

**Interim
Procedural and Technical Guidance
Document for Bottled Water Renewals:
Permit to Take Water Applications and
Hydrogeological Study Requirements**

Ministry of the Environment and Climate Change
Operations Division
April 2017

Preface:

This document provides guidance on Permit to Take Water (PTTW or permit) application requirements for taking groundwater to produce bottled water. **It is not legal advice.** All requirements related to PTTW water taking activities are contained in section 34.1 of the *Ontario Water Resources Act (OWRA)*, *Ontario Regulation 387/04 (Water Taking and Transfer Regulation)* and *Ontario Regulation 463/16 (Taking Ground Water to Produce Bottled Water)*.

On December 16, 2016, *Ontario Regulation 463/16 (Taking Groundwater to Produce Bottled Water)* came into force. The regulation prohibits a Director from issuing a new or amended permit that would authorize the taking of groundwater for the purpose of producing bottled water, unless the old permit already authorized the taking of the same or a greater amount of groundwater from the same location and for the same purpose. The regulation also prohibits the issuance of a permit under section 34.1 of the Act if it would authorize the taking of groundwater for the purpose of conducting pumping tests in order to determine the feasibility of using the groundwater supply as a source of water for a facility that produces bottled water.

Ontario Regulation 463/16 is in effect until January 1, 2019.

This interim guidance document is intended to provide guidance for renewal applications of existing permits that authorize the taking of groundwater for the purpose of producing bottled water. The taking must be from the same location, for the same purpose, with amounts equal to or less than those currently permitted.

Under Regulation 463/16, pumping tests are prohibited in order to determine the feasibility of using the groundwater supply as a source of water for a facility that produces bottled water. As such, this guide does not address requirements for pumping tests.

This document will be updated to reflect findings from the water quantity groundwater science review and consultation on water management with Indigenous communities and organizations.

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Part A – Introduction and Key Considerations

1) Purpose of this Document

This document is intended to provide guidance for renewal applications of existing permits that authorize the taking of groundwater for the purpose of producing bottled water. The taking must be from the same location, for the same purpose, with amounts equal to or less than those currently permitted. The document outlines procedural and technical application requirements that are specific to the bottled water sector.

This guidance document does not address all aspects of the Permit to Take Water program. The reader shall ensure this document is read and used within the context of information provided by the following documents (references provided in Appendix 1):

- *Ontario Water Resources Act*
- *Ontario Regulation 387/04. “Water Taking and Transfer Regulation”*
- *Ontario Regulation 463/16. “Taking Ground Water to Produce Bottled Water”*
- *Permit to Take Water (PTTW) Manual*
- *Guide to Permit to Take Water Application Form*
- *Technical Guidance Document For Hydrogeological Studies In Support of Category 3 Applications for Permit to Take Water*
- *Water Management Policies Guidelines and Provincial Water Quality Objectives (the “Blue Book”)*

2) Purpose of Procedural Requirements

All renewal applications for bottled water groundwater takings must conform to the procedural requirements outlined in this document. These requirements will also be standard conditions if a permit is issued. The procedural requirements take a precautionary and transparent approach in protecting Ontario’s valuable water resources.

3) Purpose of Technical Requirements and Hydrogeological Study

All renewal applications for bottled water groundwater takings must be accompanied by a hydrogeological study, this study must evaluate the potential for unacceptable impacts to occur as a result of the water taking. The ministry will not issue a PTTW if the proposed taking is likely result in unacceptable impacts. The study must also propose contingency and mitigative measures that will be implemented in the event unforeseen unacceptable impacts occur. If unacceptable impacts occur, the Director may amend or revoke the permit.

4) Key Considerations for this Document

The principles and policies of the PTTW program are outlined in the documents listed in Section 1 on the previous page. As an aid to the applicant, a number of *Key Considerations* that shall be addressed during the application and design of the taking and during the completion of a hydrogeological study are included below. Most of these *Key Considerations* are identified in Section 1 of this document. Some of these principles and policies are subject to interpretation by the ministry and therefore, pre-consultation with the ministry is required. A thorough hydrogeological study will address all of the following key considerations.

a) Scope of the Study

Hydrogeological studies must be prepared by a **Qualified Person** (QP). For the purposes of this document, a QP is a licensed Professional Geoscientist or exempted Professional Engineer as set out in Ontario's *Professional Geoscientists Act, 2000*. The QP must sign and stamp a completed report which is submitted to the ministry, and shall take professional responsibility for its content and the accuracy of the information contained therein. For issues of professionalism and data integrity, the QP is directed to guidelines and codes of ethics maintained by the Association of Professional Geoscientists of Ontario (APGO) or the Professional Engineers of Ontario (PEO).

The **study area** that shall be considered by the QP should normally encompass the land surface area covering the largest possible area of influence that could directly result from the proposed water taking. Factors determining the study area may include potential influences to groundwater level, flow direction and water quality.

b) Impacts of the Taking

A water taking may result in some degree of impact to an established water use or to the natural function of the ecosystem. When the impact affects an established water use, this is also referred to as an interference. An **unacceptable impact** is normally considered to occur when 1) an impact hinders the ability of the water resource to support existing natural functions of the ecosystem, and/or 2) an impact prevents an established water user from continuing their established pattern of use. This is also called unacceptable interference.

Water takings shall not cause unacceptable impacts to the **natural functions of the ecosystem**. This includes, but is not necessarily limited to, any function of the aquifer to provide baseflow to streams, maintain water levels in wetlands or lakes, support habitat and species or provide recharge to other aquifers.

Water takings shall not cause unacceptable impacts with an **established pattern of water use**. This includes water takings for which a PTTW is required and any uses for which a PTTW is not required.

Water takings may not cause **unacceptable irreversible impacts** to the aquifer such as those that may occur if an aquifer is over-pumped (e.g., aquifer mining). In addition, the taking of groundwater should not result in the deterioration of groundwater quantity or quality on a neighbouring property.

Even if the hydrogeological study demonstrates that there will not be any unacceptable impacts, the report must propose **contingency and mitigative measures** that will be implemented in the event of the occurrence of unforeseen unacceptable impacts.

5) Mandatory Pre-submission Discussion

This guidance document is intended to provide sufficient direction to enable a QP to undertake a detailed hydrogeological study that will address ministry technical requirements in most cases. Ministry of the Environment and Climate Change (MOECC) professional QPs are available to provide additional guidance with respect to procedural or technical issues. **A technical pre-submission discussion with MOECC Regional Office QPs is required for all proposals for bottled water.** The ministry recommends these discussions take place at least six months prior to the submission of a renewal application, which must be received 90 days prior to the current permit expiry date. These consultations can be held via telephone, email or in person to ensure that the following are addressed:

1. Questions regarding Ontario's rules governing water takings, including the PTTW Manual, operational practices and legislative requirements are answered.
2. Questions regarding this document are answered and MOECC surface water staff are consulted if required.
3. The standardized bottled water permit conditions for monitoring, reporting and mitigation are explained.
4. Pre-submission requirements for consultation with First Nations and/or Métis. Requirements may include advice from the ministry on who should be consulted on the application and a formal delegation of the procedural aspects of Indigenous consultation.
5. Pre-submission requirements for consultation with conservation authorities, municipalities and local Source Water Protection Committee Representatives and other interested parties.
6. Requirements for consideration of source water protection, climate change, drought and cumulative effects.
7. Requirement for consideration of current population and forecasted population growth and associated needs based on municipal drinking water servicing master plans, class EA or equivalent.
8. Any cumulative effects or contamination concerns in the study area.
9. The type of mitigative measures being considered by the applicant.
10. The hydrogeological study approach.
11. Relevant ministry data and information sources.
12. Referral of proponent to Environmental Approvals Access and Service Integration Branch where separate approvals for water works or discharge of wastewater may be required under *Ontario Water Resources Act* or the *Safe Drinking Water Act*.

Pre-submission discussions with the ministry are not a forum to review permit classifications and are not for the purpose of a document review. MOECC concurrence with a study approach does not guarantee that the study will lead to permit approval. For the purpose of clarification of report findings, details of proposed monitoring programs, contingency plans, etc..., discussion/meetings with the ministry is

not restricted to the pre-submission stage, but may be undertaken post-submission. In some cases, the ministry may not be able to disclose information due to requirements of the *Freedom of Information and Protection of Privacy Act*.

