

STAFF REPORT

File No. SPC Report-09/11

Date: March 11, 2011

To: Source Protection Committee

From: Jennifer Stephens, Project Manager

Prepared by: Shan Mugalingam, Water Resources Engineer

RE: Review of IPZ-2 Delineations for the Peterborough Surface Water Drinking Water System Intake within the Trent River Watershed

The Source Protection Committee at the meeting held on Feb 14, 2011 accepted the staff recommendation outlined in the staff report #03/11- *"The results of the modified IPZ-2 delineations corresponding to the sixteen surface water drinking water systems completed by XCG Consultants Ltd., as presented in IPZ-2 Modifications for the Sixteen Surface Water Drinking Water Systems, December 2010, be accepted by the Trent Conservation Coalition Source Protection Committee for inclusion in the Updated Trent Assessment Report for the Kawartha-Haliburton, Otonabee-Peterborough, and Lower Trent Source Protection Areas, except for the Peterborough Surface Water Drinking Water System"* (SPC 2011-02-14-11).

As per the direction provided at this meeting, the TCC regional staff obtained the storm drain travel time calculation spreadsheets from the consultants and distributed them to the concerned SPC members, namely, Wayne Stiver, Robert Lake, Richard Straka, as well as the chair Jim Hunt for their review. It was noted that the travel time/retention within the Stormwater Pond was not accounted for in the calculation.

The select SPC members, upon completion of their review, were unanimous in their opinion that the consultants' conservative delineation of IPZ-2 for the Peterborough intake be accepted.

Staff Recommendation:

That the results of the IPZ-2 delineations corresponding to the Peterborough surface water drinking water system completed by XCG Consultants Ltd., as presented in ***IPZ-2 Modifications for the Sixteen Surface Water Drinking Water Systems***, December 2010, be accepted by the Trent Conservation Coalition Source Protection Committee for inclusion in the Updated Trent Assessment Report for the Otonabee-Peterborough Source Protection Areas.

Date: March 2, 2011 **XCG File No.: 1-2007-03-01**

To: Lucy Burke (CKL)

cc: Shan Mugalingam (TCC); Jennifer Stephens (TCC)

From: Janet Noyes (XCG)

Re: Issues Update for Norland

1. BACKGROUND

As described in Section 3.1 of XCG Consultants Ltd.'s (XCG) *Technical Memorandum #1 - City of Kawartha Lakes - Trent Conservation Coalition Source Protection Region - Issues Evaluation for Six Municipal Surface Water Sourced Drinking Water Systems*, dated July 31, 2010, aluminum was identified as a drinking water issue. This conclusion was based on the fact that there was no raw water data and an increasing trend of aluminum concentration in the treated water data, of which there were 12 data points.

Because of this lack of data, XCG recommended that raw and treated water sampling be conducted at the Norland water treatment facility and this additional data would be reviewed to reassess the parameter aluminum in reference to whether it should be considered an issue or not.

2. METHODOLOGY

Please refer to Section 2 of the previously mentioned report for the methodology applied for determination of a parameter being identified as a drinking water issue.

The City of Kawartha Lakes (CKL) has provided XCG with laboratory certificates from water samples collected from the Norland water treatment plant and analyzed for aluminum from April 2010 to January 2011. Of this provided data, there were seven (7) raw water samples and five (5) treated water samples analyzed for aluminum. The additional treated water samples were added to the existing treated water data that dates back to 2001. See Figure 1 for treated water aluminum.

