

Watershed Characterization Peer Evaluation

Summary Report

For: Toronto and Region Conservation Authority

December 2007



Summary of Working Group Comments Prepared By: Jennifer Havelock, SWP Technical Coordinator

OBJECTIVE:

The purpose of this *Watershed Characterization Peer Evaluation Process* was to ensure the consistency of products being prepared provincially by the Source Protection Regions and Areas. The process was intended to ensure quality assurance and quality control in the documents prepared and to make certain that the requirements as laid out in Module 1, the Watershed Characterization Technical Guidance, have been achieved.

BACKGROUND:

The Assessment Report, the technical work behind the Source Protection Plan, will be composed of a number of chapters. These chapters include a watershed characterization, a surface and groundwater vulnerability assessment, an inventory and evaluation of threats and issues, a water budget section, and a semi-quantitative risk assessment. These chapters correspond to the current Technical Guidance Modules (October 2006) that have been prepared by the Ministry of the Environment

A locally driven peer review process has been established by the Ministry of Natural Resources to technically review the quality of the water budget products prepared by the Source Protection Regions and Areas. Peer Review is being considered by the Ministry of the Environment for portions of the Vulnerability Chapters of the Assessment Report, but this process has not yet been put in place. To complement the current Water Budget Peer Review Process, a Peer Evaluation Approach has been developed and implemented for the Draft Watershed Characterization Reports produced by the various SPA and SPRs. The lessons learned from this Peer Evaluation Approach will help guide future attempts to establish some consistency in the products developed by the SPAs and SPRs in advance of the Assessment Report submission to the Province.

APPROACH:

A Working Group made up of professionals familiar with the Source Protection Planning Process was assembled to evaluate the draft Watershed Characterization Reports written by the SPAs and SPRs. This group included Conservation Authority staff not involved directly in the Source Water Protection Program. Technical expertise among group members included knowledge of water quality, hydrogeology, and hydrology. Working group members were expected to be familiar and understand the content of Module 1: Watershed Characterization Technical Guidance (April 2006).

The evaluation of the reports submitted was based on a ranking system. Working Group members ranked sections of the draft reports submitted using a prepared template and provided commentary as appropriate adjacent to the chosen ranking. The Peer Evaluation process is not expected to be an in-depth Technical Review of the materials provided by the Source Protection Regions and Areas.

Figure 1: Ranking System

| Rank | Description |
|------|---|
| 0 | Deliverable Missing |
| 0* | Deliverable Missing due to knowledge or information gap. |
| 1 | Only portion of output / deliverable required by the guidance has been addressed. Significant addition of written information or analysis of records is required to comply with guidance. |
| 2 | Only portion of output / deliverable required by the guidance has been addressed. Some minor addition to the written information or analyses already completed is recommended for completeness. |
| 3 | Deliverable Present and addresses requirements presented in the guidance. Major editorial attention required to provide clarity and improve comprehension by reader. |
| 4 | Deliverable Present and addresses requirements presented in the guidance. Minor editorial attention required. |
| 5 | Deliverable Complete. No revisions necessary. |

General Comments – All SPR / SPAs

- To facilitate the review of material found in the Watershed Characterization Report, the Working Group recommends that the report be accompanied by a map booklet consisting of 11 x 17 maps.

- Now that the Clean Water Act (2006) is in place, it is appropriate that proper terminology be used (i.e. source protection region, source protection area, source protection).
- All maps, figures, and tables provided in the report should be referred to and described succinctly in corresponding text.
- Scientific names accompanying species described in text should be underlined or italicized.
- The Hydrology Section (Watershed Description) should reference the Conceptual Water Budget Report prepared by the SPR/SPA.

General Comments:

Report is well written and generally well balanced. Given that it was released some considerable time after many other WC reports and that the authors had access to a wealth of data sources, the lack of depth in the treatment of some sections is surprising, e.g. water quality, water quantity and threats inventories.

The Water Quality chapter would have benefited from more in-depth discussion of individual watercourses and of observed raw water quality at municipal GW and Great Lakes based intakes.

Maps are generally well done and typically suitable as stand alone products.

There is good use of colour in tables and **bolding** of text references to tables and figures.

