

ONTARIO's WATER HAZARD

THE CUMULATIVE IMPACT
OF GOLF COURSES ON
OUR WATER RESOURCES



ecojustice

 EARTHROOTS

ONTARIO'S WATER HAZARD

The Cumulative Impact of Golf Courses on Our Water Resources

July 2008

By Josh Garfinkel and Josh Kohler (Earthroots) and
Dr. Anastasia Lintner and Hugh Wilkins (Ecojustice)

The authors wish to thank Rod Northey and Paul Hubley
for their assistance with this report.

Design and layout www.handsonpublications.com



TORONTO OFFICE

30 St. Patrick Street, Suite 900, Toronto, Ontario M5T 3A3
t: (416) 368-7533 | f: (416) 363-2746 | e: toronto@ecojustice.ca

VANCOUVER OFFICE

131 Water Street, Suite 214, Vancouver, BC V6B 4M3
Toll Free: 1-800-926-7744 | t: (604) 685-5618 | f: (604) 685-7813 | e: info@ecojustice.ca

OTTAWA ENVIRONMENTAL LAW CLINIC

University of Ottawa, Faculty of Law, 35 Copernicus Street
Office 107, Ottawa, Ontario K1N 6N5
t: (613) 562-5800 x 3382 | f: (613) 562-5319 | e: ottawa@ecojustice.ca



401 Richmond Street West, Suite 410 Toronto ON M5V 3A8
t: (416) 599-0152 f: (416) 340-2429 e: info@earthroots.ca
www.earthroots.org

Contents

Executive Summary	5
Introduction.....	7
Law and Policy.....	9
Case Study: Golf Courses on the Oak Ridges Moraine.....	13
(i) Incomplete Information on Groundwater Takings.....	16
(ii) Wells, Depth, and Corresponding Aquifers	17
(iii) Expired Permits and Permits Issued in Error	18
(iv) Missing Annual Reports	19
Case Study Findings	21
Conclusion.....	27
Recommendations	28
Notes	30

By analyzing the legal and policy framework, this report highlights serious inadequacies in how the province allocates water taking permits.



Executive Summary

Ontario is blessed with a rich array of freshwater in our bountiful lakes, rivers, streams and aquifers. However, this natural bounty is being strained by the ever-increasing demand for water from industry and municipalities.

While the provincial government has recently reaffirmed its commitment to protecting our freshwater resources by significantly reforming the province's water laws and policies, its efforts are not up to par. Implementation of the new legislation and policies has lagged behind schedule and remains flawed.

One of the most alarming gaps in Ontario's water laws is the current system for permitting water takings. The provincial government's Permit To Take Water (PTTW) program provides corporations and municipalities that use more than 50,000 litres of water a day with permits to extract and use vast amounts of water.

Using a case study of permits allocated to golf courses on the sensitive Oak Ridges Moraine, near Aurora, this report highlights flaws in the current PTTW system and demonstrates that it is an inadequate tool to ensure the long-term protection and sustainability of the province's water resources.

The Oak Ridges Moraine is the headwater for more than 65 river systems and contains aquifers that provide water for a quarter million Ontarians. Despite the immense importance of protecting this sensitive landform, the moraine area is also home to 41 golf courses – operations with an immense thirst for freshwater.

The report examines permits that were granted to nine golf courses in the Aurora/Newmarket area, and the findings are alarming. Although the cumulative impacts of water takings from these golf courses and other water users have not yet been sufficiently studied, the province

While the provincial government has recently reaffirmed its commitment to protecting our freshwater resources by significantly reforming the province's water laws and policies, its efforts are not up to par.



has allocated more than 3 billion litres of water to these golf courses each year – enough to supply all annual water needs for nearly 25,000 people, based on Canada’s hugely wasteful personal water use rate of 343 litres per day.

By analyzing the legal and policy framework, the report highlights serious inadequacies in how the province allocates water taking permits, including woefully inadequate reporting methods and regulatory lapses that allowed companies to continue operating with an expired permit for as long as 17 years without any known legal recourse.

Given the prevalence of golf courses and other water intensive operations throughout Ontario and the province’s inadequate permitting system and lax enforcement, it is essential that the government act immediately. Without a proper system for allocating water permits, competing demands from industry and Ontario’s sprawling communities will place further strain on our water resources, something that will be further exacerbated by anticipated changes in the amount of water available as a result of global warming.

Thus it is imperative that Ontario live up to its promise to ensure that use of the province’s watersheds becomes sustainable for future generations. In an effort to guide the way, the report concludes with a series of recommendations aimed at addressing these concerns.

It is our hope that the province heeds these warnings and avoids Ontario’s water hazard.



Introduction

In this report, Earthroots and Ecojustice demonstrate some of the key ways in which implementation of cumulative impact assessment of water takings has not lived up to the Ontario government's commitments. Focusing on the Oak Ridges Moraine area north of Toronto, our findings show that: (1) there is a high density of permitted takings within the vicinity of Aurora in York Region; (2) there has been an ongoing history of high water use, particularly during the summer months when there can be local low flow conditions; and (3) there has been an ongoing history of declining static water levels in the Yonge Street Aquifer dating back at least as far as 1997.

Any one of these facts would normally trigger a large-scale cumulative impact study for the area; the presence of all three indicates that such a study is not only justified, but imperative. Our investigation suggests that the Ministry of the Environment's only response appears to be increasing efforts to monitor takings. There has been no public disclosure of the Ministry of the Environment's plans for cumulative impact study, including, but not limited to, a detailed outline of how the data is being gathered and assessed, how often the data is collected, what industry standard statistical methods for data analysis are being used and what independent expert peer review is being incorporated.

The next section provides the regulatory framework background. Following the background, we introduce the regulatory framework specific to the Oak Ridges Moraine and describe the case study of various golf courses within the vicinity of a proposed new golf course development in York Region. We conclude the case study with a series of findings. Finally, we provide a summary and recommendations.

Our findings show that there has been an ongoing history of declining static water levels in the Yonge Street Aquifer dating back at least as far as 1997.



It is imperative that Ontario live up to its promise to ensure that use of the province's watersheds becomes sustainable for future generations.



Law and Policy

“Protecting water at its source is the first step in ensuring that every Ontarian has access to safe drinking water.”

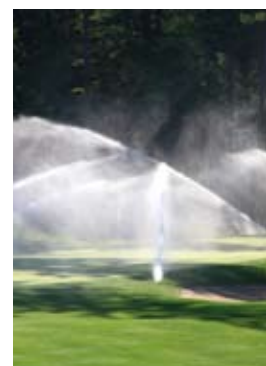
— Ontario Ministry of the Environment¹

The removal of large amounts of water in Ontario is governed by the *Ontario Water Resources Act* (OWRA) and the Water Taking and Transfer Regulation (O.Reg. 387/04). Section 34 of the OWRA requires anyone taking more than 50,000 litres of water in a day from a lake, stream, river or groundwater source to obtain a permit to take the water. The Ministry of the Environment sets limits on the total quantity of water each permit holder can take for the duration of the permit, for a maximum period of up to 10 years.²

Under Ontario’s water taking regulation, there are specified water availability issues for the Ministry of the Environment (MOE) to consider before issuing a Permit To Take Water (PTTW), including:

- the impact of the water taking on water balance, sustainable yield and existing specific uses of water (including municipal water systems, sewage disposal, agricultural and private domestic);
- water conditions (e.g. droughts);
- watershed current use (e.g. areas already identified as “high use”); and
- planned municipal use.

The Ministry of the Environment sets limits on the total quantity of water each permit holder can take for the duration of the permit.



The legal framework for permitting water takings³ in Ontario was significantly altered in 2005. In the words of the Ontario government:⁴

Ontario's water taking rules have been overhauled to better protect water supplies. Water taking rules have been strengthened to:

- *ensure tough reviews of applications for takings;*
- *ensure water conservation measures are implemented;*
- *refuse certain water takings in high use watersheds;*
- *increase local knowledge of proposed takings; and*
- *require annual monitoring and reporting of takings.*

Reviews of PTTW [Permit To Take Water] applications now have a greater emphasis on environmental considerations, such as the potential impact of proposed takings on natural water flows, habitats that depend on water flow and water levels, water availability and the interrelationship between groundwater and surface water. Permits for new or increased takings that remove water from the watershed, where that watershed already has a high level of use, will be refused.