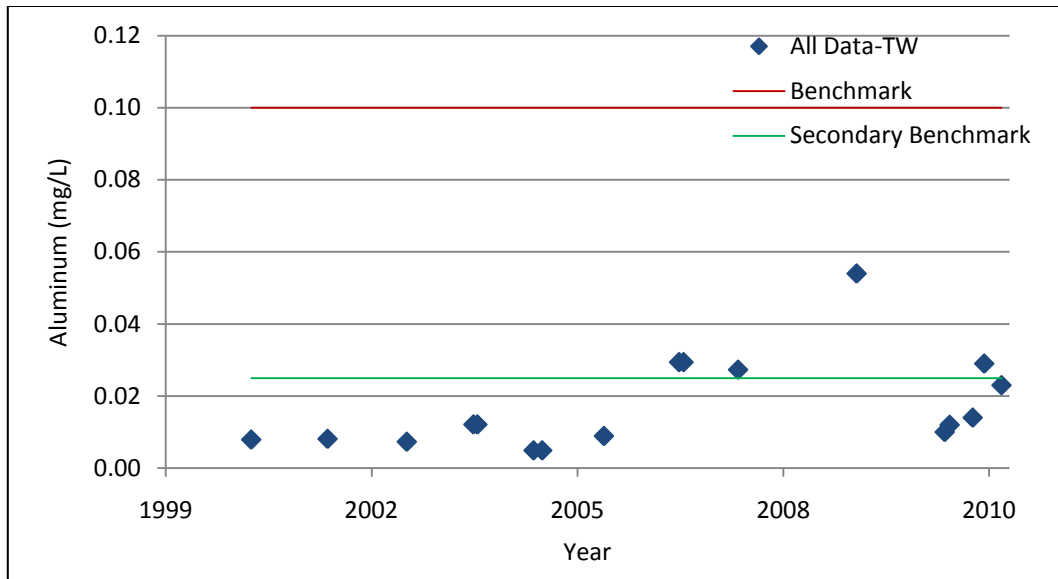


Figure 1 Aluminum Concentrations in Treated Water at Norland

For the new raw water data, all seven data points were considered. See Figure 2 for the raw water data.

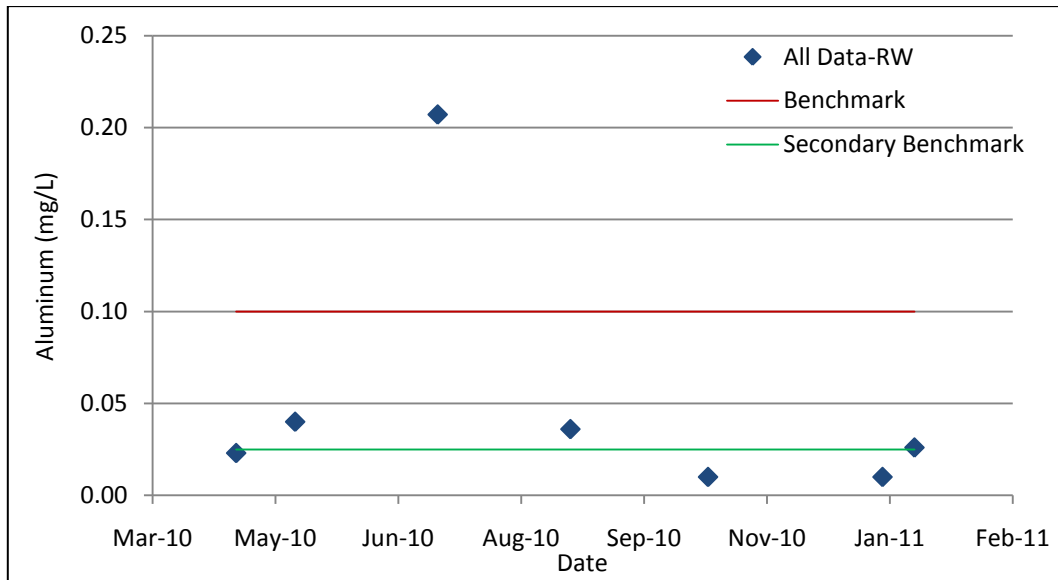


Figure 2 Aluminum Concentrations in Raw Water at Norland

3. RESULTS

With the incorporation of this more recent treated water data, there is no longer a statistically significant upward trend and all treated water samples are below the Operational Guideline of 100 µg/L (0.1 mg/L) of aluminum. Therefore the treated aluminum data does not indicate that aluminum is considered an issue.

Six of the seven raw water samples indicated aluminum concentrations between 0.01 and 0.04 mg/L. However, one sample indicated an aluminum concentration greater than 0.2 mg/L, which is twice the operational guideline.

With this single raw water exceedance, aluminum will be considered an issue, as there is not enough data to determine whether this one exceedance can be considered an outlier. There is a possibility that the exceedance could be attributed to a sampling error or laboratory error but at this time, we do not have enough data to determine whether this is an anomalous result or not.