Inclusion of summaries of key points at the end of major sections was helpful.

Report contains the most comprehensive discussion of cause-effect relationships between land use, land use practices and weather events and the resulting water quality and quantity impacts of all WC reports peer reviewed to date.

One of the few reports to successfully distinguish between 'data' gaps and 'knowledge' gaps. Most sections/chapters contain a thorough discussion of gaps.

Water Quality Chapter

The introductory discussion of indicator section (**Table 3-1**), monitoring activities, and monitoring stations and period of record (**Table 3-2**) is well done.

| | Section of Guidance Module | Output | Ranking (1 – 5) | Comments / Suggestions |
|-----|----------------------------|---|-----------------|---|
| 1.0 | Introduction | General Introduction to the Watershed Characterization Report provided. | 5 | Excellent section, especially the discussion on data sources. To shorten the introduction Section 1.5 could be put in an appendix. |
| 2.0 | Watershed Description | | | |
| | Source Protection Region | Provide a written overview of the watershed, with description of: <ul style="list-style-type: none"> - Watersheds being assessed in the region, - Watershed vision and mandate, - Historical dates and events of significance - Key studies and initiatives | 3 | Need to include historical dates and events of significance for your region Create a better link for key studies into the text of this document (App. 1) |
| | | Produce a description and map (WC Map 1) or maps of the boundaries of the CA and the associated watershed and subwatersheds. Should include: <ul style="list-style-type: none"> - List and mapping of the boundaries for the upper and lower tier municipalities | 4 | List of Provincial Policies in Section 2.1.2 , should include Places to Grow Figure 2-1 might be easier to grasp if the individual watersheds (rather than municipalities) were assigned different colours w/ the municipal boundaries superimposed. |
| | | Produce a description of relationships with Provincial ministries that impact on source water (MNE, MNR, OMAFRA, MMAH, MNDM, MOHLTC) as well as neighbouring CAs, CO, and other provincial partners. | 2 | Describe TRCAs relationship with the identified ministries, neighboring CAs, and CO? |
| | | Produce a written description of any watershed related activities that have been conducted with the federal government. | 1 | Only some Federal ministries identified. What about DFO, etc... Provide a description of TRCAs relationship with them. |
| | | Produce a written description of any watershed related activities that have been conducted with First Nations groups. | 0 | First Nations are not mentioned in this document. Comment on the presence or absence of First Nations activities in the region. |
| | | Produce a list of those stakeholders or groups that have already been engaged in some type of watershed planning/ management activities, such as those that have: participated in previous planning initiatives via task forces or committees; or have been involved in implementation activities such as rehabilitation or restoration work. | 1 | This list is short and incomplete; recommend that a more comprehensive list be created. This list can be included as part of the appendices. |
| | Physical Description | Produce a written description of the geology of the source water protection region, making reference to any unique formations. | 5 | |
| | | Produce a map (WC Map 2) or maps that identify the geological character of the watershed. | 4 | - A generalized cross-section (similar to fig.2-8) will be useful to support the bedrock geology discussion in section 2.2.4 and showing sequence of bedrock formations. - An overburden thickness map will be a useful product e.g. based on the info from the MOE well records to support discussion on surficial geology. |
| | | Produce a written description and quantitative assessment of watershed topography. | 4 | Map should be explained in more detail noting the topography across the watershed. |
| | | Produce a written description of how these landforms have affected the physical and human character within the watershed. | 0 | The human character in the watershed is not discussed in this section |