The Director at the Ontario Ministry of the Environment who is responsible for making a decision on a PTTW application is required to consider specific matters including the need to protect the natural functions of the ecosystem.



Under this revised legal framework, the Director at the Ontario Ministry of the Environment who is responsible for making a decision on a PTTW application is required to consider specific matters.⁵ The matters to be considered are grouped in four categories, relating to:

- the need to protect the natural functions of the ecosystem;
- water availability;
- the use of water; and
- “other issues” (interests of those that have an interest in the water taking – if the director is aware of those interests and whatever else the director considers relevant).

Taking into account these issues is mandatory and applies both when the Director is considering an application or is considering whether to cancel, amend or impose conditions on a Permit To Take Water.⁶ However, this mandatory requirement is qualified: “to the extent that information is available to the Director, and to the extent that the matters are relevant.”⁷

A PTTW holder is not responsible for cumulative impacts on a scale broader than the local impacts of the proposed water taking, except when, after taking into account the impact on the natural ecosystem function, water availability, use of water and other relevant issues, the MOE deems that it is necessary.⁸ Consideration of these matters is discussed in the Ministry’s PTTW Manual,⁹ particularly Principle 4 which is directly applicable to water availability issues.¹⁰ In this regard, the manual indicates that the Ministry of the Environment may initiate a cumulative assessment at a watershed/aquifer scale which includes engagement with the water takers collectively, if the Ministry “believes that cumulative impacts need to be considered.”¹¹ Under Principle 4, a watershed/aquifer scale cumulative impact study is triggered:¹²

- if a surface water taking, Level II or III low water conditions has been declared in two of the previous five years;
- if a groundwater taking, if there is a pattern of significant decline in hydraulic head in the aquifer over the previous five years;

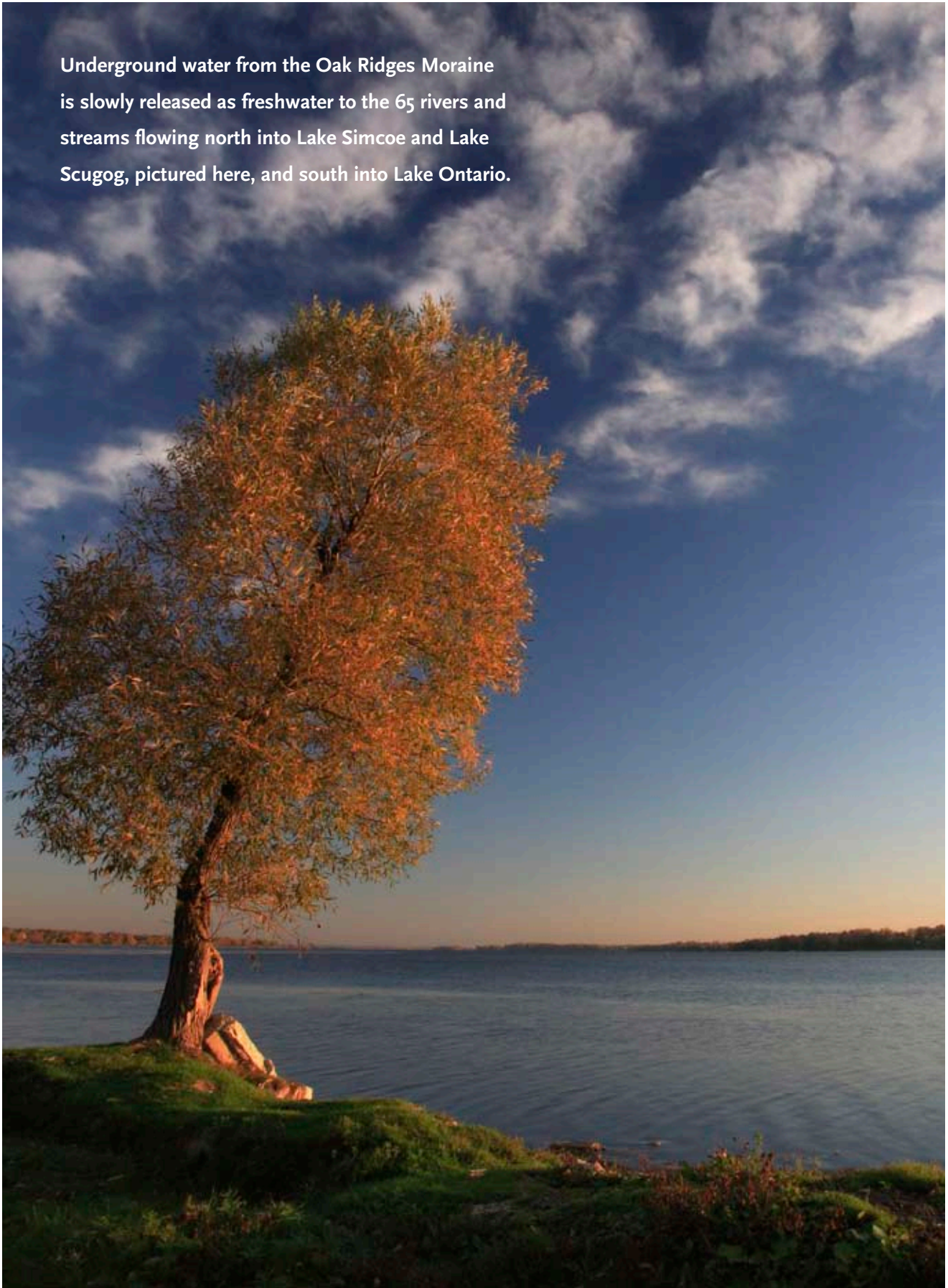
- if the watershed is classified as high or medium water use for summer low flow conditions; or
- if there is a high density of permitted takings within any given area.

This policy informs how decisions regarding PTTWs are made and are intended to provide a consistent approach for managing Ontario's waters.¹³

The next section illustrates some examples of the problems that have occurred on the ground as a result of the poor implementation on the Oak Ridges Moraine of the province's laws and policies concerning cumulative water taking impacts.



Underground water from the Oak Ridges Moraine is slowly released as freshwater to the 65 rivers and streams flowing north into Lake Simcoe and Lake Scugog, pictured here, and south into Lake Ontario.



Case Study: Golf Courses on the Oak Ridges Moraine

The Oak Ridges Moraine is one of the most distinct landform features of southern Ontario with its hills and river valleys spanning over 160 km from the Niagara Escarpment in the west to the headwaters of the Trent River in the east. Formed over 12,000 years ago by advancing and then retreating glaciers, the Moraine contains the headwaters of over 65 river systems, giving rise to a significant diversity of streams, woodlands, wetlands, kettle lakes, kettle bogs and significant flora and fauna. Importantly, it is one of the last remaining continuous green corridors in southern Ontario.

The Moraine's sands and gravel deposits absorb rain and snow melt. The resulting underground water is then stored in aquifers between layers of these deposits, filtered and slowly released as freshwater to the 65 rivers and streams flowing north into Lakes Simcoe and Scugog and south into Lake Ontario. Forming the drainage divide for Lake Simcoe and Lake Ontario, the Moraine serves as a groundwater recharge/discharge area for millions of Ontarians and a direct source of drinking water for over 250,000 people. As such, development on the Moraine impacts the health of the entire Greater Toronto Area.

Given the Moraine's importance, there is an overwhelming need for a comprehensive approach to preserve and protect the Moraine's water resources. The *Oak Ridges Moraine Conservation Act*, which was introduced and passed into law in 2001, protects the natural and water resource features on the Moraine. It preserves agricultural land, focuses development in only approved settlement areas, and prevents sensitive core and linkage areas from being diminished.

Development on the
Moraine impacts the
health of the entire
Greater Toronto Area.



Under the *Oak Ridges Moraine Conservation Act*, the Ontario government has promulgated the Oak Ridges Moraine Conservation Plan, which governs activities and development on the Moraine. The key objectives (section 4 of the Act) of the Oak Ridges Moraine Conservation Plan are to, among other things:

- protect the ecological and hydrological integrity of the Oak Ridges Moraine;
- ensure that only land and resource uses that maintain, improve or restore the ecological and hydrological functions of the Moraine are permitted;
- maintain, improve or restore all the elements that contribute to the ecological and hydrological functions of the Moraine, including the quality and quantity of its water and its other resources;
- ensure that the Moraine is maintained as a continuous natural landform and environment for the benefit of present and future generations; and
- provide for land and resource uses and development that are sustainable.

