume/groups/lr/@ene/@resources/documents/resource/std01_079452.pdfhttps://www.ontario.ca/environment-and-energy/guide-permit-take-water-application-form

Information requested on the form is categorized as the application type (e.g. new, amended, or renewal), permit category classification, applicant information, water taking information (e.g. source, public consultation requirements, and water taking sector and volume information), and location mapping and supporting studies. Revisions to the form may be required to identify information specifically related to applications that involve intra-basin transfers, return flow, and consumptive uses.

The suite of permit to take water application resources can be found at:
https://www.ontario.ca/environment-and-energy/permits-take-water

Links to related policies and manuals supporting permit to take water applicants, proponents, and application reviewers:

a) *Permit To Take Water Manual* (April 2005):
https://archive.org/details/permittotakewa4932ontauoft
This manual sets out the decision making process generally followed by the Ministry and explains to applicants, proponents, and the public the requirements and considerations that are generally taken into account as reviewers are evaluating a proposed or existing water taking.

b) *Technical Guidance Document for Surface Water Studies in Support of Category 3 Applications for Permit to Take Water* (April 2008): https://www.ontario.ca/environment-and-energy/technical-guidance-document-surface-water-studies-support-category-3
This document provides guidance and a consistent, structured approach for a surface water study (hydrological and or ecological) in support of Category 3 Permit to Take Water applications (or for Category 2 applications, where applicable).

c) *Technical Guidance Document for Hydrogeological Studies in Support of Category 3 Applications for Permit to Take Water* (April 2008): https://www.ontario.ca/environment-and-energy/technical-guidance-document-hydrogeological-studies-support-category-3
This document provides guidance and a consistent, structured approach for a hydrogeological study in support of Category 3 Permit to Take Water applications (or for Category 2 applications, where applicable).

d) *Great Lakes Watershed Locator Interactive Mapping Tool*:
http://www.ontario.ca/environment-and-energy/great-lakes-watershed-locator

The web-based mapping tool assists applicants in determining the tertiary watershed and the classification of a proposed water taking location for the purposes of the *Water Taking and Transfer Regulation*.

e) *Water Basins Map* (November 2014): https://www.sse.gov.on.ca/sites/MNR-PublicDocs/EN/CMID/Great%20Lakes%20St%20Lawrence%20Basin%20-%20Municipal%20Structure%20Great%20Lakes%20Basin%20Map.pdf
Map identifies the boundaries of water basins and connecting channel watersheds to assist practitioners in identifying new or increased water transfers.

f) Permits to Take Water Interactive Map:
http://www.ontario.ca/environment-and-energy/map-permits-take-water
Map assists users in locating water taking locations specified in active permits across Ontario.

6. Description of Provincial initiatives that support an improved scientific understanding of the Waters of the Basin (including groundwater) in basin water resource management

Initiatives supporting improved scientific understanding of basin waters:

- Ontario's **Provincial Surface Water Monitoring Centre** (Ministry of Natural Resources and Forestry) collects, monitors, and assesses climate data, water levels and flows in streams, and lake and reservoir levels. Information supports programs including the Provincial Flood Forecasting and Warning Program, Ontario's Low Water Response, and others related to water takings, water budgets, water management plan compliance, dam safety, and emergency response.
  https://www.ontario.ca/environment-and-energy/surface-water-monitoring-centre

- **Aquatic Research and Monitoring** (Ministry of Natural Resources and Forestry) The Ministry conducts research that contributes to a greater understanding of the waters of the Great Lakes – St. Lawrence basin and provides improved scientific information to support water resource decision making within the basin. Examples of research conducted or initiated over past several years include: the classification of natural flow regimes within Ontario, an examination of variability and changes in water balance components of Great Lakes tributaries in response to land and water use and climate change, work toward development of an aquatic ecosystem classification system, and several studies to better understand the ecological effects of altered flow regimes and related physical processes in rivers. In addition, the Ministry published a technical report that provides scientific information for assessing the state of river ecosystems and identifying potential changes to aquatic ecosystem condition.
  https://www.ontario.ca/environment-and-energy/aquatic-research

- The proposed 8th **Canada-Ontario Agreement on Great Lakes Water Quality and Ecosystem Health, 2014** (Environment Canada (federal lead), and Ministries of the Environment and Climate Change (provincial lead), Natural Resources and Forestry, and Agriculture, Food and Rural Affairs) supports restoration and protection of the Great Lakes Basin ecosystem. Improved understanding of adaptive management approaches to lake level regulation, groundwater and climate change impacts are areas supporting water related actions.

http://www.downloads.ene.gov.on.ca/envision/env_reg/er/documents/2014/011-9290.pdf

- The **International Joint Commission under the Boundary Waters Treaty** carries out **periodic science-based studies** in boundary waters along Ontario's borders. The Ministry of Natural Resources and Forestry and Ministry of the Environment and Climate Change support aspects of studies involving water-related natural hazards and alterations along shorelines, hydroclimate, water use, and ecosystem impacts.

