

3

OAK RIDGES MORAINÉ WELLHEAD PROTECTION AREA MAPPING

The Planning and Economic Development Committee recommends the adoption of the recommendations contained in the following report, July 28, 2004, from the Commissioner of Planning and Development Services and Commissioner of Transportation and Works:

1. RECOMMENDATIONS

It is recommended that:

1. *Map 14 – Oak Ridges Moraine Wellhead Protection Areas*, attached to this report, be adopted and submitted to the Ministry of Municipal Affairs for further approval as part of Regional Amendment 41 – the Oak Ridges Moraine Conformity Amendment.
2. That *Figure 1 – Wellhead Protection Areas – Outside the Oak Ridges Moraine* be received for information purposes.

2. PURPOSE

The purpose of this report is to introduce and proceed with Council adoption of a new Regional Official Plan Schedule, *Map 14 – Oak Ridges Moraine Wellhead Protection Areas* required as part of adopted ROPA 41 - The Oak Ridges Moraine Conformity Amendment.

The second purpose of this report is to advise Committee and Council of on-going work on the delineation of Wellhead Protection Areas (WPAs) for the balance of York Region (outside of the Oak Ridges Moraine). For information purposes, these areas are shown on *Figure 1* attached.

3. BACKGROUND

In November 2001, the Ontario Ministry of the Environment made funding available for municipalities to undertake “Municipal Groundwater Studies”. With this support, York Region developed the tools necessary to improve overall management and protection of York Region’s groundwater resources. The primary tool developed under this program is a regional-scale numerical groundwater flow model that simulates groundwater flow conditions and includes the ability to identify the area which can potentially contribute water to Regional wells. After the Oak Ridges Moraine Conservation Plan (ORMCP) was introduced in 2002, York Region revised the scope of the municipal groundwater studies to include the delineation of Wellhead Protection Areas (WPAs) around all operating municipal wells.

The *Oak Ridges Moraine Conservation Act, 2001* was proclaimed in December 2001. Under the provisions of this Act, York Region (and the Regions of Peel and Durham) were required to bring their Official Plans into conformity with the Oak Ridges Moraine Conservation Plan (ORMCP) before April 22, 2003. York Region adopted Regional Official Plan Amendment 41 – The Oak Ridges Moraine Conformity Amendment on March 25, 2003.

The ORMCP was filed as an Ontario Regulation on April 22, 2002. Policies 28 and 42 of the ORMCP require both upper and lower tier municipalities to incorporate policies relating to municipal WPA and municipal WPA mapping into their Official Plans.

Work to delineate these WPAs was not complete in March 2003 when ROPA 41 was adopted by Regional Council, however the policies contained within the ORMCP to restrict uses in WPAs were included in the Amendment. Further, Policy 2.5.19 of the Amendment committed the Region to include the mapping when available.

With the later deadline for local municipal ORMCP conformity (October 22, 2003) the technical work was sufficiently completed to permit both the ORMCP policies and WPAs to be delineated and incorporated into the area municipal official plan amendments for ORMCP conformity.

Regional Official Plan Amendment 41 is currently before the Minister of Municipal Affairs and Housing for approval. It is anticipated that the approval when granted will be subject to several site specific transition application deferrals, and a deferral to permit the subsequent adoption and approval of a Map showing Wellhead Protection Areas on the Oak Ridges Moraine.

The adoption of Map 14, attached to this report, will permit the Minister to undertake a further approval of Regional Amendment 41. The delineation of wellhead protection Areas on Map 14 reflects the wellhead protection areas provided to the Towns of East Gwillimbury, Whitchurch-Stouffville, Aurora, Newmarket and the Township of King during the preparation of their Moraine conformity Amendments. There are no municipal production wells in the City of Vaughan and the Towns of Richmond Hill and Markham where the wellhead protection areas extend onto the Oak Ridges Moraine.

4. ANALYSIS AND OPTIONS

Source Protection, and more specifically Wellhead Protection, is the first, and most important, barrier in the multi-barrier approach to safe drinking water promoted in Justice O'Connor's *Report of the Walkerton Inquiry (Volume 2)*. Recommendations 1 to 17 of the O'Connor report refer directly to source protection.

The Oak Ridges Moraine Conservation Plan is the first Provincial document to require delineation of WPAs and inclusion of Wellhead Protection into Official Plans. Recent Provincial initiatives to establish a *Safe Drinking Water Act, 2002* and the ongoing

development of an appropriate process for development and implementation of Source Water Protection in Ontario suggest that further policy changes to ensure local protection of drinking water sources will be forthcoming.