6) Application Preparation and Review Process

Step 1: Applicant Proposes Water Taking. Proponent develops project description and justification for the proposal and begins to develop the consultation plan.

Step 2: Pre-submission Discussion with Ministry. Meet with the ministry Regional Office QP's to discuss requirements of the application. Address questions associated with the procedural requirements and application process. Review and discuss consultation plan. It is recommended that these pre-submission discussions take place at least six months prior to the submission of a renewal application.

Step 3(a): Applicant works on Completing Application. The applicant's QP will, characterize the hydrogeological setting; surface water resources and surrounding land cover; perform water quality risk assessment; assess impacts to existing groundwater users and future municipal water use; assess impacts to natural functions of the ecosystem; and, assess potential cumulative impacts.

Step 3(b): Applicant Initiates Consultation. The applicant will send notification letters on the proposed taking; will meet with those who have an interest or concerns with the water taking; address concerns that are raised; and consider, mitigation measures. The ministry may become involved in proponent led consultation activities.

Step 4: Applicant Submits Application to Ministry. The applicant submits a complete application that is consistent with the regulatory requirements and ensures that the proposal is consistent with the principles and key considerations of this guidance document. Documentation of consultation activities shall also be submitted for ministry review.

Step 5: Ministry posts Application on Environmental Registry and Begins its Application Review. The ministry will review the application for administrative completeness and then post a proposal notice on the Environmental Registry for a minimum 90 day public commenting period. Once posted on the Environmental Registry, the ministry will notify and consult with municipalities, conservation authorities, First Nations and Métis communities / organizations. The ministry will begin its technical review of the application. Ministry QP's will review methods, results and conclusions provided by the applicant's QP. The ministry will take all comments received into consideration during the permit review. The ministry will identify site-specific conditions to monitor impacts of the taking (which will take into consideration comments received) and include conditions on the Permit that outline steps to take if unforeseen unacceptable impacts occur.

Step 6: PTTW Director Makes a Decision. Prior to making a decision the Director must also take all comments received into consideration. The Director will either: approve the permit, potentially with conditions, or deny the permit. Once a decision is made, a Decision Notice will be posted to the Environmental Registry that summarizes the number and nature of comments received and explains the outcome of the Director's considerations.

Step 7: Permit Holder Obligations. The Permit Holder will comply with the terms and conditions of the Permit, maintain the public web page and report to the ministry (i.e., water taking records, reports etc.).

Part B – Procedural Requirements

1) Consultation Requirements

The ministry recognizes the value of involving the public, municipalities, local agencies and its legal duty to consult with Indigenous communities where the proposed water taking could negatively impact on existing or asserted Indigenous and Treaty rights, in the process of managing water takings at the local level. The ministry, therefore, fosters an open and consultative process in the PTTW program and makes information publicly available on permitted water takings. Any proposals for renewal of currently permitted takings for bottled water will be subject to posting on the Environmental Registry under the *Environmental Bill of Rights, 1993*. In addition to the posting of bottled water applications on the Environmental Registry by the ministry, proponents will be required to consult with municipalities, agencies, First Nations and Métis communities / organizations and other interested parties on their PTTW application.

An element of responsible environmental decision-making is to ensure those with a potential interest or those who may be affected by water taking proposal have opportunities to provide input to decision-making and to influence decisions. Consultation protects these interests and helps ensure concerns are identified early and addressed where possible. In addition, the ministry's legal obligation and duty to consult with First Nation and Métis communities are discussed in detail below.

Consultation on water taking renewals will be initiated during the pre-submission phase of the application review process. Consulting with interested parties and Indigenous communities during the pre-submission phase provides an opportunity for a proponent to understand and address concerns early on in the process, make adjustments to proposals where necessary, and may lead to fewer delays during application review. It is important to note that effective consultation is a two-way process where proponents share information and listen to potential concerns in a respectful manner, as well as make meaningful efforts to address any concerns that are raised. Should issues remain unaddressed upon submission of an application, or Indigenous consultation efforts be unfulfilled, the ministry may require additional efforts to be made.

Duty to Consult

As stated above, proponents are required to consult with First Nations and Métis communities / organizations on their PTTW proposals. There may be situations where the Crown's Duty to Consult is triggered by a water taking proposal which may require additional consultation requirements beyond what is set out in this guidance document. The ministry may have a Duty to Consult, and potentially accommodate, First Nations and Métis communities / organizations where there is potential for the proposed water taking to negatively impact existing or asserted Aboriginal and Treaty rights. Where the Duty to Consult is not triggered, proponents will complete the general consultation requirements for PTTW proposals in recognition of the stated interests Indigenous communities have in all matters related to water. The ministry will begin assessing its potential consultation obligations once it has sufficient information from the proponent on the proposed water taking.

Where the Crown's Duty to Consult is triggered, it is ultimately the ministry's responsibility for fulfilling the Crown's consultation obligations. However, the ministry will delegate certain procedural aspects of the Duty to Consult to proponents, which may require proponents to take additional steps as part of their delegated consultation responsibilities. The ministry will play an oversight role for the consultation it delegates to proponents and in some situations may become involved in consultation activities. In its oversight role, the ministry will review the steps taken by proponents and the information they obtain to ensure adequate consultation has taken place.

Once proponents have discussed their consultation plan with the ministry and received direction on who should be consulted, proponents will initiate the consultation process by notifying the appropriate First Nations and Métis communities / organizations of the proposal.

a) Ministry Consultation Requirements

All bottled water renewal applications under consideration of the Director will be posted for a minimum 90 day public commenting period on the Environmental Registry. The ministry will take all comments received into consideration during the permit review. Once the ministry has completed its review, considered all comments received through consultation, and is ready to make a decision, a Decision Notice will be posted to the Environmental Registry that summarizes the number and nature of comments received and explains the outcome of a Director's consideration of the application in a manner that responds to any issues raised. A link to allow public viewing of the permit instrument, if one is issued, and instructions concerning leave to appeal provisions will be posted. For more information about the *Environmental Bill of Rights, 1993* and the Environmental Bill of Rights Registry, please visit the [Environmental Registry](#).

As part of its review of a permit application, the ministry will continue its practice of notifying and consulting with municipalities, conservation authorities and First Nations and Métis communities / organizations, in addition to the consultation carried out by the proponent. Furthermore, the ministry may also become involved in proponent led consultation activities in certain circumstances. Where applicable, the ministry may also consult with other agencies that have expertise or mandate in certain areas or who have requested to be consulted. This consultation will be initiated when the notice of the PTTW application is posted on the Environmental Registry.

Municipalities, conservation authorities, First Nations and Métis communities / organizations are notified of permit applications posted on the Environmental Registry in order to increase local awareness of permit activities. This enables these organizations and communities to serve as local sources of information about the permit application.

The Director is required to notify each municipality (upper-tier, lower-tier or single-tier), local conservation authority and the local Source Water Protection Committee representative, within whose area or jurisdiction the proposed water taking is located. At the Director's discretion s/he may also notify and consult municipalities and conservation authorities outside the location of taking (e.g., in cases where the projected impact may extend outside the municipality or conservation authority where the taking occurs).

The Director will notify municipalities, conservation authorities, First Nations and Métis communities / organizations of a posting on the Environmental Registry by:

- sending a brief description of the proposed water taking application by mail, fax, e-mail or by other electronic means; or
- delivering a brief description of the application in person

In addition to the above, the Director can give any person notice of an application if s/he is of the opinion that it is consistent with the purposes of the regulation to do so.

Where the Crown's Duty to Consult is triggered by a renewal application and procedural aspects delegated to a proponent, the ministry will be responsible for ensuring that the Crown's Duty to Consult is fulfilled, and will play an oversight role of a proponent's consultation activities.

b) Proponent Consultation Requirements

Proponent-led consultation will be required for all bottled water proposals for renewals of currently permitted takings for bottled water. Proponents must initiate this consultation as early as possible during the pre-submission phase and complete it before submitting a permit application to the ministry. It is important that this consultation begin as early as possible during the pre-submission process so the parties being consulted have an adequate amount of time to review information, identify potential concerns and discuss the proposal with the proponent. The purpose of the proponent-led consultation is:

- to provide information to the municipalities, conservation authorities, First Nations and Métis communities/organizations and other interested parties
- to ensure consultation is meaningful and occurs early in the process
- to identify concerns that might arise from the proposed undertaking
- to create an opportunity to develop proponent commitments in response to local input
- to focus on and consider concerns along with regulatory procedures and administration
- to provide appropriate information to the ministry to enable a fair and balanced decision
- to identify and attempt to resolve concerns with the proposed taking that may expedite the review and approvals process

The proponent must develop a consultation plan outlining its proposed consultation activities, which are to be reviewed during the technical pre-submission discussion with the ministry. Additional consultation requirements may be discussed at this time.