- The **Spatial Data Infrastructure Program** (SDI) Program of the Ministry of Natural Resources and Forestry (formerly Water Resources Information Program – WRIP) is responsible for capturing, creating and maintaining Ontario's fundamental mapping data (water, roads, utilities, wetlands, elevation and imagery), by focusing on the needs and priorities of internal and external partners, the sharing of data, and providing leadership in management practices and standards for mapping and imagery.

  Part of SDI's mandate supports the creation and maintenance of Provincial water and elevation datasets to ensure accurate information is available on Ontario's water resources. A series of GIS data products are developed by SDI to support the generation of watersheds. These datasets are used by provincial ministries, municipalities, conservation authorities and others to create maps, conduct geographic analysis and support decisions about the province's water resources. The SDI program developed updated watershed boundaries to support the implementation of the Agreement.

- The ***Conservation Authorities Act*** administered by the Ministry of Natural Resources and Forestry provides a statutory framework for establishing conservation authorities. The purpose of conservation authorities is to develop and undertake programs on a watershed basis to meet both provincial and municipal natural resource management needs.
  - Conservation authorities are established by participating municipalities within a common watershed which are entitled under the Conservation Authorities Act to appoint representatives to the conservation authority board in accordance with a representation by population formula that is set out in the Act. There are 36 authorities in the province, principally in southern Ontario with five authorities in urbanized centres in the north.
  - In order to develop programs, conservation authorities are enabled to study and investigate the watershed(s) in their jurisdictions and some authorities have developed watershed planning documents, watershed 'report cards' and technical studies to support understanding of local resource management interests and to effectively undertake provincial responsibilities for example in natural hazard prevention and management.
  - Conservation authorities are involved in the delivery of several provincial programs that require data management and monitoring of water including the Provincial Flood Forecasting and Warning Program, Ontario's Low Water Response and the Ministry of Environment's Provincial Groundwater Monitoring Network.
    https://www.ontario.ca/environment-and-energy/conservation-authorities

- The ***Clean Water Act*** (Ministry of the Environment and Climate Change) provides for a **source water protection program and local source water protection planning**. The Ministry of Natural Resources and Forestry with the Ministry of the Environment and Climate

Change develop supporting estimates of surface and groundwater supplies, water budgets, water use demand, and water quantity risks assessments. Locally, water use impacts are considered through Ontario's water use permitting application process.

The Science Behind Drinking Water Source Protection:
http://www.ontario.ca/environment-and-energy/drinking-water
Water Quantity Solutions in Ontario:
http://www.waterbudget.ca/

- **Ontario's Provincial Groundwater Monitoring Network** (Ministry of the Environment and Climate Change) monitors ambient groundwater quantity and quality conditions in the province. Science provides an indicator of aquifer conditions and supports studies and decisions around water-taking, drought management, land use planning decisions, and water budget and cumulative impact studies. Ministry of Natural Resources and Forestry and conservation authorities are involved in the program delivery.
  http://www.ontario.ca/environment-and-energy/provincial-groundwater-monitoring-network

- **Climate Ready: Ontario's Adaptation Strategy and Action Plan** is aimed at understanding and adapting to climate change. Under it, the Ministries of the Environment and Climate Change, and Natural Resources and Forestry are supporting science-based decision-making, including exploring partnerships that link hydrologic models with climate models to better understand the local impacts of climate change on our water resources.
  https://www.ontario.ca/environment-and-energy/climate-ready-adaptation-strategy-and-action-plan-2011-2014

- The **Ministry of Natural Resources and Forestry Climate Change program** coordinates science and research on climate change and its impacts on Ontario's ecosystems and natural resources, including aquatic and terrestrial research in the Great Lakes basin and beyond. Recent projects that support the implementation of the Agreement include a Lake Simcoe watershed climate change vulnerability assessment, completion of a Practitioner's Guide to Climate Change Adaptation in Ontario's Ecosystems, and enhancements to climate modelling and monitoring capacity. Several related initiatives are currently underway:
  https://www.ontario.ca/environment-and-energy/natural-resource-management-and-climate-change
  - State of Knowledge on Ecological Vulnerabilities to Climate Change in Ontario's Great Lakes Basin
  - Climate Change Vulnerability Assessment for Aquatic Habitat in Ontario's Great Lakes Basin
  - Climate Change Vulnerability Assessment for Furbearers in Ontario's Great Lakes Basin
  - Rapid Assessment of Climate Change Vulnerability of Great Lakes Basin's Biodiversity (rapid assessment of ~200 aquatic and terrestrial species

- **Ontario Geological Survey** (Ministry of Northern Development and Mines) implements a **groundwater mapping program** that contributes to water management initiatives, including the development of GIS-based maps / databases, regional (3-D) aquifer mapping, watershed

characterization, thematic studies, regional groundwater sampling, and method/protocol and product development.

http://www.mndm.gov.on.ca/en/mines-and-minerals/geoscience/groundwater

7. Additional Information

N/A