Provisions of the Act and the Plan have failed to effectively address the cumulative impacts that development projects, and in particular golf courses, are having on the integrity of the area's water supply.



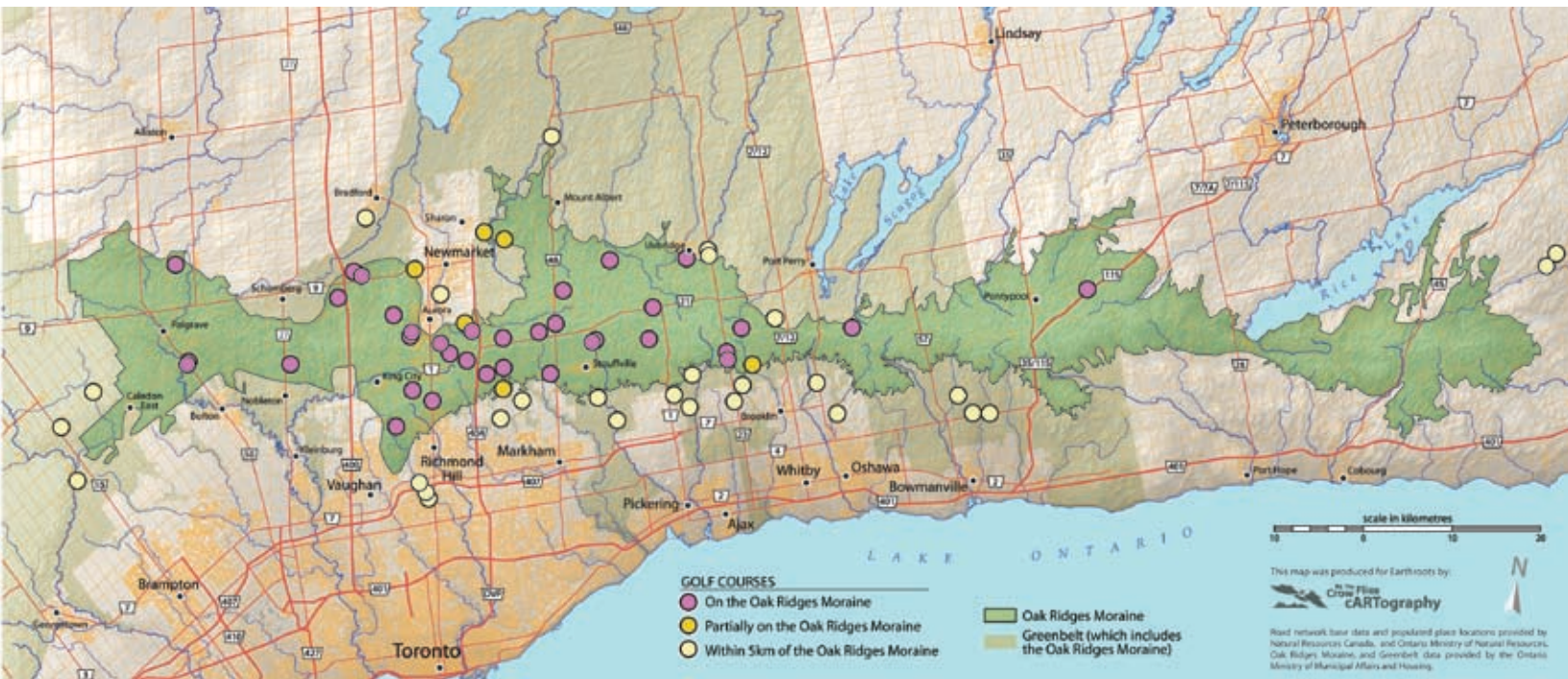
A key part of these objectives is to protect the hydrological integrity of the Oak Ridges Moraine. However, as outlined in this report, the provisions of the Act and the Plan have failed to effectively address the cumulative impacts that development projects, and in particular golf courses, are having on the integrity of the area's water supply. In fact, the PTTW system in Ontario has remained a complaints-based system. In a complaints-based system, action happens only after some negative impact has been registered. In this case, a PTTW holder is only required to restore a complainant's supply, after the complainant demonstrates the negative impact on his/her water supply. Generally, such a complaint will require a significant event, such as a dry well, to require a response from the PTTW holder. This is expressed as a condition for all PTTWs, which includes the following:

If the taking of water is observed to cause any negative impact to other water supplies obtained from any adequate sources that were in use prior to initial issuance of a Permit for this water taking, the Permit Holder shall take such action necessary to make available to those affected, a supply of water equivalent in quantity and quality to their normal takings, or shall compensate such persons for their reasonable costs of so doing, or shall reduce the rate and amount of taking to prevent or alleviate the observed negative impact. Pending permanent restoration of the affected supplies, the Permit Holder shall provide, to those affected, temporary water supplies adequate to meet their normal requirements, or shall compensate such persons for their reasonable costs of doing so. If permanent interference is caused by the water taking, the Permit Holder shall restore the water supplies of those permanently affected.

As such, preventative action for a general lowering of the aquifer, associated with the cumulative impact of multiple takings, will not meet this archaic test to trigger a need to restore the integrity of the groundwater system. A more precautionary approach, in keeping with the principles articulated in the PTTW Manual, is warranted.

Thirty-eight golf courses have been identified as being on or partially on the Oak Ridges Moraine; when we examine golf courses on or within 5 km of the Oak Ridges Moraine, this number jumps to 69 (see map on page 15). Golf courses draw significant amounts of water from local aquifers and are often not sustainable water users. This report examines nine approved PTTWs and one

proposed PTTW for golf courses in the Aurora area as a case study to exemplify what is being done to address the cumulative impact of water takings on the Oak Ridges Moraine. These golf courses include: Beacon Hall Golf Club, Bloomington Downs Golf Club, Diamondback Golf Club, Emerald Hills Golf & Country Club, Magna Golf Club, Maples of Ballantrae Golf Course, Rolling Hills Golf Club, Station Creek Golf Club, Westview Golf Club, and the proposed Westhill golf course and condominium development.¹⁴ The cumulative impacts of these golf courses on the area's water balance have not been sufficiently studied. Currently approved maximum groundwater takings for the nine existing golf course PTTWs (excluding the proposed Westhill development) amount to over 3.1 billion litres annually (see Table 1 on page 16). The Town of



Aurora consumes 5.4 billion litres annually.¹⁵ The Town of Aurora draws water from the Yonge Street Aquifer, which is also a water source for neighbouring communities of the Town of Newmarket and the Town of East Gwillimbury.¹⁶

The nine PTTWs examined in this study all fall within a tight proximity of one another in York Region. These golf courses do not represent a complete list of large takers of groundwater. All of the nine existing PTTW holders are drawing on the same water resources that their respective municipalities are drawing upon, indicating a significantly high density of permitted takings on the Yonge Street Aquifer. Located in the East Holland watershed, the Yonge Street Aquifer acts as a source of water for the towns of Aurora, Newmarket, and East-Gwillimbury. The Yonge Street Aquifer is actually a complex made up of numerous layers of glacial till which separate three different aquifers found at different depths within the ground: the Oak Ridges Aquifer, the Thorncliffe Aquifer, and the Scarborough Aquifer. The materials separating these individual aquifers are called 'aquitards,' meaning that they do not allow water to readily flow between respective aquifers. While the Yonge Street Aquifer is often discussed as a single entity, it is important to note that it is in fact made up of smaller, separate aquifers with their own respective properties, sustainable yields, and depths within the ground.

After examining existing and past PTTWs for these golf courses and the accompanying paper trail of correspondence between the MOE and PTTW holders, a picture of incomplete information, non-transparency, and inconsistent implementation of Ontario’s laws and policies protecting the Moraine on both the part of the MOE and PTTW holders emerges. More specifically, it was found that there is a high density of permitted takings on the sensitive Yonge Street Aquifer, that there has been a pattern of declining static water levels over multiple years, and that there is evidence of high water use, particularly during the summer months when there may be local low flow conditions. While these facts would normally be more than enough justification to trigger a large-scale cumulative impact study of water takings on the Yonge Street Aquifer under Principle 4 of the PTTW Manual, the MOE’s only response appears to be increasing efforts to monitor takings.