Consultation plans must include, but are not limited to:

- a list of parties to be consulted
- an overview of the consultation process to be undertaken
- the type of information that will be shared
- timeframes
- contingency plans where responses are not received

c) Document Proponent Consultation Requirements

During the technical pre-submission discussions with the ministry, the proponent shall provide a suggested list that identifies the persons, municipalities, First Nations and/or Metis communities and applicable stakeholders that are to be consulted. The ministry will review the list and the Director may identify additional parties to be consulted. Written notification about the proposed water taking activity shall be sent to all identified parties via mail, e-mail, fax, other electronic means, or in person.

The notification letter shall include the following:

- The applicant name and contact information.
- A description of the proposed water taking activity including how, where and when all water is obtained, stored, transferred, used and returned to the environment. Details must include the source of all water takings, purpose of the water taking, period of water taking, and maximum quantity requested.
- Source information presented in a table listing the source name, source type, UTM (Universal Transverse Mercator) coordinates for each source, and the proposed maximum taken per minute, per day, number of hours water is taken daily and the maximum number of days taken per calendar year.
- A map of sufficient scale to show the location of the proposed taking(s) and surrounding property (e.g., surface water features, wells, intakes) with the proposed source locations marked and labelled.

NOTE: Notification may lead to further consultation if a person identifies a concern or interest that might be affected by the proponent's proposed water taking activity. Proponents are required to provide documentation of their consultation activities as part of the submission of a PTTW application to the ministry. Therefore, it is important for proponents to develop and maintain a record of the consultation activities completed during the pre-submission phase, as well as any consultation that occurs after the application has been submitted for ministry review. The consultation record should include, but not be limited to the following:

- a copy of public notification information provided, including how, when and where
- a description of the consultation plan process completed (schedule of events, dates and times, parties consulted, materials shared, and methods used to consult)
- agenda and meeting minute(s)
- a summary of concerns raised during the consultation and how these were addressed by the proponent
- how consultation results were considered in the proponent's planning and decision-making process
- copies of materials obtained from communities regarding the proposed activity and related environmental concerns and/or impacts to Indigenous or Treaty rights that were handed out or discussed at consultation events

d) Delegation of Procedural Aspects of the Duty to Consult to Proponents

As stated previously, where the Crown's Duty to Consult is triggered by a renewal application, the ministry will delegate certain procedural aspects of the Duty to Consult to proponents. The following are the proponent's responsibilities for completing the procedural aspects of the Duty to Consult:

- Providing notice to the elected leadership of the First Nations and/or Métis communities (e.g., First Nations Chief, community council, or other designated contact) as early as possible regarding the proposal;
- Providing First Nations and/or Métis communities with information about the proposal including anticipated impacts, information on timelines and the assessment process. This is most effective when conveyed in person through discussion, not relying solely on the provision of documents;
- Following up with First Nations and/or Métis communities to ensure they received the information and that they are aware of the opportunity to express comments and concerns about the proposal. The ministry expects that all reasonable efforts will be made to engage and follow up.
- Providing First Nations and/or Métis communities with opportunities to meet with appropriate proponent representatives to discuss the project;
- Gathering information about how the proposal may adversely impact Aboriginal and/or Treaty rights (for example, hunting, fishing) or sites of cultural significance (for example, burial grounds, archaeological sites);
- Considering the comments and concerns provided by First Nations and/or Métis communities and providing clear responses;
- Where appropriate, discussing potential mitigation strategies with First Nations and/or Métis communities;
- Bearing the reasonable costs associated with these procedural aspects of consultation, which may include providing support to help build communities' capacity to participate in consultation about the proposal;
- Maintaining a consultation record to show evidence that the proponent, completed all the steps itemized above or at a minimum made meaningful attempts to do so; and
- Provide copies of the consultation record to the ministry

Successful consultation depends, in part, on early and respectful engagement by proponents with First Nations and/or Métis communities. Information shared with communities must be clear, accurate and complete and consideration should be given to the translation of materials into the appropriate Indigenous language if requested. The consultation process must maintain sufficient flexibility to respond to new information, and proponents should make all reasonable efforts to build positive relationships with all First Nations and/or Métis communities contacted.

2) Permit Conditions for Bottled Water Renewals

After consultation, posting and review, if a decision is made to renew a permit, then the following conditions will be included in each PTTW that is renewed for the purpose of bottling water. These conditions will accompany the standard set of terms and conditions that already appear on all permits. In the event the characteristics of a particular water

taking system make it impossible or impractical for a Permit Holder to comply with one of these conditions, the Director may modify the wording of the condition, but only if the Director is satisfied that an equivalent or higher level of environmental protection can be maintained.

In addition to these conditions, the ministry will continue to impose site-specific terms, conditions and limits on each Permit. These terms, conditions and limits are designed to address the case-specific issues that are identified during the review of each application by the ministry's professional staff. They will include the terms and conditions that require monitoring of water levels in the observation wells, as well as in nearby creeks, wetlands and other water bodies that could be impacted by the taking. Professional judgement on the part of the ministry reviewer will be used to tailor the monitoring conditions to each site-specific environment.

Conditions for Bottled Water Permit Renewals

1. The Permit Holder shall monitor and record the total volume of water taken each day under the authority of this Permit. A separate record shall be maintained for each source authorized by this Permit. The Permit Holder shall use a device or devices that are capable of direct volumetric flow measurement and data recording and that cannot be readily reset by the Permit Holder. The Permit Holder shall keep all records required by this condition current and available at or near the site of the taking and shall produce the records immediately for inspection by a Provincial Officer upon his or her request.
2. All data, interpretation, plans, or proposals for changes to be submitted to the ministry as a requirement of this Permit shall be supported by technical documentation prepared by a Qualified Person. For any submission pertaining to groundwater resources, the Qualified Person shall be a person that specializes in hydrogeology and be licensed in Ontario as either a professional geoscientist or professional engineer, as set out in Ontario's *Professional Geoscientists Act, 2000*.
3. The Permit Holder shall instruct a Qualified Person to prepare an Annual Monitoring Report. The report shall summarize, present and interpret all monitoring data that is collected under the authority of this Permit. The report shall be submitted to the Director each year, no later than 60 days following the anniversary of the date of issue of this permit and be posted for public review. The report shall consider, at a minimum, all of the data collected for the year prior to the most recent anniversary date.
4. Prior to the commencement of water taking, the Permit Holder shall instruct a Qualified Person to prepare a written Well Interference Protocol to address allegations of well interference. The protocol shall include a telephone number which can be used at any time to report an allegation of interference. An initial response to any allegation shall be provided to a complainant within 24 hours of the notification. Prior to the commencement of water taking, a copy of the protocol shall be provided to: a) the District Office of the Ministry of the Environment and Climate Change with responsibility for the area in which water

is taken, b) the municipality in which the water taking is located, c) any other municipality located within 5 kilometres of the water taking location, d) the conservation authority (if one exists) with boundaries that include the water taking location. Any complaints made under this protocol shall be logged and form part of the annual reporting requirements.