| | Section of Guidance Module | Output | Ranking (1 – 5) | Comments / Suggestions |
|--|----------------------------------|---|-----------------|--|
| | | Produce a map (WC Map 3) or maps that illustrate the physiography of the watershed. | 5 | |
| | | Produce a written description of the soil composition and distribution of land uses in relation to soil type. | 1 | The soil composition of the watershed is not described in relation to land use. |
| | | Produce a map (WC Map 4) or maps of land uses as they related to soil composition throughout the watershed. | 2 | Soils map is not linked to land use maps |
| | Hydrology | Determine the location of and available data from rainfall gauges in the watershed. | 5 | |
| | | Produce a written description which characterizes the stream network within the watershed. | 5 | |
| | | Produce a map (WC Map 5) or maps that illustrate significant hydrologic features. | 2-3 | <ul style="list-style-type: none"> - The discussion groundwater hydrology is lacking details even though it seems lot of information is available. - Various aquifers units have been discussed in section 2.3.10 and it is indicated for some aquifers that they are used for domestic and/or municipal water supplies. A map , based on MOE well records, showing locations of private wells will be very useful to support the discussion on aquifers in use and their location. Bedrock wells and overburden wells should be shown separately. This map should also separately show (by symbols) the confined and unconfined wells to support the discussion on aquifers , if sufficient info is available. - Supplementing the discussion in section 2.3.10 with aquifer characteristics (conductivity of aquifers, yield, etc.), will be useful. - Supporting the groundwater hydrogeology discussion in section 2.3.10 with information on ground water flows, potentiometric and/or watertable elevations maps, etc. will be very useful. - Groundwater-Surface water interconnection discussion in section 2.3.11 needs to be supported by identification/discussion of recharge/discharge areas on figures (5-3&5-4). - Section 1.5.3 indicates that MOE well records information is available but is not analyzed to supplement the groundwater hydrology discussion. - 22 PGMN wells have been identified in the region, however, their location and geological/hydrogeological characteristic have not been discussed. This information will be useful to support the discussion. Similarly information from the municipal water wells identified in section 3.4 can be used to supplement the discussion on aquifers etc. |
| | | Produce a written description of the availability of climate data and the time span over which continuous climatic information exists. | 5 | |
| | | Produce a written description of the evaluation and identify potential climatic predictive models. | 3 | Describe what the implications for the SPA might be for the two scenarios described. |
| | Naturally Vegetated Areas | Produce a map (WC Map 6) or maps that show the location of wetland areas including provincially significant wetland areas (where available). | 2-3 | Recommend that provincially significant wet lands be marked differently than not significant wetlands and unevaluated wetlands |
| | | Produce a map (WC Map 7) or maps that delineate the natural features of the source water protection area and shows the proportion of the watershed that consists of naturally vegetated areas (woodlands and riparian areas). | 2-3 | Riparian areas not mapped and identified as a data gap |

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|--|-------------------------------|---|-----------------|--|
| | Aquatic Ecology | Produce a written description which includes: <ul style="list-style-type: none"> - Reference to any sensitive fish species in the watershed; - Reference to any of these species found in groundwater discharge areas or the headwaters of major water systems; - An evaluation of any fisheries related temperature studies completed in the watershed; - Reference to relevant portions of Fisheries Management Plans, particularly where relationships to water quality have been highlighted. | 5 | |
| | | Produce a map (WC Map 8) or maps that illustrate the diversity of benthos specimens in the watershed (especially if there is greater diversity in specimens in known recharge areas). | 5 | |
| | | Produce a written description of whether the benthos specimens indicate acceptable or poor water quality. | 3-4 | This section would benefit from a more detailed description of the results. |
| | | Produce a written description, noting the distribution of species at risk in relation to water quality or quantity conditions | 2-3 | Needs a more in-depth discussion of identified Species at Risk and their status under the Act. |
| | | Produce a written description which: <ul style="list-style-type: none"> - Identifies known invasive species in the watershed - Notes the distribution of these species Notes any changes in water quality since the first occurrence. | 5 | |
| | Human Characterization | Produce a map (WC Map 9) or maps and provide a written description illustrating the population distribution and current population densities throughout the watershed. | 1 | No map produced for the distribution of the population in the region. |
| | | Produce a map (WC Map 10) or maps that illustrate, at a minimum, the existing and future land uses which include: <ul style="list-style-type: none"> - Settlement Areas - Designated Growth Areas - Rural Areas - Urban Residential Development - Rural Residential - Cottage and Camp Development - Industrial / Commercial Sectors Distribution | 2 | The map of golf courses (Figure 2-32) is helpful given their large numbers and relevance to potential water quantity concerns. Recommend that Figure 2-24 be linked to this section as an indication of future land use/ future growth areas. |
| | | Produce a written description of relevant trends in industrial and commercial land use patterns. | 3 | There needs to be further discussion on relevant trends for industrial/ commercial land use patterns. i.e. are brown fields being rehabilitated and developed? |
| | | Produce a map (WC Map 11) or maps of the municipally serviced areas in the watershed. | 2-3 | It's not clear from the text and the map descriptions if figure 2-30 is for municipal water supply, waste water service, or a combination of both, recommend this be clarified. Ensure waste water serviced areas are mapped. |
| | | Produce a map (WC Map 12) or maps of the locations of municipal / communal wastewater facilities and their outfall locations where available. | 1 | Outfall locations shown on Fig 5-6, but map is confusing, requires a key. Map is required showing STP locations and their outfalls. |