(i) Incomplete Information on Groundwater Takings

The PTTWs and supporting documentation examined for the nine golf courses studied leave many questions unanswered regarding the depth of respective production wells and/or the specific aquifers being drawn upon. In multiple cases, PTTWs were allowed to expire and the conditions, manner, and amounts of water being taken were altered without the knowledge or notice of the MOE for a number of years. In addition, all golf courses in question are required by the MOE to submit annual reports regarding water takings and their impact on the local environment. While most of the golf courses do not appear to be submitting this information to the MOE, permits have still been regularly renewed at or above their previous allowed takings. In the cases where such reports are present, there are issues of incomplete data due to the malfunctioning of technical equipment and/or various failures on the part of maintenance

Table 1: Summary of Permitted Water Takings for ORM Case Study

Golf course	Water source	Number and type	Expiry date (current permit)	Maximum permitted annual taking from ground water (litres)
Beacon Hall Golf Club	ground water	2 wells	31-Dec-12	276,062,560
Bloomington Downs Golf Course	ground water + surface water	2 wells, 1 irrigation pond	31-Mar-08	128,800,000
Diamondback Golf Club	ground water	2 wells	31-Dec-12	301,568,800
Emerald Hills Golf & Country Club	ground water	3 wells	31-Mar-10	400,465,000
Magna Golf Club	ground water + surface water	1 well, 1 irrigation pond	31-Dec-12	299,358,720
Maples of Ballantrae Golf Course	ground water	2 wells, 1 irrigation pond	31-Mar-11	103,680,000
Rolling Hills Golf Club	ground water	2 wells (irrigation) and 2 wells (drinking water)	31-Dec-11	500,400,000
Station Creek Golf Club	ground water	4 wells, 1 irrigation pond	31-Dec-11	638,128,800
Westview Golf Club Ltd.	ground water	1 well + 1 supplemental well	31-Mar-10	469,327,680
Westhill (proposed)	ground water	1 well		252,288,000 ^a
TOTAL (excluding Westhill)				3,117,791,560

^a Proposed water taking, not included in total permitted volume.

staff. All of these issues point to the fact that the information flowing between the MOE and PTTW holders on the Yonge Street Aquifer is missing key elements necessary for a complete understanding of groundwater takings in the area.

(ii) Wells, Depth, and Corresponding Aquifers

Reviewing the information on water taking that the Ministry has on file, the PTTW and accompanying documentation for Station Creek Golf Club provides an example of the types of incomplete information that are used to obtain Ministry approval to take our water.¹⁷ The PTTW¹⁸ lists four wells on the club's property, and the accompanying documentation lists their depth: the North Irrigation Well (76.2 m), the South Irrigation Well (72 m), the Clubhouse Well (21.6 m), and the Clubhouse Dewatering Well (12.5 m).¹⁹ It also states that the irrigation wells draw on a 'deeper aquifer,' while the clubhouse well draws on an 'intermediate aquifer,' and the Clubhouse Dewatering Well draws on a 'shallow aquifer.'²⁰ Herein lies a very important issue: the PTTW holder does not specify which aquifers are being drawn upon by name. Because the depths of the wells are listed, it is possible with some research to find out which wells are drawing on respective aquifers within the Yonge Street Aquifer; however, as it is set out, the documentation lacks transparency, which could lead to significant cumulative impacts if the decision maker does not undertake the additional research to determine the implications of this set up of wells. And, none of this information is on the face of the PTTW (the only item that an individual can access easily, through the on-line *Environmental Bill of Rights* Registry).

Several other PTTW holders do not even include the specific depth of their wells in the documentation held by the Ministry. Westview Golf Club has one production well and one clubhouse well. The production well draws on a 'mid-level aquifer,' while there is no mention of the depth or the level of the aquifer being drawn upon by the clubhouse well.²¹ Beacon Hall Golf Club's two irrigation wells respectively draw on a 'deep aquifer' and a 'shallow aquifer.'²² Maples of Balantrae Golf Club has a 'deep irrigation well,' and a 'shallow irrigation well.'²³

Documentation from Rolling Hills Golf Club states that the club's two irrigation wells target an aquifer at 25 to 30 metres in depth,²⁴ while the two clubhouse wells target an aquifer at 14 to 15 metres in depth.²⁵ Curiously, separate documentation from the MOE states that Rolling Hill's irrigation wells and the north clubhouse well all derive their water from a 'shallower aquifer,' while the south clubhouse well draws on a 'deeper aquifer.'²⁶ A number of issues are present here. We are seeing wells with no description of depth (e.g. the Westview clubhouse well), and also discrepancies between the depths from which the clubs believe their wells are drawing water and the depths from which the MOE believes the clubs are drawing water (e.g. Rolling Hills).

To further complicate matters, many PTTW holders do not indicate the specific depth of their wells. The issue here is that a 'deep aquifer' for Magna Golf Club may be 128.3 metres deep,²⁷ a 'deep aquifer' for Station Creek may be 70 metres deep,²⁸ while a 'deep aquifer' for Rolling Hills may be 30 metres deep.²⁹ A shallow aquifer for one course is a deep aquifer for another; these terms become meaningless and confuse the realities of who is taking what and from where. Not only should the specific depth of wells be listed in PTTW applications and all accompanying documentation, the actual name and approximate range of depth for

Several PTTW holders do not even include the specific depth of their wells in the documentation held by the Ministry.



the aquifers that are being drawn from should also be presented (e.g. Thorncliffe Aquifer). Without this information, it is essentially impossible for the MOE to have a clear idea of the cumulative takings from the separate and individual aquifers within the Yonge Street Aquifer, and how these aquifers are being impacted.

Based upon the missing data, inherent discrepancies, and confusing use of non-specific terms like 'deep aquifer,' it would appear that the MOE is not able to track which aquifers individual golf clubs are taking groundwater from. As the aquifers within the Yonge Street Aquifer are not all interconnected, this information is integral to monitoring groundwater takings, and to measuring the cumulative impacts of these takings.

(iii) Expired Permits and Permits Issued in Error

Rolling Hills, Bloomington Downs, Station Creek, and Beacon Hill golf clubs have all had issues with expired permits, pointing to a large degree of neglect both by PTTW holders and the MOE itself.

Bloomington Downs Golf Course allowed its PTTW to expire on December 31, 2000, and did not file an application for renewal until April 4, 2001. Curiously, the MOE initially did not seem to notice that the initial permit had expired, and renewed the permit. On June 9, 2003 this permit was revoked as it was noted in a 'records review' that the permit had expired. As expired permits cannot be renewed, the MOE immediately issued a new permit under a new number. Rather than reprimanding or enforcing some sort of consequence for Bloomington Downs for allowing its permit to expire, the MOE simply apologized for its own administrative neglect and immediately issued the new permit.³⁰

Similarly, Beacon Hill Golf Club allowed its PTTW to expire on March 31, 1997, and later in 1999 attempted to renew its permit. The MOE issued a strongly worded letter mentioning a rejection of a temporary permit to conduct pumping tests based upon concerns of water shortages.³¹ Despite this, Beacon Hill was allowed to have the conditions of its permit altered and began drawing groundwater from a deeper aquifer less than a year later.³²

Even more disturbing are the cases of the Rolling Hills and Station Creek golf clubs. Rolling Hills held a PTTW that was valid between 1970 and 1990 for the taking of surface water. Only in 1999 – nine years after it had expired – did the MOE require that this permit be renewed, at which point it was noticed that water takings had switched from surface taking to drawing groundwater from deep aquifers using production wells. The date of the switch is still unclear.³³ Similarly, Station Creek allowed a PTTW granted in 1972 to expire in 1982, and continued to operate without a valid permit for 17 years. In the time from when the initial permit was granted and 1999, the nature of water takings switched from surface and groundwater takings to exclusively using groundwater for irrigation.³⁴

Even more disturbing, Station Creek built a new irrigation system, adding two new wells and a new irrigation reservoir, and subsequently filed an application for a new PTTW in March 2003 to reflect these changes. After hearing no response from the MOE regarding its application, Station Creek filed a second renewal application on March 26, 2007, four years later.³⁵ Station Creek was operating a new irrigation system without a permit for a period of four years, something of which the MOE had knowledge but did not respond to until a second PTTW application was filed and granted.