5. The Permit Holder shall develop and maintain a web site that is available to the public. The web site shall be operating prior to the commencement of water taking under the authority of this Permit. The Permit Holder shall use the web site to make available the following documents:
 - a. A copy of this Permit, to be posted no later than 30 days after the date of issue of this Permit.
 - b. A copy of all technical reports that were submitted to the ministry in support of this Permit, to be posted no later than 30 days after the date of issue of this Permit.
 - c. The annual monitoring report that is required by Condition No. 3, to be posted no later than 60 days after each annual anniversary of the date of issue of this Permit.
 - d. A plain-language report of approximately two to three pages in length providing an executive overview of the water taking and a simplified, plain-language justification for why the taking can occur without resulting in unacceptable impacts to the environment. This report shall be posted 30 days after the date of issue of this Permit.
 - e. A copy of the Well Interference Protocol required by Condition No. 4.
 - f. A graphical or numerical presentation of all daily water takings at each source. This shall be updated each week, and shall provide all water taking data up to two weeks prior to the date of update.
 - g. An electronic copy of the monitoring data that is required to be collected under the authority of this Permit. These data shall be submitted in a format consistent with the template provided in Appendix 3 of this document. These data shall be posted no more than 60 days after each annual anniversary of the date of issue of this Permit.
 - h. All information posted to the web site shall be kept publically available for the duration of this Permit, and shall continue to be kept publically available for an additional one year after the date of expiry.

6. In the event that a Level 1 Low Water Response is declared in the area of the water taking, the Permit Holder shall immediately calculate the average daily water taking for each source. The Average Daily Taking shall be calculated by determining the average of daily withdrawals that have occurred at each source during the previous three months.
 - a. In the event a Level 1 Low Water Response is declared in the area of the water taking, the maximum rate of taking for each source listed in Table A of this Permit shall immediately be decreased to 90% of the Average Daily Taking, and shall remain as such for the duration of the Level 1 Low Water event.

- b. In the event a Level 2 Low Water Response is declared in the area of the water taking, the maximum rate of taking for each source listed in Table A of this Permit shall immediately be decreased to 80% of the Average Daily Taking, and shall remain as such for the duration of the Level 2 Low Water event.
 - c. In the event a Level 3 Low Water Response is declared in the area of the water taking, the maximum rate of taking for each source listed in Table A of this Permit shall be decreased to 70% of the Average Daily Taking, and shall remain as such for the duration of the Level 3 Low Water event.
 - d. The Permit Holder shall not discharge water to waste in order to increase the average daily water taking.
7. The Permit Holder shall not discharge water to the natural environment unless applicable regulatory approval to do so has been obtained. This prohibition includes, but is not necessarily limited to, the discharge of excess water from a free-flowing well.

Please Note: The *Ontario Water Resources Act*, Section 34.1 (2) allows the Director to apply his or her own discretion to amend or revoke a Permit. This discretion allows for Permit conditions to be continuously updated as science progresses. Every Permit contains the following condition:

The Director may amend this Permit by letter requiring the Permit Holder to suspend or reduce the taking to an amount or threshold specified by the Director in the letter. The suspension or reduction in taking shall be effective immediately and may be revoked at any time upon notification by the Director. This condition does not affect your right to appeal the suspension or reduction in taking to the Environmental Review Tribunal under the Ontario Water Resources Act, Section 100 (4).

3) Expiry Dates

Each PTTW is issued with an expiry date. **Permits for the purpose of bottling water will be issued for one to five years with a five year maximum**, to allow for regular review and to assess any changes that may have occurred due to climate change and/or population growth. Applications to renew existing takings must be submitted at least 90 days prior to the expiry date.

4) Other Approvals

A Permit to Take Water authorizes the withdrawal of water from a source(s) according to the terms and conditions on the permit. It does not authorize or extend to any other activities at a bottled water operation. The issuance of a permit does not imply that other federal, provincial or municipal approvals have been received or will be issued. It is the responsibility of the applicant to obtain any other approvals, licences, authorizations or permits that may be required.

5) Water Taking Records and Reporting

It is a requirement of O. Reg. 387/04 that a Permit Holder measures and records volumes of water taken daily. Data collected will be measured by a flow meter or a comparable mechanical measuring device. Data for the previous year must be submitted to the ministry on or before March 31st in every year in a form and manner approved by the Director. More frequent reporting may be required where needed.

As required by the conditions for bottled water permits, the Permit Holder will be required to measure the amount of water taken from each source using a device capable of volumetric flow measurement and electronic data recording. For example, it would not be suitable to calculate the daily taking volumes based on the length of time the pump is operated, or on the number of bottles produced per day. Furthermore, the Permit Holder is required to ensure the accuracy and integrity of the data collected. This would include (but not be limited to) ensuring that all manufacturer instructions and guidelines are followed for installation, calibration and maintenance of the device, and regular auditing to ensure that the data continues to be recorded correctly and the calibration remains valid.

The water taking records collected by the ministry supports improved water management in the province and is used in support of source protection initiatives (in the development of water budgets, assessment reports, and source protection plans), as well as Ontario Low Water Response and annual water use reporting under the Great Lakes-St. Lawrence River Basin Sustainable Water Resources Agreement.

In addition to recording and reporting daily water taking, bottled water Permit Holders must also develop and maintain a website that is available to the public.

The Permit Holder shall use the website to post:

- the permit application
- all technical reports submitted to the ministry
- annual monitoring report
- a two to three page plain language executive summary of the water taking activity;
- the well interference protocol and any complaints made under the protocol must be reflected in annual monitoring reports
- daily water taking records reported weekly
- monitoring data, as required by the permit

For further details on these requirements refer to the *Conditions for Bottled Water Permit* section of this document.

6) Application Fees

The fee to apply for a Permit to Take Water renewal for water bottling is \$3000. Application fees were introduced into the permit program to help cover some of the costs to process, review and issue a permit. The fee reflects the amount of time that ministry staff need to complete reviews of different types of applications.

The following permit adjustments are free of charge:

- administrative amendments (e.g., name/address change). Any change in ownership or sale would require a new permit application and is not considered a renewal
- amendments made necessary because of actions the Director may require of an applicant to meet permit requirements
- revocation of an existing permit

Application fees can be paid by certified cheque or money order, or by credit card (VISA, Master Card, American Express), in Canadian funds, payable to the **Ontario Minister of Finance**.

Failure to pay the required fee will result in the submitted application for a Permit to Take Water being cancelled and returned.

The Director may return the fee to the applicant if:

- the application is incomplete;
- the application is not accompanied by the appropriate fee;
- where an application has been withdrawn or refused and in the opinion of the Director the amount of time spent by ministry staff and expenses incurred by the ministry in the review of the application is insignificant.

7) Climate Change, Drought and Low Water Conditions

Water is vital to the health and integrity of our ecosystems, industry and communities. The occurrence of drought conditions in areas of Ontario, projected increases in population and associated water needs, and anticipated impacts of climate change have intensified concerns related to water security in Ontario, particularly among communities that depend on groundwater.

For this reason, the effects of climate change and drought conditions must be considered in the hydrogeological assessment included in all applications for Permits to Take Water. See *Methodology* section in the document for requirements.

As part of Ontario's source protection program, a process was developed to incorporate climate change effects into water budgets under the Clean Water Act. Unless otherwise directed by the ministry, the applicant must consider this water budget information in their hydrogeological study, specifically in the cumulative effects assessment. More information on these requirements is provided under *Methodology* in the *Cumulative Effects* section. Information on how climate change is considered in these water budgets can be found in a document titled "[Guide for Assessment of Hydrologic Effects of Climate Change in Ontario](#)".

In order to address drought concerns, the ministry will include mandatory decreases in water taking during drought conditions and mandatory monitoring conditions in the PTTWs for water bottlers.

Mandatory decreases in actual water takings will be triggered by the declaration of Level 1, 2 and 3 Low Water Conditions via the Ontario Low Water Response (OLWR) program. The decreases are as follows:

- Level 1 - A mandatory decrease of a minimum of 10% in the measured daily average water taking over the preceding 3 month period
- Level 2 – A mandatory decrease of a minimum of 20% in the measured daily average water taking over the preceding 3 month period;
- Level 3 – A mandatory decrease of a minimum of 30% in the measured daily average water taking over the preceding 3 month period

The Director also retains the authority under the OWRA to order decreases in water taking at any time.

Part C – Technical Requirements (Hydrogeological Study)

The applicant's Hydrogeological Study is required to be completed by a licensed QP. The ministry's review will be conducted by a licensed professional QP. This study is required for all PTTW renewal applications.

1) Recommended Report Structure

The following structure is suggested as a standard format for the hydrogeological study report. Depending on the characteristics of a proposed taking, some sections may not be necessary, while in other circumstances additional sections may be required.