To determine whether or not this exceedance is the result of naturally occurring phenomena or whether it is a result of anthropogenic influences, XCG reviewed additional information. A search of the provincial threats tables indicated that two specific land activities can result in drinking water threats with aluminum as a chemical of concern. These activities are:

- A stormwater facility designed to discharge stormwater to groundwater or surface water that is capable of discharging untreated stormwater from a stormwater retention pond; and
- An industrial facility that is required to report through Environment Canada's National Pollutant Release Inventory (NPRI) with a sewage system or sewage works that discharges industrial effluent to surface water.

Neither of these activities were noted upstream of the Norland intake. However, it was noted that there are a number of stormwater culverts discharging to the Gull River directly upstream of the intake but none of these are connected to a stormwater pond.

To determine if the increased aluminum concentrations measured on July 7, 2010, were a result of a runoff event, XCG reviewed the local rain gauge data as well as the flow records for the Gull River. The two closest climate stations with daily precipitation monitoring are the Haliburton 3 station (6163171) and the Muskoka AWOS station (6115524). There are no recorded precipitation events from July 1 to July 7 at either station; however there is a record of 25.8 mm of rain on July 8 at the Haliburton Station and 25.4 mm on July 9. For the Muskoka station, there is no recorded rainfall on July 8 and 21.1 mm on July 9. Because the daily measurements are based on a 24-hour measurement, there is a possibility that the recorded rainfall on July 8 in Haliburton could have partially occurred on July 7 but this cannot be confirmed.

XCG also reviewed the water levels in the Gull River at Norland (Water Survey of Canada Station 02HF002), which is located slightly upstream from the intake, between

Elliot Falls Dam and the Norland Dam. The measured water levels are shown below in Figure 3.

GULL RIVER AT NORLAND [ON] (02HF002)