| | Section of Guidance Module | Output | Ranking (1 – 5) | Comments / Suggestions |
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| | | Produce a written description of the requirements for stormwater management indicated in local planning documents, policies, and guidelines. | 5 | The mapping of stormwater management areas and SWM ponds is a nice addition. See Figure 2-31. Helpful comment about stormwater management controls becoming a consideration after 1975. |
| | Water Uses | Produce a written description that identifies inadequacies and gaps between studies requiring resolution. | 0 | Specific gaps and inadequacies in groundwater mapping are discussed in Section 5.4 Aquifer Vulnerability - Mapping. Suggest there be a short summary here. |
| | | Produce a map (WC Map 14) or maps that illustrate the sources of surface water for designated municipal uses. This map should include the locations of municipal drinking water plants and their intakes. | 0 | Municipal surface water supplies are not mapped. Municipal GW and Lake Ontario water sources/systems are recognized and discussed in some detail. More should be included about the lake-based supplies, e.g. intake distance from shore and depth of water. Should take care to state whether water usage figures are based on maximum permitted or actual, e.g. Sections 2.7.1 and 2.7.6. |
| | | Produce a written description; elaborating on any dependencies which may exist between local economic prosperity and water based recreational activities. | 1-2 | Explain how mentioned recreational activities/ areas relate to the local economy. i.e # of visitors per a year, estimated tourist \$, etc... |
| | | Produce a written description of the important and scale of agricultural activities in the watershed in relation to the sector's dependency on water resources for livestock watering, irrigation, and other associated uses. | 5 | |
| | Data and Knowledge Gaps | Data Gaps should be recorded and described using template provided in Appendix 2. The specific purpose of the data, in relation to source protection, should be described. Other details that might be included: - Priority of the data or knowledge needs - Practicality - Plans to fill the data and knowledge gaps. | 4 | Some data / knowledge gaps along with the plans/work in progress to address these gaps have been presented in section 1.6.2 and 2.8.2. However, there is a need to identify critical areas where geological characterization and groundwater monitoring should be a priority for evaluating groundwater resources. This will help to focus the efforts for site investigations in the areas seen as critical in relation to future groundwater use to improve the current understanding of the geology and hydrogeology. |
| 3.0 | Water Quality | | | |
| | Surface Water Quality | Describe the current state of surface water quality. | 3 | - Generally helpful discussion of cause-effect relationships - Box and whisker plots could be improved by noting the period of record being assessed and indicating the number of samples upon which the stats are based. - The 'y' scale chosen for some parameters in Figure 3-2 makes it difficult to get a sense of actual concentrations in the rural and urbanizing areas. - While the lumping of all stations into a single plot offers some advantage, separate upstream to downstream plots within individual watercourses might yield additional perspectives of relevance. - Figures 3-4 and 3-5 are a compact way of presenting data but could be improved by increasing the size of the concentration range blocks and correspondingly enlarging the type in the legend. - Suggest Figure 3-6 be redone on logarithmic scale. |
| | | Identify long-term trends in surface water quality to determine whether water quality is improving, deteriorating, or staying constant. | 3 | - Good recognition of the problem of presenting trend information for many metals because of the effects of changing laboratory procedures over the years. - The choice of scales for the y-axis in Figures 3-7 to 3-10 could be improved to get more out of the data. |
| | Groundwater Quality | Describe the current state of groundwater quality. | 1-2 | - The depth of discussion doesn't match the relevance of GW as a DW source in the more rural areas - Actual concentration data should be included rather than just mentioning the incidence of exceedences. Most of the water quality indicators presented in Table 3-1 seem to be related to surface water. Suggest addition of separate groundwater quality indicators specific to this region and to support discussion on groundwater quality. The indicators should be supported by rationales for selection as indicators, their significance and how they are related to landuse or other activities (e.g agriculture, spills, bad sewer connections, waste management activities, etc.), geology, water uses etc. in each major watershed. |