Report Outline:

The suggested report format and main section headings are as follows:

Introduction

- a) Justification for the Proposal

Background

- a) Description of Taking
- b) Characterization of the Hydrogeological Setting
- c) Key Figures, Tables and Graphs
- d) Quaternary and Bedrock Geology
- e) Physical Hydrogeology
- f) Well Survey
- g) Local Surface Water Features
- h) Other Background Information

Methodology

- a) Water Quality Monitoring
- b) Additional Analysis
- c) Drought and Cumulative Effects Water Quantity Risk Assessment

Impact Assessment

- a) Impact to Existing and Proposed Future Municipal Groundwater Users
- b) Impact to Surface Water (if applicable)
- c) Other Potential Impact Considerations
- d) Drought and Cumulative Effects Water Quantity Risk Assessment

Conclusions and Recommendations

- a) Summary of Results and Impact Assessment
- b) Recommended Monitoring Program
- c) Recommended Contingency Plan

2) Introduction

This section shall identify and briefly describe the general location and ownership of the property where the taking is to occur and intended use of the water proposed to be taken, who performed the hydrogeological study, when it was conducted and outline the scope of work performed. The purpose, rates, volume, location and predicted impact of the proposed water taking shall also be summarized. The surrounding land uses and natural features located adjacent to, and/or near the property shall also be provided.

a) Justification for the Proposal

This section shall provide a justification for the water taking that takes into account the ministry's Statement of Environmental Values (SEVs). These SEVs can be found on the [Environmental Registry](#).

3) Background

a) Description of Taking

This section shall do the following:

1. Outline the purpose, and justify the requested rates and volume of the proposed taking.
2. Confirm that the water is required within the life of the Permit and is not being reserved for future uses. It is not the purpose of the PTTW system to reserve water resources for unspecified or speculative land uses that are not likely to be approved in the immediate future.
3. Describe the locations of all proposed takings, specify the capacity of equipment that will take the water and explain any variability in taking rates and durations.
4. Describe the quantity and quality of any water discharged back into the environment. If there is an existing approved discharge, specify the ECA number. If the discharge is to a municipal storm water system or sewerage system, include a copy of the agreement with the application.
5. For the source wells include the following:
 - i) Water well record or detailed well log showing wellhead completion (and date, if known)
 - ii) Assessment of production records and any existing water quality data
 - iii) History of any well interference or other concerns
 - iv) Maximum instantaneous pumping rate
 - v) Average and maximum number of days per year of water taking

b) Characterization of the Hydrogeologic Setting

The purpose of this section of the study report is to characterize the local physiographic and hydrogeological setting, including groundwater and surface water features and functions, so the potential for interference can be evaluated. This section usually includes a brief description of the local physiographic features and characterization of the relevant hydrostratigraphic units, including a determination of the groundwater flow direction, and may include a characterization of local groundwater quality. Identification of any source water protection vulnerable areas in which the proposed taking is located must also be completed.

The study area shall not be limited to the property boundary, but shall focus on the area delineated by the maximum predicted area of influence. An iterative approach is often needed for defining the study area; the type of information needed to estimate the area of influence is usually gained through aquifer testing. In the case of renewals during the moratorium, prior aquifer testing results shall be utilized to have defined the area of influence. The study area shall be broad enough to consider local groundwater flow conditions (including local flow boundaries, constant head boundaries and aquifer boundaries) that may be relevant to the assessment of interference.

It is strongly recommended that the APGO Professional Practices Guidelines for Groundwater Resources be followed. These guidelines require field sampling and measurement to establish and confirm the hydrogeological characterization both spatially and temporally.

c) Key Figures, Tables and Graphs:

Where appropriate, information in the technical report should also be presented in a visual format. As a minimum, each report shall include:

1. A site location map of a scale that is appropriate to provide a regional overview.
2. A study area plan drawn to scale to illustrate relevant site features, including all on-site wells, buildings, property boundaries, all identified wells within the study area (with corresponding MOECC Water Well Record identifier (WWR ID, if one exists)), any municipal wells or intakes within 5 kilometres of the area, permitted water takings, watercourses, and drainage features within the study area, and vulnerable areas identified in the *Clean Water Act* Assessment Report for the Source Protection Area in which the proposed taking is located.
3. Existing pumping test data, graphs, and a summary of the pumping test data and analysis, monitoring well hydrographs. The ministry will also require this data be submitted in electronic format.
4. Hydrogeological cross-sections showing the relationship between geology, the locations of pumping and observation wells, well screen depths, water level measurements and topography. Where sufficient information is available, a block diagram is encouraged.

5. MOECC water well records (with WWR ID Numbers) or borehole logs with accurate geological descriptions.
6. A table identifying the main hydrostratigraphical units and their associated hydrogeological properties.
7. Historical data is to be included in a summary figure and in electronic format. A summary of monitoring results and graph of aquifer groundwater levels over the life/lives of the permit(s).

d) Quaternary and Bedrock Geology

A site-specific conceptual hydrogeological model shall be developed based on published geological and hydrogeological mapping, supplemented with site-specific hydrogeological information. Wherever possible, this shall be done within the context of existing regional scale watershed studies or groundwater studies, which commonly include pertinent information such as local recharge rates and surface water base flows. This must show key topographic / geological features and describe, to an appropriate level of detail; soil materials, including thicknesses, composition, and texture. The geological stratigraphic framework shall be described. In addition, in bedrock environments, known fractures, joints, bedding planes, faults, and shear zones shall, where applicable, be described.

e) Physical Hydrogeology

Key hydrogeological features of local aquitards and aquifers (confined, semi-confined and unconfined) that the Qualified Person considers relevant to the proposed taking shall be defined. This may include details of their depth, thickness, lateral continuity, porosity, vertical/horizontal hydraulic gradients, hydraulic conductivity, transmissivity, storativity/specific storage and the location / nature of aquifer recharge supplying the well. Where available, historical/seasonal groundwater level trends shall be identified and along with interpretations of existing pumping tests.

f) Well Survey

The purpose of the well survey is to identify existing water users and collect baseline data to help assess impacts of the proposed water taking. This information can help prevent and resolve interference complaints. The focus is on gathering current information about the existing hydrogeological conditions. The following information shall be collected and included in the study report:

1. A copy of each water well record for all wells located in the study area. Alternatively, a tabulated summary of all wells can be provided for all areas in which there are a relatively large number of wells. Identification of current and future proposed municipal wells within five kilometres. Future proposed wells maybe identified by accessing municipal class EA's or municipal water planning documents.
2. Reasonable effort shall be made to field verify the type, location (NAD83 datum UTM coordinates), and characteristics of all registered and unregistered wells within the

study area. Reasonable effort is normally considered to include at least one attempt to interview the owner or occupant during normal business hours and at least one repeat visit during evening hours to those locations where there was no initial response. If contact cannot be made, a note shall be left in a mailbox with a contact name and telephone number. Drilled wells within the study area that are predicted to experience more than 0.25 meter of drawdown shall be identified. Dug or bored wells shall be identified if they may have more than 0.25 meters drawdown (these numbers provide a practical limit to the required level of effort where the zone of influence is predicted to extend for a considerable distance).

3. Where there are a relatively large number of existing wells, a representative subset of wells can be assessed if the Qualified Person clearly identifies the criteria used to select the wells and that all wells at higher risk of experiencing unacceptable interference are included. At a minimum, reasonable effort shall be made to obtain static water level readings in the wells closest to the production well that are screened in the same aquifer.
4. Where a record for a well exists but the well is buried or cannot be found, the well may be assumed to be located at the center of the front yard of the subject property.
5. Where owners or occupants are unreachable, deny access or later refuse to cooperate with either the survey or monitoring, that inability to make contact or refusal shall be documented by the Qualified Person. Confidentiality issues of private land owners and local residents shall be respected. No individuals shall be named in the reports, but shall be referred to by referenced numbers (water well record numbers, if available) and locations. All private information shall remain in the Qualified Person's project files to be provided to the ministry upon request.

g) Local Surface Water Features

The purpose of this part of the study is to describe all surface water features in the study area so that potential interference can be evaluated. A brief description of the surface water system shall be provided. All surface water features (including streams, ponds, lakes and wetlands) within the study area shall be identified. For more detail, please see [MOECC Surface Water Permit to Take Water Guidance Document](#).

h) Other Background Information

The purpose of this part of the study is to describe nearby known existing water takings (both permitted and large non-permitted takings). Included shall be a list of permitted takers within the defined area of influence (refer to the [PTTW interactive mapping tool](#)). Provide any other applicable information on contaminated sites, waste disposal sites, large septic systems, and other applicable sites that are located within or nearby to the zone of influence.