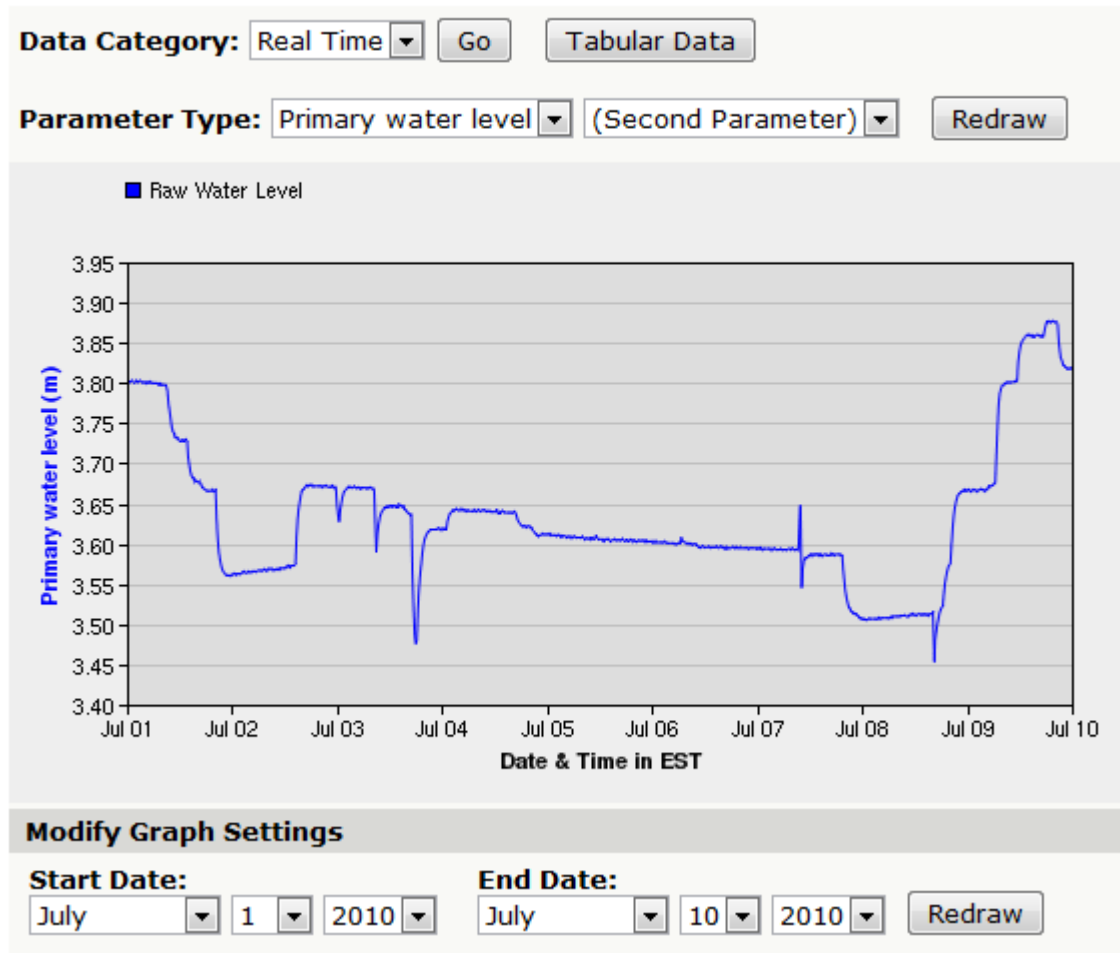


Figure 3 Water Levels in the Gull River at Norland - July 2010

There does not appear to be a significant increase in water level until sometime between July 8 and July 9. Therefore, the increase in aluminum measured in the raw water on July 7 cannot be directly attributed to a significant runoff event.

According to the on-line database for the Ministry of Northern Development, Mines and Forestry, there are only two documented aluminum deposits in Ontario (both of which are located in the Porcupine area north of Sudbury). Therefore no anthropogenic influences from aluminum mining in the area are indicated.



As there are no identified anthropogenic contributors for aluminum upstream of the Norland intake, the aluminum in the raw water is considered to be naturally occurring. Therefore no Issue Contributing Area (ICA) is required to be delineated.

Table 6 - Identified Drinking Water Issues, Norland and Table 27 - Summary of Identified Drinking Water Issues from the previous report have been updated and are included below for reference.

Table 6 Identified Drinking Water Issues, Norland

Issue	Type of Parameter	Anthropogenic / Naturally Occurring	Issue Contributing Area Defined	Potential Threats (Activities/Conditions) Linked
Aluminum	Operational	Naturally Occurring	N/A	N/A
Alkalinity	Operational	Naturally Occurring	N/A	N/A
Colour	Aesthetic	Naturally Occurring	N/A	N/A
Hardness	Operational	Naturally Occurring	N/A	N/A
Temperature	Aesthetic	Naturally Occurring	N/A	N/A

Table 17 Summary of Identified Drinking Water Issues

Site	Table 4 Parameters									
	Alkalinity	Aluminum	Colour	DOC	Hardness	Iron	Manganese	pH	Temperature	Turbidity
Norland	N	N	N		N				N	
Kinmount	N				N	N			N	N
Fenelon Falls				N	N				N	N
Lindsay		N	N	N	N		N		N	N
Southview Estates		N	N	N	N		N	N	N	N
Bobcaygeon			N	N	N			N	N	N

Note:

N – Naturally Occurring Source

A – Anthropogenic Source

STAFF REPORT

File No. SPC Report-10/11

Date: March 11, 2011

To: Source Protection Committee

From: Jennifer Stephens, Project Manager

Prepared by: Shan Mugalingam, Water Resources Engineer

RE: Issues Update for Norland Drinking Water Systems – Aluminum

In Section 3.1 of *Technical Memorandum #2 - City of Kawartha Lakes - Trent Conservation Coalition Source Protection Region - Issues Evaluation for Six Municipal Surface Water Sourced Drinking Water Systems*, prepared by XCG Consultants Ltd. (XCG) (July 31, 2010), aluminum was identified as a potential drinking water issue at the Norland Drinking Water System. XCG identified aluminum as a potential issue based on the increasing trend in aluminum concentrations in the treated water data (12 data points). There was no raw water data with which to complete an assessment.

Due to this lack of data, it was determined that raw and treated water sampling would be conducted at the Norland water treatment facility between April 2010 and January 2011. This data would then be reviewed to reassess whether aluminum should be considered an issue.

With the additional seven months of treated water data, there is no longer a statistically significant upward trend in aluminum concentrations. All treated water samples are below the Ontario Drinking Water Operational Guideline of 100 µg/L (0.1 mg/L) for aluminum. Therefore, concluded that aluminum was not an issue in the treated water.

Analysis of six of the seven raw water samples indicated aluminum concentrations ranged between 0.01 and 0.04 mg/L. In one sample, however, the aluminum concentration was greater than 0.2 mg/L, which is twice the operational guideline.