Rather than reprimanding or enforcing some sort of consequence for Bloomington Downs for allowing its permit to expire, the MOE simply apologized for its own administrative neglect and immediately issued the new permit.

Another interesting issue is presented by the Westhill (Lebovic) Enterprises Ltd.'s PTTW, which was issued after a December 6, 2006 application. This PTTW was revoked on August 7, 2007 after it was brought to the MOE's attention that the permit had been issued without a required Environmental Assessment (EA).³⁶ Considering that this development has been the source of much controversy due to its location in a sensitive area protected by the *Oak Ridges Moraine Conservation Act*, issuing a permit without an Environmental Assessment is an oversight on the part of the MOE. The fact that no one appeared to notice that this most basic requirement had not yet been met raises serious questions about common practice at the Ministry. It would appear that all a golf course has to do to obtain a PTTW is to apply, and that the MOE is neglecting to screen for even the most basic supporting documentation such as EAs prior to the issuance of a PTTW.

Most of these regulatory lapses occurred prior to the 2005 changes in legislation regarding water takings and accompanying promises to better monitor and enforce this legislation by the Ontario government. However, based on the more recent cases with Station Creek's and Lebovic's applications, it would appear that the MOE has not improved its track record by ensuring that permits are valid and reflective of actual groundwater takings. Not only does it appear that the MOE is *not* ensuring that PTTWs for all water takers are valid and reflective of takings, it also seems that, in practice, there are no serious repercussions or consequences for allowing a permit to expire, for taking water without a valid permit, or for changing the amounts or sources of water takings.

In practice, there are no serious repercussions or consequences for allowing a permit to expire, for taking water without a valid permit, or for changing the amounts or sources of water takings.

(iv) Missing Annual Reports

As all of these golf courses are drawing on the sensitive, protected Yonge Street Aquifer, the MOE requires golf courses to submit annual reports outlining the local environmental impacts of groundwater takings and course maintenance. While there is a fundamental issue in that requiring a PTTW holder to do self-monitoring and reporting may lead to the holder downplaying or obscuring actual negative environmental impacts, this fact becomes less of an issue as most golf clubs are not bothering to complete or submit such reports to the MOE at all.

Files found through Freedom of Information requests yielded annual reports for Bloomington Downs for the years of 2001, 2002, 2003; a 2001 annual report for Diamondback; a 2004 annual report for Magna; and a 2001 monitoring report for Beacon Hall. Other clubs have studies and other reports accompanying applications for renewals and changes to PTTWs, but these do not clearly fit into the category of the required annual reporting of actual amounts taken daily, and the impacts of these takings. In addition to a number of years being absent from the files for the aforementioned four clubs that had some annual reports, the files for the other five holders of current PTTWs had no mention of annual reports. It would seem that the MOE is willing to issue PTTWs without these required reports.

Curiously, among the annual reports that were submitted, there were a number of cases of technical malfunction of monitoring equipment and/or various failures on the part of staff responsible for monitoring, such that significant quantities of data were corrupted or not collected. For example, in all three annual reports (2001, 2002, 2003) for Bloomington Downs, there were issues with data collection. In 2001, a data logger was removed from a compost well used for monitoring between April 27 and June 8 to service the well, and data is missing from the larger irrigation well between August 16 and September 4 due to 'logger lockup'.³⁷ In 2002, a sensor failed in the larger irrigation well and was replaced with a sensor from the



compost well (meaning that as of May 15 there was no data from the compost well). Other issues included failed batteries, incorrect programming of a data logger, and devices no longer functioning as their memory banks had been left full, resulting in missing data from two other monitoring wells.³⁸ In 2003, there was again an issue with the compost well regarding a drifting sensor resulting in missing data between May 26 and July 22, and a second issue with incorrect programming for a monitoring well which resulted in missing data between September 9 and November 13.³⁹

Between absent annual reports and missing or corrupted data within submitted annual reports, it would appear that the information being passed from PTTW holders to the MOE regarding local groundwater conditions and environmental impacts of groundwater takings is incomplete at best.



While there is a fundamental issue in that requiring a PTTW holder to do self-monitoring and reporting may lead to the holder downplaying or obscuring actual negative environmental impacts, this fact becomes less of an issue as most golf clubs are not bothering to complete or submit such reports to the MOE at all.

Case Study Findings

Despite regulatory changes to ensure comprehensive, cumulative assessments of applications for groundwater takings and refusal of certain takings on high use watersheds like the Yonge Street Aquifer, implementation of the regulatory regime has not been “up to par.”

There are a number of issues regarding the information that is being shared between the MOE and PTTW holders. Uncertainties surrounding the depth of wells and regarding which aquifers they draw upon indicate that the MOE does not have a complete understanding of where golf clubs are pumping their groundwater from. This limits the Ministry’s ability to monitor and evaluate what is being taken out of individual aquifers within the Yonge Street Aquifer, how these aquifers are recovering from takings, and ultimately what their sustainable yields are. Information regarding depth and which aquifers a club is pumping from should be central to the consideration of issuing new or renewal PTTWs to ensure that individual aquifers within the Yonge Street Aquifer are not being over-taxed.

Cases of expired permits, and permits that were issued and then revoked due to ministerial errors indicate that the MOE is not ensuring that PTTWs are valid and reflective of actual takings. Furthermore, it would appear that in issuing permits, key pieces of information such as annual monitoring reports, environmental assessments, and even something as simple as the date of expiry on a renewal request are not being examined by the MOE prior to issuing PTTWs.

It should not be surprising that accompanying this high density of groundwater takings are ongoing issues surrounding water shortages. Dating back to 1998, the file we examined regarding Magna Golf Club included a letter from the York Region Transportation and Works Department regarding the renewal of Magna’s PTTW. This letter indicates a history of water shortages dating back at least as far as 1997, when the Region was forced to implement lawn-watering restrictions in Aurora and Newmarket due to significant drawdown of municipal

Key pieces of information such as annual monitoring reports, environmental assessments, and even something as simple as the date of expiry on a renewal request are not being examined by the MOE prior to issuing PTTWs.



water supply wells during peak usage periods. The letter also noted the expectation of similar measures being necessary in 1998, as well as noting plans to supplement groundwater supplies with water from Lake Ontario by 2001.⁴⁰

Aurora began supplementing its municipal groundwater takings with Lake Ontario water in 2001, and is currently pulling approximately 1.3 billion litres from Lake Ontario per year.⁴¹ Newmarket has also recently begun supplementing municipal groundwater takings with water from Lake Ontario; information regarding their takings will be available later this year. Rather than transferring water from Lake Ontario, municipal water supplies should be locally sustainable. Continued enhancement of water supply from surface water sources is not a desired outcome.

Despite the relatively new practice of supplementing municipal groundwater takings with water from Lake Ontario, there are still issues regarding static declines in groundwater levels in the area. Bloomington Golf Club's annual monitoring reports from 2001, 2002, and 2003 all cite cumulative seasonal declining static water levels, ranging from 0.25 to 0.5 metres.⁴² The MOE noticed similar declines on a larger scale, dating back to 2003. In a June 23, 2003 renewal permit for Beacon Hall Golf Club the MOE states that:

Our preliminary assessment of available technical information indicates incomplete understanding of the sustainable yield of the groundwater resource to support all the current demands within the Aurora-Newmarket area. The historic decline in water levels in the Yonge Street Aquifer and interference complaints in the community of Vandorf indicates a potential over-draft that may be due to cumulative effects of integrated groundwater takings.⁴³



These uncertainties surrounding sustainable yield and ongoing declining water levels in the Yonge Street Aquifer prompted the MOE to hold a meeting on May 15, 2003 including MOE staff, affected golf courses,⁴⁴ and the Regional Municipality of York. Increased MOE monitoring efforts that had been implemented over the preceding two years revealed the fact that since the commencement of monitoring, static water levels were declining at an approximate rate of 0.25 metres per year at a number of locations. The meeting was held to discuss a voluntary groundwater use reduction program for the 2003 irrigation season. Specifically, the Region of York planned to implement an ‘Outdoor Water Use Ban’ if and when municipal groundwater reservoirs could not be held at 65 per cent of capacity. Accompanying this measure, affected golf courses agreed that a voluntary 10 per cent reduction in takings from production wells should accompany the public outdoor water use ban.⁴⁵

Clearly, ranging from at least 1997 to 2003 the Aurora-Newmarket area had serious issues with declining static water levels, particularly during seasonal high usage periods. There is no evidence to indicate that these trends have changed since 2003; rather, with growing populations in both Aurora and Newmarket, and even with the same number of PTTW holders with allowed takings either matching or exceeding historic levels, it can be reasonably assumed that past trends have continued.