4) Methodology

The purpose of this section is to document, describe and justify the selection of the methods used to evaluate potential impacts that could be caused by the taking.

a) Water Quality Monitoring

According to the Water Taking and Transfer Regulation - O. Reg. 387/04 - 4(2)(1)(ii), potential impacts of water takings on water quality shall be considered. It is considered good practice to conduct a baseline water quality study. This may help determine if the water quality is suitable for the long-term intended use of the water taking, and to provide baseline data for comparison in the event future negative impacts to water quality that may arise from other contaminant sources. Water quality study considerations are provided in Appendix 2.

b) Additional Analysis

This section shall describe any other field studies and any numerical computer modelling conducted and summarize any water budgets or estimates of sustainable yield that are made.

Please note that numerical computer groundwater modeling is not necessarily required in order to obtain approval of a PTTW application. If the Qualified Person decides to use numerical computer models to assist in estimating long-term groundwater flow impacts, some general guidance on key components of groundwater modeling that shall be described in the report is provided below.

1. Modeling software details - i.e., name, version, vendor, and type of hydrogeological systems for which it is designed
2. Justification of analyzing steady-state vs. transient conditions
3. Justification of hydrogeological conceptualization used to develop the model with support of real field data
4. Justification of initial and boundary conditions with support of field data
5. Discussion and justification of any assumptions made to develop the model
6. Rationale for hydrostratigraphical property selection and distribution with support of field data
7. Number, resolution, and extent of model layers
8. Model calibration
9. Model validation

10. Sensitivity analysis
11. Uncertainty (error) estimates for all calculations and predictions
12. Discussion and conclusion (conceptual model understanding, data quality assessment, model parameter sensitivity output interpretation and potential range of uncertainty for the predictions provided).

All of the above items shall be accompanied with graphical presentation of the results. In addition, the model input and output may be submitted in digital format along with reports that contain a computer modeling component. Note that the level of effort required to obtain adequate data to support a model that provides useful results is often very substantial.

c) Drought and Cumulative Effects Water Quantity Risk Assessment

All applications for water bottling shall consider the potential for cumulative effects, under both current conditions and various climate change or drought scenarios. Unless instructed otherwise or agreed to by the Director, the cumulative effects assessment shall use information obtained through watershed water budget evaluations completed under the *Clean Water Act, 2006*, where available. The highest tier of water budget completed for the location should be used to evaluate the potential for cumulative effects. Additional details on what must be considered when undertaking this assessment are provided below.

A water budget is a quantification of the various components of the hydrologic cycle to better understand how water moves through a watershed or an aquifer at a broader scale. It can provide an approximate understanding of the cumulative effect of multiple water takings in the same watershed or aquifer. The *Clean Water Act* provides three “tiers” of methodologies for conducting a water budget, with each successive tier representing a more advanced assessment. The proponent shall conduct their own assessment to determine whether the proposed taking is in a low stress area. If the proposed taking is in a moderate or significant stress area, the proponent shall determine and discuss the extent of cumulative effects anticipated.

The Tier 1 and 2 information is available on the [water budget website](#). Access to a Tier 3 water budget should be discussed with the ministry during your pre-submission consultation. During the pre-submission discussion applicants will be provided with the appropriate map showing the water budget study area. If the required water budget information is not readily available, i.e., for Tier 3 modelling, the ministry will assist the applicant in obtaining the information. Where a water budget of any tier has not been completed, the applicant will need to conduct their own analysis. It is highly recommended that the applicant discuss this issue with the ministry during the pre-submission consultation phase.

Applications that are Within a Tier 1 or 2 Study Area

The Tier 1 and 2 water budgets assess stress within subwatersheds under current conditions and a prolonged drought condition to assess climate change effects. The results of these water budgets must be considered in this cumulative effects assessment.

Applications that are Within a Tier 3 Model Study Area

Where Tier 3 water budgets have been updated to incorporate climate change data sets, as per the *Guide for Assessment of Hydrologic Effects of Climate Change in Ontario*, unless instructed otherwise or agreed to by the ministry, the cumulative effects assessment shall use information obtained from these updated water budgets.

Where Tier 3 water budgets have not been updated to incorporate climate data sets, the applicant will work with the ministry to determine how the climate change data sets will be incorporated into this cumulative effects assessment.

This approach is an interim screening process to identify the potential for water quantity stress from a taking. The ministry will be considering further assessment methods during the two-year groundwater science review currently underway.

The ministry will use the information provided by the proponent in addition to the water budget information to assess the potential for cumulative effects. The ministry will continue to rely on site specific information and analysis provided by the proponent's Qualified Person. This assessment will continue to be reviewed by the ministry's qualified professional staff, who will also use their knowledge of the local area and available monitoring data to evaluate the sustainability of the proposed taking.

5) Impact Assessment

The purpose of this section is to describe how to determine whether the taking will cause unacceptable water quantity or quality interference including any of the following:

- a) impacts to natural functions of the ecosystem (including, but not limited to, reductions in stream flow and surface water availability, including effects on aquatic habitats)
- b) interference with existing and proposed future municipal groundwater users

Assessments of potential interference shall be based on the maximum possible area of influence calculated using conservative assumptions and input data or based on actual field data obtained from aquifer testing. In addition to previous pumping test data, aquifer characterization shall consider chemical data, field-verified survey data and other hydrogeological data. Uncertainty regarding the Transmissivity (T) and Storativity Coefficient (S) / Specific Yield (Sy) values caused by variable fracture permeability, limited aquifer extent, etc., shall be discussed where relevant.

Note that it is the permit applicant's responsibility to ensure the quantity and quality of water that is taken is suitable for its long-term intended use. The PTTW approval process does not consider the suitability of the quantity or quality of the raw water for the intended use nor does it assess water treatment needs.

a) Impact to Existing and Proposed Future Municipal Groundwater Uses

Assessment of potential impacts to existing groundwater uses will typically include the following steps:

Step 1: Identification of Existing Users and Potential Water Quality Concerns. Use the well survey to identify existing groundwater uses and potential future municipal users within the area of influence. This is based on any publicly accessible databases or other sources that may be provided by the ministry or other information available to the Qualified Person, identification of potential contaminant sources or naturally-occurring sources of poor water quality within the area of influence.

Step 2: Assessment of Interference Potential. Assessment of interference potential for representative groundwater users within the area of influence. Potential well interference effects may be evaluated using distance/time drawdown graphs based on aquifer parameter values determined from prior pumping tests or determined from other information available to the Qualified Person. Predicted drawdown in wells, ponds and excavations not connected to surface water shall be compared to the:

1. available head (depth of water above the top of the aquifer or the completion interval, whichever is less)
2. pump intake depth in area wells (based on MOECC well records and well survey)
3. depth and pumping level of local ponds (where used for water supply)

Step 3: Action to Avoid Unacceptable Interference. Evaluation of whether measures shall be taken to avoid unacceptable interference with existing users. Unacceptable interference usually means that the water taking results in existing water users being unable to maintain their established pattern of water use.

If there is a potential for unacceptable interference, these impacts shall be quantitatively assessed using direct field measurements, such as water level measurements, during the pumping test.

Additional quantitative predictions may be made with numerical groundwater models (such as Modflow or FEFLOW). Larger withdrawals, such as municipal well fields, are more likely to warrant the use of numerical groundwater models. If groundwater models are used, the modeling process shall be documented in the report, as indicated previously in section 4(c).

Assessment of potential impacts on proposed municipal groundwater users may include; obtaining information from municipal drinking water service master plans or their equivalent. These plans provide important information regarding current population and forecasted population growth and associated water needs. Consultation with municipalities is required to obtain this information.

b) Impact to Surface Water and Natural Functions of the Ecosystem

If surface water bodies have been identified within the predicted maximum area of influence of the groundwater taking, then potential impacts to surface water and their related natural functions of the ecosystem need to be considered. A reasonable effort

shall also be made to conduct field verification of all surface water bodies within the study area, with a greater focus in areas that are more likely to be impacted by the proposed water taking.