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| | | | | This will be useful for future groundwater quality monitoring programs. Once the indicators have been identified, a table summarizing the relevant water quality standards such as ODWS, PWQO, CCME etc., and concentrations for selected groundwater parameters should be produced to support the water quality discussion and to assist interpretation of the results. - Discussion on groundwater quality could also be supplemented by adverse water quality occurrences or events within the watershed. This would include MOE monitoring data for situations involving spills etc., if any. Also, monitoring data around landfills, junkyards etc. can also be used to supplement the water quality discussion. - Some water quality discussion based on municipal groundwater systems has been included in section 3.4. It will be useful to supplement the discussion with key well characteristics e.g. depths, aquifer types being utilized etc. and nature of surrounding landuses etc. |
| | | Identify long-term trends in groundwater quality to determine whether water quality is improving, deteriorating, or staying constant. | 0* | There appears to be an insufficient data record although you would expect the regional municipalities to have been monitoring their wells for a variety of indicators over the last several years. |
| | Raw Water Characterization for Drinking Water Intakes | Produce an assessment of the water quality at each drinking water intake. | 1 | - Same concerns as above. - Discussion should include coverage of incident observation and reporting by plant operators, e.g. taste and odour complaints, high turbidity, algal blooms. - Some sweeping statements are included regarding the lack of water quality concerns at both GW and SW based municipal systems. Such statements would appear to be premature. |
| | Data and Knowledge Gaps for Water Quality | Data Gaps and knowledge gaps regarding water quality should be recorded and described using template provided in Appendix 2. | 3 | Key gaps are identified and relate primarily to problems in obtaining the necessary data sets or in having / finding the time to organize and discuss them. Not sure why this was a problem since other SP Regions appeared to have been able to undertake this work. - Some data / knowledge gaps have been presented in section 1.6.4 and 3.6.2 regarding groundwater quality. However, specifics are missing and more details need to be added. Suggest including itemized data and knowledge gaps which prevent evaluation of the groundwater quality trends in the sub-watersheds. This should be in addition to the data not being available through Envirobase database and may included such things as lack of monitoring well, etc. The gaps should be prioritized and plans to address the gaps should be presented. - Critical areas that need to be monitored for groundwater quality in future should be clearly identified. - Lack of groundwater monitoring infrastructure for various aquifers in use or of importance around the region needs to be identified as gap. - Data needs for better aquifer characterization (flow patterns, geology etc.) also needs to be identified as gap and plans presented to address this gap. This information is necessary prior to commenting on any aspect of the groundwater quality, vulnerability and hydrogeology. |
| | Data and Knowledge Gaps for Water Quality | | | |
| 4.0 | Water Quantity | | | |
| | Water Use | Produce a map (WC Map 15) or maps of water takings (by point location). | 2-3 | Would be helpful to separate water takings by sector as well as source. A figure 4-1 titled “known water users” is attached with the report. However, it is not clear if this is only based on PTTW or also includes other water users information which was obtained by TRCA as indicated in the section 4.1.2. This needs to be clarified. If this figure is not showing PTTW then suggest preparing a figure showing all PTTW in the watershed in one map. It will be helpful if the map has separate legends for different types of PTTW e.g. surface water and groundwater takings, golf course water taking, quarry dewatering, industrial use, agriculture uses, etc . |
| | | Produce a map (WC Map 16) or maps of water use (by watershed). | 0 | Good discussion on wateruses. As per section 4.1.2, seems Rouge River watershed has been a focus of more studies (nature of studies not clear) as compared to other watersheds as it is considered to be representative of most TRCA watersheds. It will be helpful to clarify if any studies are in progress in other sub-watersheds. |
| | | Produce a written report summarizing the water takings in the study area. | 3 | Report includes a much more comprehensive discussion of water takings relative to baseflows (and relative risks) than most other reports. See Figure 4-5 . - Greater care should be taken in presentation and discussion of data to clarify whether information does or doesn't include lake- |