Since one of the seven water samples exceeded the operational guideline, and there is insufficient data to determine whether this one exceedance is an outlier, aluminum would be considered an issue based on the Technical Rules. As there are no identified anthropogenic contributors for aluminum upstream of the Norland intake, the aluminum in the raw water is considered to be naturally occurring.

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A memo prepared by XCG Consultants Ltd. outlining the results of the assessment of aluminum as a potential issue at the Norland Drinking Water System is attached to this report.

Staff Recommendation:

That the consultants' recommendation "that aluminum be considered as a naturally occurring issue at the Norland Surface Water Drinking Water System" be accepted by the Trent Conservation Coalition Source Protection Committee for inclusion in the Updated Trent Assessment Report (for the Kawartha-Haliburton Source Protection Area).



STAFF REPORT

Date: March 11, 2011
To: Source Protection Committee
From: Andrew Doiron, Source Protection Planning Coordinator
RE: Summary of Existing Policies & Programs to supplement Source Protection Plan Policy Development

Information regarding existing policies and programs collected through the municipal working groups has been consolidated into a single table. Each policy is being summarized in a spreadsheet format using a number of fields selected to clarify how policies relate to the requirements of the *Clean Water Act*. The completed table will provide a concise summary of all of the existing policies and programs that have been identified within each municipality in the TCC. This product will be most useful for the municipal working groups' second review of a set of policies for a given threat (i.e. when local considerations can be worked into policy wordings).

Existing policy information was documented by the working groups in a table format with "Description" and "Notes" fields for each policy. In many cases, a single policy may refer to one or more prescribed threats, or to an aspect of municipal governance that is otherwise related to source protection. As far as possible, each existing policy or program is being linked to prescribed drinking water threats and specific locations. Policies that do not have a specific effect on source protection planning, or that are duplicated in the table, are being flagged and removed from the final list.

Approximately 400 policy statements have been provided by the working groups and are being organized as described above. An excerpt of the table format is provided as an example of the finished product on the reverse of this page.

(See reverse for sample table & description of fields)

STAFF RECOMMENDATION

Accept this staff report for information.

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Sample Excerpt:

An excerpt of the table is shown below (from Township of Scugog results):

Upper & Single Tier	Lower Tier	Document & Version	Policy No.	Effect	Threat Activity		Other Activity	Existing /Future	Conditions	Area
					Prescribed Threat No.	Threat Description				
Durham, Regional Municipality of	Scugog, Township of	Scugog Draft OP 2009	2.6 b	Consider	2	Wastewater treatment	NA	Future	NA	Blackstock & Port Perry
			5.3.3 b	Restriction	NA	NA	Infilling (new lots by severance)	Future	Approval of servicing from MOE or Durham Reg. Health Dept.	Hamlet Designation
			5.3.3 c	Restriction	NA	NA	Plan of subdivision approval	Future	Hydrogeological assessment; Lot servicing plan; Soil sampling report; Grading plan	Hamlet Designation
			5.3.4	Consider	2	Wastewater treatment		Future	EA & Secondary Plan	Blackstock
			7.4	Restriction	10,11	Pesticides	Golf course development	Future	Integrated Pest Mgmt Program	

The fields in the above table have the following meanings:

Upper & Single Tier: Indicates the applicable upper or single tier municipality

Lower Tier: Indicates the applicable lower tier municipality (where applicable)

Document & Version: Indicates the source document for the existing policy

Policy No.: Indicates the policy number of the existing policy

Effect: Indicates the intent of the existing policy (i.e. prohibition or restriction of an activity or land use, a consideration, an “encouraged” but voluntary course of action, etc.)

Threat Activity: Indicates the prescribed threat to which the policy applies (where applicable) and its prescribed threat number.

Other Activity: If the policy does not specifically apply to a prescribed drinking water threat, this field describes the subject of the policy

Existing/Future: Indicates if the policy would apply to existing or future or drinking water threats (or “other activities” as applicable).

Conditions: Describes the conditions that relate to a restriction or consideration (i.e. if a policy has the effect of “restriction”, this field describes what is required prior to undertaking the activity).

Area: Describes the area(s) to which the policy applies (blanks cells indicate that the policy applies across the entire municipality).