The assessment of impacts to surface water features should not necessarily be limited to the prediction of losses of stream baseflow. Even when changes to stream discharge are small, the loss of groundwater discharge to the stream ecosystem may impact aquatic ecosystems. Groundwater discharge may be isolated to selected reaches of a stream. Other potential impacts due the loss of groundwater input include thermal impacts and changes in water quality. These factors may be as important as reductions to stream discharge and may need to be considered. The studies also need to consider the timing of groundwater taking in relation to the corresponding ecological conditions in the aquatic ecosystem. Assessment of potential impacts to natural functions of the ecosystem may be completed using the following process:

Step 1: Evaluation of System Isolation. This requires consideration of whether identified surface water features are isolated from the aquifer from which water will be taken. System isolation needs to be assessed in the context of the magnitude of the water taking. Large, on-going takings have greater potential to induce unacceptable amounts of leakage through an aquitard compared to small and intermittent takings.

Step 2: Assessment of Potential Impacts to Surface water. Prediction of how the proposed groundwater taking may change groundwater flux into the surface water features within the study area. To reduce the uncertainty commonly associated with ground water-surface water interactions, the use of tracer tests, isotope analysis or installation and monitoring of steam bed mini-piezometers and/or near-shore piezometers during pumping tests is encouraged.

The following set of guidelines may be used to help the Qualified Person assess potential risks to natural functions of the ecosystem. Where more than one method is applicable, the Qualified Person is encouraged to use the most conservative method. Further surface water field studies are likely required where:

- i) groundwater flux to any surface water feature is predicted to decrease by more than 10% in the zone of influence or 50,000 litres/day, whichever is greater;
OR
- ii) the maximum predicted reduction of groundwater discharge to any 1st or 2nd order river/stream is less than 50,000 litres/day but may exceed 10 per cent of flow at any time (based on conservative calculations or on direct measurements during the taking);
OR
- iii) the maximum predicted amount of stream depletion in a 3rd or higher order river/stream is greater than 5 per cent of 7Q20 (seven-day quantile with a 20 year return period). In this case, a surface water Qualified Person would need to perform the equivalent of a Category 2 submission for PTTW;
OR
- iv) groundwater is discharging into a known fish spawning area, cold water stream or provincially significant wetland.

The values discussed above are not intended to be prescribed standards, but are only intended to indicate that such changes in groundwater flux are generally considered to pose a lower risk of causing negative impacts to the natural functions of the ecosystem. Furthermore, exceedance of these limits does not immediately signify a need to contract a surface water hydrologist or aquatic ecologist/biologist, but rather may indicate that additional investigations are required to provide more accurate and reliable data. (Note: 10 per cent is usually within the range of error and uncertainty for groundwater measurements. As a result, it is not possible to economically and reasonably measure changes in surface water flow/levels below this amount and to attribute these changes to the groundwater taking.)

If the proposed taking is predicted to stay approximately within the limits outlined above within a reasonable degree of uncertainty, and there is an insignificant risk of unacceptable impacts to the natural functions of the ecosystem in the connected water bodies, then there is no need to proceed to Step 3.

Step 3: Hydro-ecological Study. Where the study indicates that the proposed taking may cause significant changes in the amount of groundwater flowing between the hydrostratigraphic unit and connected surface water, more detailed field studies performed by Qualified Person(s) with expertise in surface water hydrology and aquatic ecology or biology may be required. The ministry's Technical Guidance document for Category 3 Surface Water Takings may serve as a reference to evaluate and assess potential impacts to surface water and natural functions of the ecosystem.

c) Other Potential Impact Considerations

Other potential unacceptable interference effects within the maximum area of influence shall be considered, including the following:

1. Potential for uncontrolled artesian flow
2. Any other considerations not mentioned in this guidance document that the Qualified Person feels is relevant

6) Conclusions and Recommendations

a) Summary of Results and Impact Assessment

The purpose of this section is to summarize previous pumping test results and/or historical monitoring data and identify any potential negative impacts on the natural environment and/or existing and future municipal water uses. A clear summary statement must be provided by the Qualified Person indicating whether or not they anticipate any unacceptable interference and under what circumstances this may occur.

b) Proposed Monitoring Plan

The purpose of this section is to recommend an appropriate monitoring program. A groundwater monitoring plan shall be designed for long-term takings to:

- confirm that the taking does not result in unacceptable impacts to either the natural functions of the ecosystem or to existing and future municipal water uses
- ensure that groundwater elevation levels do not fall below an unacceptable level
- confirm over time whether there is significant deviation between actual and predicted impacts
- initiate contingency action in the event that unforeseen unacceptable impacts do occur

The contingency plan can be put into action if the monitoring results indicate that the thresholds for action have been reached. Note that in all cases daily records of water taking amounts are required of a Permit Holder. Additional monitoring that shall be required includes measuring water levels and determining water quality changes over time (if applicable). Where impact on surface water features is possible, biological monitoring and flow monitoring may also be required. In conjunction, this section shall also recommend water taking conditions that will help ensure that the proposed water taking does not result in unacceptable impacts. Monitoring plans shall identify the following:

1. Frequent or continuous water-level monitoring of production and observation wells using automatic digital recording is required. All monitoring data shall be submitted in graphical and digital formats as part of the supporting documentation.
2. The number of wells or piezometers required to effectively monitor groundwater levels and quality needs to be identified.
3. Specific hydrostratigraphic units that are being monitored.
4. Frequency and type of data collection (i.e. water levels, water quality).
5. Field sampling methods.
6. Methods of reporting and data analysis.
7. Field and laboratory sample quality assurance and quality control procedures.
8. The results will be summarized annually and posted for public review, as per sections on *Conditions for Bottled Water Permit* and *Water Taking Records and Reporting* of this document.

c) Contingency Plan

The purpose of this section is to provide for the development of contingency plans and establish trigger limits to govern when the plans are to be put into action. Contingency plans shall contain a description of mitigative measures that will be taken in the event that unforeseen and unacceptable impacts occur as a result of the proposed taking. Contingency plans shall include the following:

1. Incorporation of low water response plans
2. Description of mitigative measures to minimize or restore any negative impacts that may occur (this may include plans to reduce and/or cease water taking activities, temporary and permanent water supply restoration measures to affected parties or plans to restore any negative ecological impacts etc.)
3. A trigger mechanism which specifies the circumstance(s) that will trigger the implementation of the contingency plan
4. Actions will be summarized annually and posted for public review

In many cases a simple contingency plan is appropriate. For example, when a complaint is received or the ministry determines that unacceptable interference is occurring, the water taking could be stopped until the problem is rectified.

7) Review Process

All applications for PTTWs for water bottling will be reviewed by licensed professional ministry staff who have credentials that meet the requirements of a Qualified Person. Each application will be carefully considered to determine whether or not it is likely to result in unacceptable impacts and take into consideration all comments received. Applications should typically be submitted well in advance of the time that water taking is intended to start. The ministry will post bottled water permit applications on the Environmental Registry in accordance with the Environmental Bill of Rights and consider public comments during the review and in its decision.

a) Review

All renewal applications are required to be accompanied by a hydrogeological study. The following provides the procedure that ministry professional Qualified Persons use to guide the technical screening, scientific evaluation and scientific review of proposed water takings from groundwater sources. This procedure provides a science-based assessment of the scope and magnitude of potential impacts. In addition, the ministry will review and consider all comments received from notification and consultation.

In evaluating a bottled water application, the Director must consider the following matters to the extent that they are relevant and information is available to the Director.

1. Natural functions of the ecosystem, including:

- potential impact on the natural variability of water flow or water levels, minimum stream flow, and habitat that depend on water flow or water levels
- interrelationships between groundwater and surface water, including impact or potential impact on water quantity and quality

2. Water availability, including:

- potential impacts on:
 - water balance and sustainable yield
 - existing uses of water for municipal water supply and sewage disposal, private domestic, agricultural purposes, livestock and for other applicable purposes
- Cumulative effects assessment (i.e., water budget)
- climate change
- low water conditions
- whether the water taking or proposed water taking is in a high use watershed or a medium use watershed
- planned municipal use of water that has been approved or proposed under a municipal official plan or an Environmental Assessment

3. Use of water, including:

- whether water conservation in accordance with best water management practices for the bottled water sector is being implemented or is proposed to be implemented
- the purpose for which the water is being used or is proposed to be used
- if the water is not currently being used, whether there is reasonable prospect that the person will actually use the water in the near future

4. Other issues, including:

- the interests of other persons who have an interest in the water taking, to the extent that the Director is made aware of those interests
- Comments received during proponent and ministry notification, consultation and through the Environmental Registry
- any other matters that the Director considers relevant

Part D - References and Appendices

Appendix 1: References and Suggested Resources

Association of Professional Geoscientists of Ontario. General Professional Practice Guidelines for Environmental Geoscience (Online). September 2003.