4.1 Principles of Wellhead Protection

Wellhead protection refers to the process of identifying the area from which a well will potentially draw its water supply. This is also referred to as a capture zone. Establishing controls of either land use or management actions within this area can minimize the potential for contaminants to reach the well. Wellhead protection is a key component of York Region's Groundwater Management Strategy.

In order to delineate wellhead protection zones, numerical groundwater flow models are applied to delineate the capture zone of the well. Within the overall capture zone, further delineation identifies zones of decreasing risk to the well based on the estimated time-of travel for a contaminant to potentially reach the well. All work to delineate wellhead protection areas is conservative to increase the confidence that the wells are adequately protected.

From a policy side, the basic principle of wellhead protection is to establish more rigorous land use controls close to the wellhead and reduce the extent of controls further away from the wellhead. The estimated time for groundwater to travel to the wellhead from any point in the capture zone is a suitable way of applying a uniform level of wellhead protection that can provide adequate time to identify and respond to potential contaminants within the capture zones.

At this time, the majority of the effort to delineate the wellhead protection areas in York Region has involved achieving an improved understanding of the groundwater flow conditions through development of a robust three-dimensional numerical groundwater flow model.

Several consulting teams have been working on behalf of York Region since the spring of 2002 to develop the numerical model in York Region. This schedule allowed the Region to provide the updated WPAs on the ORM to the local municipalities in early 2004 and has permitted the same mapping to now be included in the Regional Official Plan.

4.2 Policy Framework for Wellhead Protection Areas on the ORM

The Oak Ridges Moraine Conservation Plan contains comprehensive policies directed at identifying, protecting and enhancing the hydrological resources of the Moraine.

The ORMCP defines wellhead protection areas as:

“the surface and subsurface area surrounding a water well or well field that supplies a public water system and through which contaminants are reasonable likely to move so as eventually to reach the water well or well field.”

Sections 28 and 42 of the ORMCP require that municipal official plans contain policies to establish wellhead protection areas around all existing and new wells for municipal

water services and prohibit certain land uses from locating within wellhead protection zones. Further, the policies require that municipalities, at a minimum, identify zones of contribution corresponding to the 0 to 2 year time of travel, the 2 to 10 year time of travel and the 10 to 25 year time of travel. Map 14 complies with this direction and in addition provides one more zone - the 0 to 150 day time of travel zone. While no policies are attached to this last zone, at a future date these sensitive areas may require policy additions to provide greater security from potential bacterial contamination close to the wellhead. At this time this zone has been included for information purposes.

Adopted Regional OPA 41 policies relating to wellhead protection areas generally repeat the wording contained in the ORMCP and do not apply more restrictive policies than those contained in the Plan. *Attachment 2* to this report contains the Wellhead Protection section of ROPA 41. Implementation of these policies is largely through the area municipal official plans and zoning by-laws and may restrict future uses from locating in these areas where the use requires materials or processes on the prohibited list. At this time however, there is no requirement for uses in these areas to cease.

Within the context of the ORMCP, the 0 to 150 day zone does not apply more restrictive policies than the 0-2 year zone, but does enable the Region to establish more restrictive policies as part of a potential subsequent amendment dealing with Wellhead Protection on a wider Regional basis as described in Section 4.4 following.

4.3 Delineated Wellhead Protection Areas On - Moraine

Map 14 – Oak Ridges Moraine Wellhead Protection Areas delineates the wellhead protection areas on the Oak Ridges Moraine. For the communities of Ballantrae, Stouffville, and King City, the municipal wells lie within the Oak Ridges Moraine Area and the entire capture zone out to 25 years of horizontal travel time are delineated. For other communities where the municipal well is not on the Moraine, only portions of the capture zones lie within the Oak Ridges Moraine Area.

4.4 Future Steps to Implement Wellhead Protection in York Region

The inclusion of Wellhead Protection Areas and Wellhead Protection Policy in the Regional Official Plan through Amendment 41, will ensure that York Region complies with the requirements of the ORMCP, however, the identification of wellhead protection areas on the Moraine is only one part of a larger overall project being undertaken by the Region in source water protection and by the Province through its work on Source Water Protection. A report dealing with the Province's recently released Draft *Drinking water Source Protection Act* was the subject of a report on the Transportation and Works Committee agenda of September 8, 2004.

The extent of the capture zones around York Region Municipal Wells off the Oak Ridges Moraine is shown in *Figure 1* attached to this report. Work is continuing to review the assumptions made in delineating these zones and to determine the appropriate policies for protection within these zones. York Region staff anticipates that further direction regarding requirements for wellhead protection will come from the Province in conjunction with proposed Drinking Water Source Protection legislation and is working

toward a schedule for planning and implementation in York Region that will ensure compliance with provincial initiatives and minimize the need for future revisions of the wellhead protection policies and mapping.