Despite aforementioned commitments from the provincial government to ensure water conservation measures, and to refuse groundwater takings in high use watersheds, it would seem that business as usual water takings are continuing in the Aurora-Newmarket area. In the files on PTTWs there is little mention of water conservation other than the May 15, 2003 MOE meeting. It should be noted that the *voluntary* 10 per cent reduction program discussed at this meeting does not represent ‘ensuring water conservation measures’; rather, it involves suggesting them. Furthermore, as this meeting took place prior to the provincial promise to ensure conservation, it follows that in the Aurora-Newmarket area no new measures have been pursued to ensure conservation among the PTTW holders examined.

In our examination of files obtained through Freedom of Information requests for the nine PTTW holders included in this study, there is no evidence suggesting that the MOE is pursuing the sort of cumulative impact study that would normally be triggered by the aforementioned conditions. It would appear that the Ministry is increasing efforts to produce data from monitoring; PTTW renewals have been accompanied with conditions requiring ‘more stringent monitoring,’ and it is stated that “the monitoring conditions are designed as a data gathering process to assess the cumulative effects of water takings on the long-term sustainable yield of the regional aquifer(s).”⁴⁶

This represents an initial step being taken by the MOE in the direction of collecting the sort of data that would be necessary to undertake a cumulative impact study. However, no mention of a further synthesis or use of monitoring data has been made by the MOE in the files examined since 2003. The only statement made by the MOE regarding its knowledge of the cumulative impacts of groundwater takings in the Aurora-Newmarket area was made in 2003:

Our preliminary assessment of available technical information indicates incomplete understanding of the sustainable yield of the groundwater resource to support all the current demands within the Aurora-Newmarket area. The historic decline in water levels in the Yonge Street Aquifer and interference complaints in the community of Vendorf indicates a potential over-draft that may be due to cumulative effects of integrated groundwater takings.⁴⁷

The only statement made by the MOE regarding its knowledge of the cumulative impacts of groundwater takings in the Aurora-Newmarket area was made in 2003.



The important aspects of this statement involve the nature of 'available technical information,' which our findings would suggest could not yield anything *but* an 'incomplete understanding' of groundwater usage. To the extent that the MOE has undertaken steps to gather, collate, and/or review data regarding water use, the steps that have been and will be taken have not been transparently described to the public.

As discussed earlier, the confusing and incomplete nature of the information being passed between PTTW holders and the Ministry indicate that, at best, the MOE is still working towards obtaining complete, specific information from PTTW holders indicating how much water they are removing from the respective underground aquifers in the Yonge Street Aquifer. Considering the confusion surrounding the depths of wells, it appears that the MOE does not have a clear picture of which clubs are taking water from the separate aquifers within the Yonge Street Aquifer. This information is integral and would form the foundation of a solid study examining the cumulative impacts of groundwater takings on said aquifers.

Issues surrounding expired permits, and permits issued in error by the MOE that were later revoked indicate the Ministry has not been able to fully ensure that PTTWs are current and reflective of the groundwater takings of PTTW holders. It would also appear that the MOE has been renewing PTTWs without required reports from PTTW holders discussing monitoring data as it relates to the impacts of their respective groundwater takings. The few such annual monitoring reports that are on file indicate that it is common for monitoring data to be corrupted or missed completely due to technical malfunction of monitoring equipment and/or various failures on the part of club staff. These findings further indicate that the monitoring data that is flowing between PTTW holders and the MOE is not of the quality that would be necessary to complete an aquifer-scale cumulative impact study.

There is essentially a barrier for the public to access information regarding the existence of potential initiatives, projects, or reports.



In order to obtain a clearer idea of what exactly the MOE has done since the May 15, 2003 meeting, a number of calls were made to different branches of the Ministry. Contrary to the provincial commitment to increase local knowledge of groundwater takings, our discussions with the Ministry proved to be anything but illuminating, and lacked the sort of transparency that one would hope for. Questions concerning the outcomes of and follow-up to the May 15, 2003 meeting that occurred between affected golf courses, the Regional Municipality of York, and MOE staff went unanswered. Ministry representatives at a number of branches and locations were unsure if this meeting was public or private, whether or not records were available, and whether or not any sort of follow up initiatives were being pursued. Correspondence with the MOE ended with a conversation which confirmed that while the MOE is still implementing stringent monitoring conditions with PTTWs and examining that data to keep track of static water levels, the Ministry had no other information that could be shared with the public at the time of our conversation in March, 2008.

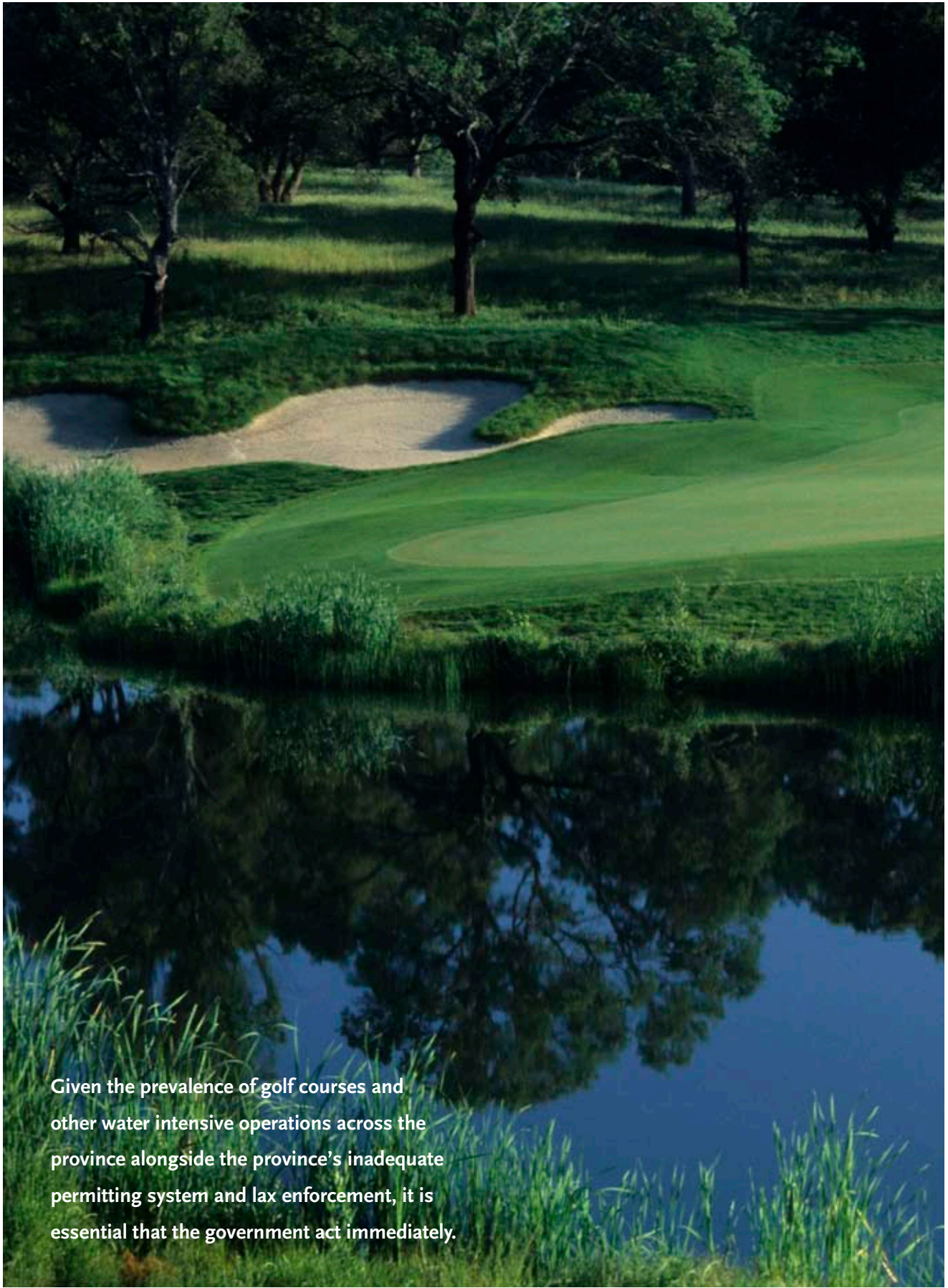
There is essentially a barrier for the public to access information regarding the existence of potential initiatives, projects, or reports that the MOE may or may not be pursuing to address the cumulative impacts of takings in this area (such as a large-scale synthesis of the results of more stringent monitoring data, the implications of that data, and potential programmes or measures to address the results of such a synthesis). The notices on the *Environmental Bill of Rights* Registry regarding these nine PTTWs are incomplete, some do not have links to the current approved PTTW, and none refer to any cumulative impact assessment.⁴⁸ Thus, a member of the public could not make a Freedom of Information request about any such initiative (since there is no mention of such a project, initiative, or report). It is only through a time and resource consuming review of specific PTTW files that we were able to find any reference to cumulative impact assessment.