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ASTM D 5880-95(2000), "Standard Guide for Subsurface Flow and Transport Modeling", ASTM International.

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ASTM D 5981-96(2002), "Standard Guide for Calibrating a Ground-Water Flow Model 18 Application", ASTM International.

Bear, J., Beljin, M. S., and R. R. Ross. 1992. Fundamentals of Ground-Water Modeling. EPA/540/S-92/005. Office of Solid Waste and Emergency Response, U.S. Environmental Protection Agency, Washington, D.C.

Guide to Permit to Take Water Application Form

Ontario Ministry of the Environment and Climate Change. Technical Guidance Document for Surface Water Studies In Support of Category 3 Applications for Permit to Take Water. Queen's Printer for Ontario, March 2006. No availability. April 2005.

Ontario Ministry of the Environment and Climate Change. Water Management – Policies, Guidelines, Provincial Water Quality Objectives (Also known as the MOE's "Blue Book"). (PIBS 3303e) Queen's Printer for Ontario, July 1994.

Ontario Ministry of the Environment. Soil, Groundwater and Sediment Standards for Use Under Part XV.1 of the *Environmental Protection Act*. (PIBS 4697e) Queen's Printer for Ontario, March 9, 2004.

Ontario Water Resources Act

Professional Engineers of Ontario. Guideline – Professional Practice (Online).

Water Taking Regulation (O. Reg. 387/04)

Appendix 2: Water Quality Monitoring Considerations

The following are key considerations that shall be incorporated into the study:

1. New water takings shall not result in water quality impacts that unacceptably interfere with existing or future municipal groundwater uses or natural functions of the ecosystem.
2. Water quality impact assessments shall address the following:
 - i) Water quality impacts to a neighboring well(s) by induced mixing of water of differing quality caused by the proposed water taking activity. This may be water of naturally poor quality or water that is contaminated by human activity.

Example 1: A well screened in a bedrock aquifer over time may begin to withdraw groundwater from deeper zones that may contain brine or other non-desirable natural chemicals. This may adversely impact neighbouring wells that provide domestic water supply or other water uses.

Example 2: The owner of Property A applies for a PTTW to pump groundwater from a well. Property C has contaminated groundwater and is located within the well's capture zone. Property B is located in-between Properties A and C, and has a domestic water supply well within the same aquifer in question. Continuous pumping from the Property A's well may cause the contaminant plume from Property C to migrate onto Property B and may in turn cause adverse impacts to the domestic water supply well on Property B.

The Qualified Person shall make a reasonable effort to determine if there are any known or potential contaminant sources within the cone of influence of the water taking site, which may negatively impact water quality induced by the water taking. This may involve a general site reconnaissance of the immediate area surrounding the site of the water taking to identify potential sources of contamination. No specific field investigation is required by the Permit applicant to address contaminant sources for which it is not responsible. If the Qualified Person deems it necessary, detailed records of specific contaminant sources from the ministry may be obtained through a Freedom of Information request.

In accordance with "Water Management Policies, Guidelines, Provincial Water Quality Objectives of the Ministry Of Environment and Energy," Section 5.1.3, all reasonable and practical measures shall be taken to maximize the availability of groundwater for existing or potential uses. As such, where induced contamination is identified by the Qualified Person as a significant risk, and where the source of that contamination is not the responsibility of the applicant, responsibility for addressing that impact will normally rest with the party responsible for the contamination. The Director will consider the Qualified Person's evaluation in determining what action the responsible party must take to address the contamination.

- ii) Physical impacts associated with discharge water (including construction dewatering). Common concerns include: flooding, erosion, and sedimentation when discharging to surface water. Water quality impacts associated with discharge water to a receiving water body may need to be addressed through a Certificate of Approval issued by the Environmental Assessment and Approvals Branch.
 - iii) Potential physical and/or ecological impacts to surface water systems resulting from losses in groundwater input.
3. Where the potential for an induced water quality impact on an existing water user related to naturally-occurring compounds has been identified, it is acceptable for the water taker to address that potential induced impact by incorporating a contingency plan for the provision of treatment devices or alternative water supply should the impact occur. Only a reasonable degree of effort is required to predict the likelihood of such an impact, such as, if background groundwater quality information from regional studies is readily available.
 4. Aesthetic problems related to microbiological activity such as iron-reducing or sulphate-reducing bacterial infestations, are not within the scope of evaluation of induced water quality problems. Because these are naturally-occurring organisms and the factors involved in the creation of infestations are poorly understood, the occurrence of an infestation cannot be adequately predicted or attributed to any given cause.
 5. PTTW hydrogeological studies do not need to duplicate water quality monitoring and control issues that are addressed by legal instruments. For example, water quality concerns associated with a PTTW for a groundwater pump-and-treat system that discharges to surface water should be addressed in a sewage works Environmental Compliance Approval.
 6. If there is a significant risk of water quality impacts that may result from the proposed water taking, a water quality sampling program may need to be developed. Sampling frequency depends on the level of risk.
 7. Potential water quality impacts on groundwater uses shall be assessed using applicable water quality standards or guidelines based on the type of potential receptor(s). Potential impacts to drinking water supplies shall be assessed using the Ontario Drinking Water Quality Standards and the Ontario Drinking Water Objectives. Potential water quality impacts on natural functions of the ecosystem shall be assessed using criteria from Table 4 of Ontario Regulation 153/04 for unregulated anthropogenic contaminant sources or the relevant Provincial Water Quality Objectives for natural compounds or regulated contaminant sources.
 8. Any historical water quality data collected during the pumping test stage or under an existing Permit shall be presented in a table comparing results with the applicable standards or guidelines. The report shall include an interpretation of the water quality analysis using applicable analytical methods (such as Piper or Durov or similar plots for major ion geochemical analyses). Time-trend graphs are very helpful and shall be

used whenever samples have been collected over time.

9. A contingency plan is required in the event of water quality impacts occurring to other existing uses or on the site itself resulting from the proposed water taking. Notification to the Regional OWRA s. 34 Director and local District Office (during regular business hours), or the Spills Action Centre (1-800-268-6060; emergencies) may be required and/or to seek further assistance.

Appendix 3: Monitoring Data Template

A condition of the permit requires each permit holder to maintain an electronic copy of all monitoring records on a public web site. The data must be made available in an electronic format that allows for efficient manipulation. It is recommended that the permit holder maintain all data in three tables.

The first table shall have a structure similar to the following. It shall present a short list of all monitoring locations. These include pumping wells, observation wells, and surface water monitoring locations. The list shall identify the name, location, type of monitoring location and coordinates of each location. Where available, the water well record number shall be identified.

Permit Number	Monitor Identification	Type	Latitude / Northing	Longitude / Easting	Water Well Record No
		<i>Pick one for each row:</i>			
		Pumping Well			
		Observation Well			
		Surface Water Feature			

The second table shall have a structure similar to the following. It shall maintain a list of all water withdrawals. There shall be one row per day per water source. Thus, if water is taken from two wells, there shall be 730 rows of information each year.

Permit Number	Water Source Name	Date	Permitted Taking (L/day)	Total Withdrawal L/day)

The third table shall present all water level monitoring data. It shall also list any necessary discharge data that is different than the record of water taking. For example, some permits may require stream flow measurements. Each row shall contain one water level or discharge measurement, along with an identification of the type of measurement. It is understood that this table may become very long if frequent data measurement is required at many sites. In this case, it would be acceptable to store monitoring data in multiple tables following this format. (e.g., one table per monitoring well).

Permit Number	Monitor Identification	Date and Time	Measurement	Value (m, L/day)
			<i>Pick one for each row:</i>	
			Water depth	
			Water elevation	
			Discharge	