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|-----|--|--|-----------------|---|
| | | | | <p>based water takings, e.g. Table 4-1.</p> <ul style="list-style-type: none"> - In general more should be presented regarding lake-based municipal supplies and the fact that they are expected to serve more and more people and businesses in York Region including areas outside the TRC SPA and outside the SPR. - Should use consistent units - preferably m³/day or ML/d. <p>Water uses have been discussed in section 2.7 and 4.1. Groundwater use from private wells has been discussed in section 4.1.7. It will be helpful to support the discussion on private groundwater supplies with a figure showing locations of private wells (overburden and bedrock wells separately)</p> <ul style="list-style-type: none"> - Section 4.1.6 comments on communal groundwater supplies and seems some data is awaited from MOE . It will useful to clarify the nature of data that is available and that will be analyzed. |
| | Data and Knowledge Gaps for Water Use | <p>Data Gaps and knowledge gaps regarding water quantity (surface and groundwater) should be recorded and described using template provided in Appendix 2. The specific purpose of the data, in relation to source protection, should be described.</p> <p>Other details that might be included:</p> <ul style="list-style-type: none"> - Priority of the data or knowledge needs - Practicality - Plans to fill the data and knowledge gaps. | 4 | <ul style="list-style-type: none"> - Some data/knowledge gaps and plans to fulfill the gaps been presented. However, it will be worth itemizing the water quantity related data/knowledge gaps based on major-watershed/ground watershed atleast for areas that are considered critical. - TRCA region undertook studies to obtain information on the actual water takings for Rouge River watershed. Suggest adding recommendation for similar monitoring programs for other watersheds in cooperation with CA, municipality etc. if feasible. - Suggest adding a recommendation for volunteer monitoring network for water levels in representative wells in sub-watersheds in cooperation with CA, if feasible. |
| 5.0 | Description of Vulnerable Areas | | | |
| | Groundwater: WHPAs | Produce a map (WC Map 17) or maps that illustrate the well(s) and/or well field(s), including wellhead protection areas as defined by the municipal groundwater studies where they exist. | 4 | <ul style="list-style-type: none"> - WHPAs are delineated for all municipal wells (Figure 5-1), however, the map’s scale makes it difficult to get a sense of what landuses may be contained within the capture zones. - The discussion indicates that refinement of the delineations is ongoing. - Section 5.3 contains a helpful discussion of the types of land use activities that would need to be restricted and/or managed within the WHPAs per the MOE module. <p>Section 5.2. discusses wellhead areas in a cursory manner and identifies the various WHPAs on figure 5-1. Currently, the appended figure shows WHPAs on a very smaller scale and does not show the labels for various land uses such as roads, etc. Therefore, suggest improving the figure for clarity. The WHPAs for each well should be produced separately at large scale for clarity. The WHPAs should also be discussed identifying geological characteristics, landuses, ToT zones, etc.</p> <ul style="list-style-type: none"> - For municipal groundwater wells inclusion of key area and well characteristics e.g. type of aquifers, well depths, nature of overburden and depth etc. will be a useful addition. |
| | Surface Water: IPZs | Produce a written description of the service area. | 2 | <ul style="list-style-type: none"> - Service areas are generally described earlier in Chapter 2.0. - This would be an appropriate point to present information on the intake distance from shore and depth of water. - Statements inferring that these intakes have not been “historically impacted or impaired” are likely an over generalization and appear to argue against the need for further IPZ refinement and determination of threats and risks. The statements also don’t mesh well w/ the discussion of threats and pathways re. lake-based intakes in Chapter 6.0. |
| | | Produce a map (WC Map 18) or maps that show the surface intake locations, and the contributing area or watershed of the intake (where feasible). | 3-4 | The lake-based municipal intakes are shown on Figure 5-7 along w/ the generic 1km IPZ per the MOE module. |
| | Other Vulnerable Areas: Aquifer Vulnerability | Produce a map (WC Map 19) or maps that show the vulnerable aquifers that have been defined in the groundwater studies. | 2-3 | <p>Significant recharge and discharge areas are preliminarily mapped</p> <p>Aquifer vulnerability and recharge/discharge mapping is available (figs. 5.2, 5-3,5-4). Currently, the discussion on vulnerability is very cursory. Section 5.4 indicates that refined vulnerability mapping is being prepared based on an alternate methodology. The final mapping should be discussed in terms of threats, concerns, recharge/discharge characteristics, geological characteristics, etc.</p> <ul style="list-style-type: none"> - It will be worth producing an overburden thickness map to support aquifer vulnerability discussion. The discussion on various overburden/bedrock aquifers in use, depths etc. will also be useful information to support the vulnerability discussion. |