Based upon the other evidence from our findings, it seems highly unlikely that MOE would have enough long-term, accurate data to complete the sort of cumulative impact study envisioned by Principle 4 of the PTTW Manual. If such initiatives are being pursued, we can only assume that they are at such an early stage that they cannot be shared with the public, PTTW holders, municipal politicians, or any other body responsible for making informed decisions regarding groundwater takings on the Yonge Street Aquifer. In other words, whether or not the MOE is beginning to pursue such initiatives, in the eyes of the public, such initiatives do not exist.

There is a tension between the objectives of the *Oak Ridges Moraine Conservation Act* and the ongoing development plans on the Moraine. In particular, land use planning decisions, which have serious implications for ecological and hydrological integrity, are being made by planners and reviewed by the Ontario Municipal Board. Furthermore, infrastructure decisions (made under the Municipal Class Environmental Assessment) also have potential to significantly impact the ecological and hydrological integrity of the Moraine. The proposed Westhill development is a case where concerns regarding the project's environmental assessment will be heard by the Ontario Municipal Board. While we support integration between land use planning and environmental assessment, we are deeply concerned that there is no meaningful integration and that expertise (such as that which would be available through a joint hearing with the Environmental Review Tribunal) is not being used to consider these issues.



There is a tension between the objectives of the *Oak Ridges Moraine Conservation Act* and the ongoing development plans on the Moraine.



Given the prevalence of golf courses and other water intensive operations across the province alongside the province's inadequate permitting system and lax enforcement, it is essential that the government act immediately.

Conclusion

Although the Ontario government has established a commendable new legal framework for water protection and has committed to ensuring implementation goes forward as envisioned, this report highlights numerous remaining gaps.

The case study examined in this report revealed serious inadequacies with the Permit To Take Water system, including inadequate reporting and regulatory lapses that allowed companies to continue operating with an expired permit for as long as 17 years without any known legal recourse.

That these lapses are taking place on the Oak Ridges Moraine, one of the province's most renowned geological features, the source of 65 river systems, and the drinking water source for a quarter million people, is truly alarming.

Given the prevalence of golf courses and other water-intensive operations across the province alongside the province's inadequate permitting system and lax enforcement, it is essential that the government act immediately. It must live up to its promise to ensure that the use of Ontario's watersheds becomes sustainable for future generations.

It is our hope that the province heeds these warnings and avoids Ontario's water hazard.

We conclude with a series of recommendations aimed at addressing these concerns.

Inadequate reporting and regulatory lapses allowed companies to continue operating with an expired permit for as long as 17 years without any known legal recourse.



Recommendations

Recommendation 1: Ensure sufficient resources are in place to implement the water protection framework as envisioned.

The Ministry of the Environment has established a system of conservation charges that are coming into force in 2009. These charges have been established to support the MOE's water conservation programs. Our findings suggest that the conservation programs, particularly cumulative impact assessments, are not being fully implemented. The MOE should ensure that the conservation charges are sufficient to properly implement water protection and conservation laws.

Recommendation 2: Review Permit To Take Water laws, policies and implementation of the legal framework to ensure consistency and transparency.

A number of improvements to the implementation of the legal framework for water takings are needed to ensure the legal intent is preserved:

- include, within the water taking "Table A," the depth of wells and the name of the aquifer from which the PTTW draws;
- inform the public of the MOE's efforts to ensure cumulative impact assessments are completed when appropriate;
- make PTTW application files available without requiring costly Freedom of Information requests;
- ensure PTTW holders are required to respond to local watershed/aquifer conditions in a precautionary manner (not only triggering response when neighbours' wells run dry) – such as mandatory conservation practices when high use/low water conditions exist;

- move away from a complaints-based system to trigger investigation of groundwater supplies to a more precautionary approach; and
- ensure that cumulative impact assessments of water are completely integrated with planning reviews.

Recommendation 3: Review of development proposals should be heard by joint panels of the Ontario Municipal Board and the Environmental Review Tribunal.

Land use planning proposals have traditionally been reviewed by the Ontario Municipal Board (OMB). As we recognise the need to ensure land use planning respects ecological limits, especially with respect to cumulative impacts on our waters, the OMB is increasingly being required to review materials that are relating to environmental issues. Environmental expertise is not necessarily a qualification of the OMB panel members. However, the Environmental Review Tribunal does have expertise in such areas (and is not mandated to review land use planning decisions). Joint panels are permitted, but not required, under the *Consolidated Hearings Act*.

Recommendation 4: Prohibit new or expanding golf course development on the Oak Ridges Moraine.

As illustrated above, one of the great misconceptions regarding golf courses is their relationship to the natural environment. Golf courses are significant drains to the water balance of the regions in which they exist. The prolificacy of golf courses on the Moraine represents a significant threat to both quality and quantity of the area’s water supply and therefore to the health and access to water of its residents. Given the objectives of the *Oak Ridges Conservation Act* and associated Plan, new golf course developments should be prohibited on the Moraine.

Recommendation 5: Subject golf course development, where not prohibited, to specific standards.

In areas that will see proposals for new golf course developments, there needs to be a uniform set of standards that will be required for approval. The US Golf Association,⁴⁹ in collaboration with others, has set out a number of principles for the development of golf courses. These include the requirements that the design of golf courses must:

- enhance local communities ecologically and economically;
- lead to the development of environmentally responsible golf courses that are economically viable;
- offer and protect habitat for wildlife and plant species;
- recognize that every golf course must be developed and managed with consideration for the unique conditions of the ecosystem of which it is a part; and
- lead to the education of golfers and potential developers about the principles of environmental responsibility and to promote the understanding that environmentally sound golf courses are quality golf courses.

One of the great misconceptions regarding golf courses is their relationship to the natural environment.