While Regional staff and consultants have made significant progress towards a comprehensive groundwater management strategy and are much farther advanced than other municipalities in the Province in understanding our complex groundwater systems and achieving a comprehensive groundwater management system, much work remains to implement Wellhead Protection on a wider scale within the Region, including:

- Review and finalization of Wellhead Protection Area Delineation reports for each municipal well field.
- Threat assessment and inventories of existing and past land uses within delineated wellhead protection areas.
- Development of communication and education tools to ensure public participation and support for wellhead protection initiatives.
- Development and refinement of draft policies for each municipal well field in York Region.
- Assessment of need for additional official plan policies and zoning by-law amendments for WPAs in conjunction with more comprehensive provincially-directed source water protection initiatives.
- Monitoring and management programs within delineated WPAs and review and updates of WPA based on results of monitoring and advances in science.

Reports on the status of these activities will continue to be delivered to Transportation and Works Committee and Council as part of regular updates on development of the Groundwater Management Strategy and as further details are available from the Province.

4.5 Relationship to Vision 2026

Wellhead protection is a key initiative to preserve and maintain the quality of groundwater resources used for municipal water supplies. This intent is consistent with the objectives of Vision 2026 toward ensuring clean water, securing a green York Region and promoting conservation.

5. FINANCIAL IMPLICATIONS

Programs outlined in the 10 year capital plan under the Water Resources Protection Section of the Transportation and Works Department include budget allocations for the development of wellhead protection areas and policy and implementation of wellhead protection. The 2004 10-year Capital Plan includes an allowance for programs contributing to wellhead protection of \$5,290,000. This amount addresses all wellhead areas in York Region and includes public consultation processes, development of standards and guidelines, programs for public education, data collection and management, and implementation. The implementation programs cannot be fully defined at this time, but include allowance for activities such as potential acquisition of key lands necessary to ensure protection of future water supplies.

The full costs of developing and implementing wellhead protection, including any costs associated with mitigation of contaminated areas within the context of future Provincial drinking water source protection initiatives are not known at this time. Regional staff will continue to ensure that budgets for programs that contribute to the overall wellhead protection initiative are included in the current annual budget and the 10 year capital plan.

6. LOCAL MUNICIPAL IMPACT

Wellhead Protection Areas on the Oak Ridges Moraine have been included in the ORMCP conformity amendments to official plans and zoning by-laws of area municipalities and are identical to those shown on Map 14.

As part of the Region's comprehensive Groundwater Management Strategy, Regional staff will co-operatively pursue the inclusion of wellhead protection areas off-Moraine in area municipal official plans and zoning by-laws. Local municipal staff will be consulted and will be part of this process.

7. CONCLUSIONS

The Oak Ridges Moraine Conservation Act, 2001 was proclaimed in December 2001 and required York Region to bring its Official Plan into conformity with the Oak Ridges Moraine Conservation Plan (ORMCP) before April 22, 2003. Policies 28 and 42 of the ORMCP require both upper and lower tier municipalities to incorporate policies relating to wellhead protection areas and WPA mapping into their Official Plans. *Attachment 1* contains the proposed ROPA 41 policies for Wellhead Protection

Map 14 – Oak Ridges Moraine Wellhead Protection Areas attached to this report, reflects wellhead protection areas to be approved in the area municipal plans of the Towns of East Gwillimbury, Whitchurch- Stouffville, Aurora, Newmarket and the Township of King through the Oak Ridges Moraine conformity Amendments. There are no municipal production wells in City of Vaughan and the Towns of Richmond Hill and Markham where the wellhead protection areas extend onto the Oak Ridges Moraine.

It is therefore recommended that Map 14 be endorsed for adoption by Regional Council as part of the Regional Official Plan Amendment 41 – The Oak Ridges Moraine Conformity Amendment. Once adopted, the Map will be submitted to the Minister of Municipal Affairs and Housing for further approval as part of Regional Official Plan Amendment 41.

Figure 1 to this report shows wellhead protection areas off-Moraine and is provided for information purposes only. Regional staff will continue to work to develop the appropriate wellhead protection strategy for York Region as a component of the

Groundwater Management Strategy and in accordance with emerging legislation. The form of implementation is still not clear, but the need for further amendments to official plans and zoning by-laws will be assessed following a development, consultation and approval process.

The Senior Management Group has reviewed this report.

(A copy of the attachments referred to in the foregoing is included with this report and is also on file in the Regional Clerk's office.)