| | Section of Guidance Module | Output | Ranking (1 – 5) | Comments / Suggestions |
|-----|--|--|-----------------|---|
| | Potential Future Drinking Water Sources | Produce a map (WC Map 20) or maps that identify potential future drinking water sources. | 1 | Limited commentary regarding potential future GW supplies is provided in Chapter 7.0 . Municipality should be contacted for obtaining info on potential future drinking groundwater sources. If areas are identified, then there will be a need to discuss their characteristics such as population growth, availability of groundwater, types of aquifers that will be potentially used etc. Also, if communally or individually serviced settlement areas, if any, are not seen as candidates for groundwater communal/municipal servicing in the future due to the presence of municipal water supplies from other sources, then this should be clearly documented. |
| | Data and Knowledge Gaps for Vulnerable Areas | Data Gaps and knowledge gaps regarding vulnerable areas (surface and groundwater) should be recorded and described using template provided in Appendix 2. The specific purpose of the data, in relation to source protection, should be described. Other details that might be included: <ul style="list-style-type: none"> - Priority of the data or knowledge needs - Practicality - Plans to fill the data and knowledge gaps. | 3 | Key gaps are identified along w/ discussion of tentative plans for addressing them in cooperation w/ municipalities. Some data and knowledge gaps have been presented in section 5.6 and this section indicates that gaps will be addressed through provincially funded technical studies. However, clarifying the nature of studies/program in detail that will help to address each identified gap will be useful. |
| 6.0 | Existing Threats Inventories | | | |
| | Threats to Water Quality | Produce a written description of the drinking water threats (to quality and quantity) in the sources water protection region. | 1-2 | - Discussion of threats is generic at this stage. - The discussion of storm and CSO water quality and loading determinations is interesting and will be helpful down the road. - The TRCA study team has not gone as far as most in compiling and summarizing information from available sources. |
| | Data and Knowledge Gaps for Existing Drinking Water Threats Inventories | Data Gaps and knowledge gaps regarding threats inventories should be recorded and described using template provided in Appendix 2. The specific purpose of the data, in relation to source protection, should be described. Other details that might be included: <ul style="list-style-type: none"> - Priority of the data or knowledge needs - Practicality - Plans to fill the data and knowledge gaps. | 2 | Obvious gaps are acknowledged and the need for further analyses is recognized. No details are provided regarding priorities and responsibilities for the work. |
| 7.0 | Identified Issues | | | |
| | Inventorying Identified Issues and Concerns | Produce one-page checklists to catalogue each issue and concern. | 2 | The authors' conclusion that there are no DW 'issues' fitting the MOE definition appears questionable. No other WC report reviewed to date has come to this conclusion. - A fairly extensive list of 'concerns' is presented indicating the potential threat and the location. Descriptions of the concern are very brief. The observation is made that additional study is required to better assess and define the level of concern. - The only potential concern identified relative to lake-based supplies is tritium releases from the Pickering GS. |
| | | Produce a map (WC Map 21) or maps of the issues contained in the inventory of identified issues and concerns. | 1-2 | Figure 7-1 is a repeat of the map showing WHPAs. |
| | | Produce a written description of the relationship between the location of issues and vulnerable areas. | 0 | Per above, no 'issues' have been identified. |
| | | Produce a written summary of the concerns and, for each case, the source of concerns. | 2-3 | Included above. |