Notes

- 1 See www.ene.gov.on.ca/en/water/index.php (accessed July 2, 2008).
- 2 See <http://www.ene.gov.on.ca/programs/5299e.pdf> (accessed July 15, 2008).
- 3 “Water takings” are withdrawals of water from surface water or groundwater sources. For example, a municipality pumps water from a river, lake or well to supply the drinking water system.
- 4 Green Facts – Permit To Take Water, PIBS 5299e (October 2005), www.ene.gov.on.ca/programs/5299e.pdf (accessed July 2, 2008).
- 5 See *Ontario Water Resources Act*, O.Reg. 387/04, Water Taking.
- 6 *Ibid.*, s.4(1).
- 7 *Ibid.*, s.4(2).
- 8 Permit To Take Water (PTTW) Manual, PIBS 4932e (April 2005), www.ene.gov.on.ca/envision/gp/4932e.pdf (accessed July 2, 2008), at 23.
- 9 PTTW Manual.
- 10 Principle 4 states: “The Ministry will consider the cumulative impacts of water takings.” PTTW Manual, at 4.
- 11 PTTW Manual, at 4.
- 12 Prior to the new regulatory framework being put in place, the PTTW Manual was made legally binding through its incorporation into the province’s water taking regulation. (See *Ontario Water Resources Act*, O.Reg. 285/99, Water Taking and Transfer.) However, this is no longer the case. As indicated in the PTTW Manual:

The manual sets out the decision making process generally followed by the Ministry and it is intended to explain to applicants, proponents, and the public the requirements and considerations that are generally taken into account when a Section 34 Director and Ministry reviewers are evaluating a proposed or existing water taking. However, each taking must be evaluated on a case-by-case basis through the exercise of professional judgment based on the requirements of the Water Taking and Transfer Regulation and the principles set out in this document.
- See PTTW Manual, at 2. From this, we can conclude that the Ministry of the Environment interprets the PTTW Manual as policy. This policy informs how decisions regarding PTTWs are made and are intended to provide a consistent approach for managing Ontario’s waters. As explained in the PTTW Manual (at 4): The principles provide a scientifically based, consistent approach to managing water takings in Ontario and guide the application and regulatory review of Permits To Take Water. Applicants are encouraged to consult with the Ministry prior to submitting a permit application if they are unsure how to interpret or apply these principles.
- 13 As explained in the PTTW Manual (at 4): The principles provide a scientifically based, consistent approach to managing water takings in Ontario and guide the application and regulatory review of Permits To Take Water. Applicants are encouraged to consult with the Ministry prior to submitting a permit application if they are unsure how to interpret or apply these principles.
- 14 The proposed Westhill development Permit To Take Water was issued on April 30, 2007 and has since been cancelled (when it was brought to the MOE’s attention by local residents that the environmental assessment of the proposal had not yet been completed).
- 15 Town of Aurora, Drinking Water Quality Report, 2006, www.town.aurora.on.ca/app/DocRepository/1/ResidentServices/W/Water%20Quality%20Annual%20Report%202006.pdf (accessed July 2, 2008).
- 16 *Ibid.*
- 17 It should be noted that the primary reason this information was included was that changes were made to the facilities, number of wells, and irrigation methods, requiring more specific documentation from the PTTW holder.
- 18 Permit To Take Water #2085-746R7N (Station Creek Golf Club).
- 19 “Application to Renew OWRA Section 34 PTTW No. 02-P-3003, Station Creek Golf Club (Clublink Corporation),” March 26, 2007; Azimuth Environmental Consulting, INC., pg. 2, 3, 9.
- 20 Jones, Mike and Jason Murchison. “Application to Renew OWRA Section 34 PTTW No. 02-P-3003, Station Creek Golf Club (Clublink Corporation),” March 26, 2007; Azimuth Environmental Consulting, INC., pg. 11-13.

- 21 "Westview Golf Club Water Management Plan," February 18, 2004. pg. 1.
- 22 Permit To Take Water #02-P-3046 pg. 5 (Beacon Hall Golf Club).
- 23 Permit To Take Water #2165-6FZH ZP pg. 4 (Maples of Balantrae Golf Club).
- 24 Jones, Mike and Jason Murchison. "Application to Renew OWRA Section 34 PTTW No. 02-P-3002, Rolling Hills Golf Club (Clublink Corporation)," Azimuth Environmental Consulting, INC. March 16, 2007. pg. 2.
- 25 Ibid. pg. 4.
- 26 Ryan, Robert. "RE: Permit To Take Water For: Rolling Hills Golf Course, No. 02-P-3002." July 19, 2002.
- 27 Taylor, A. "2004 Annual Monitoring Report, Magna Golf Course" December, 2004. pg. 1.
- 28 Jones, Mike and Jason Murchison. "Application to Renew OWRA Section 34 PTTW No. 02-P-3003, Station Creek Golf Club (Clublink Corporation)," March 26, 2007; Azimuth Environmental Consulting, INC., pg. 2.
- 29 Jones, Mike and Jason Murchison. "Application to Renew OWRA Section 34 PTTW No. 02-P-3002, Rolling Hills Golf Club (Clublink Corporation)," Azimuth Environmental Consulting, INC. March 16, 2007. pg. 2.
- 30 Lewandowski, Cheryl. "RE: Revoking of Permit To Take Water No. 00-p-3041 For Bloomington Downs Golf Course," June 9, 2003.
- 31 Kaye, Brian. "RE: Application to Renew Permits to Take Water 86-p-3023 and 87-p-3012, Issued to the Beacon Hall Golf Club, Aurora," August 4, 1999.
- 32 Lewandowski, Cheryl. "RE: Permit To Take Water For: Beacon Hall Golf Club, NO.99-p-3023." July 10, 2000.
- 33 Zwiers, Greg. "RE: Temporary Permit To Take Water For Pumping Test, Rolling Hills Golf Club, Gormley." September 21, 1999.
- 34 Zwiers, Gregg. "RE: Temporary Permit To Take Water for Pumping Test, Gormley Greens Golf Club, Gormley." September 21, 1999.
- 35 Jones, Mike and Jason Murchison. "RE: Application to Renew OWRA Section 34 PTTW No. 02-p-3003, Station Creek Golf Club (Clublink Corporation)." March 26, 2007.
- 36 Keen, Debbie Pella. "Permit to take water Notice of Cancellation Number 3008-75prt8." August 7, 2007.
- 37 "Permit To Take Water 00-p-3041, 2001 Annual Report and 2002 Renewal Application, Bloomington Downs Golf Course." Geo Kamp Limited. December 28, 2001.
- 38 "Permit To Take Water 00-p-3041, 2002 Annual Report and 2003 Renewal Application, Bloomington Downs Golf Course." Geo Kamp Limited. February 18, 2003.
- 39 "Bloomington Downs Golf Course Permit To Take Water 02-p-3001, 2003 Annual Report." Geo Kamp Limited. January 24, 2004.
- 40 Schipper, Kees. "RE: Permit To Take Water Renewal, The Alpen House, 255 Magna Drive, Town of Aurora, EBR Registry Number IA8E0767, Ministry File Number 94P3071, Our File No. 19T-98001, OPA 8." June 30, 1998.
- 41 John Mabira, Project Engineer, Water and Wastewater Branch, Environmental Services Department, York Region, personal communication, July 8, 2008.
- 42 Op cit, Bloomington Downs Golf Club Annual reports for 2001, 2002, 2003.
- 43 Lewandowski, Cheryl. "RE: Permit To Take Water For: Beacon Hall Golf Club, No.02-p-3046." June 23, 2003.
- 44 Of the files examined, it is clear that Magna, Bloomington Downs, Diamondback, Beacon Hall, and Emerald Hills Golf clubs were all involved in this meeting. It is possible that other courses and stakeholders were present as well.
- 45 Lewandowski, Cheryl. "RE: New Permit To Take Water No. 02-P-3001, For: Bloomington Downs Golf Course." June 9, 2003.
- 46 Lewandowski, Cheryl. "RE: Renewal Permit To Take Water For: Diamondback Golf Club, No. 00-p-3019." May 22, 2003.
- 47 Lewandowski, Cheryl. "RE: Permit To Take Water For: Beacon Hall Golf Club, No.02-p-3046." June 23, 2003.
- 48 For example, Rolling Hills and Station Creek EBR Registry notices (Numbers 010-0198 and 010-0226, respectively) do not have a link to the currently approved PTTW.
- 49 Environmental Principles for Golf Courses in the United States, http://www.usga.org/turf/articles/environment/general/environmental_principles.html (accessed July 2, 2008).

Ecojustice goes to court to defend the right of Canadians to a healthy environment. We are Canada's largest and foremost non-profit environmental law organization. Our trusted voice in the courts enables citizens to expose lawbreakers and hold governments accountable, all while setting powerful precedents for clean water, natural spaces, healthy communities, and global warming solutions.

Earthroots is a grassroots environmental organization dedicated to protecting Ontario's wilderness, wildlife and watersheds. Since 1986, when our predecessor, the Temagami Wilderness Society, was formed, Earthroots has used its expertise to organize, educate and mobilize the public, conduct successful media events, carry out wilderness research projects and ensure proper forest management planning.