



Brownfields Redevelopment

Indicator #7006

Overall Assessment

Status: **Mixed**

Trend: **Improving**

Rationale: **Data from multiple sources are not consistent. Inventories of existing brownfields are not available in Ontario, so it is difficult to determine a trend for the redevelopment of brownfields. Since more sites are being redeveloped and/or are being planned, there is some trend of an improvement in the Great Lakes basin, but it is not based on a quantitative assessment.**

Lake-by-Lake Assessment

Individual lake basin assessments were not prepared for this report.

Purpose

- To assess the area of redeveloped brownfields
- To evaluate over time the rate at which society remediates and reuses former developed sites that have been degraded or abandoned

Ecosystem Objective

The goal of brownfields redevelopment is to remove threats of contamination associated with these properties and to bring them back into productive use. Remediation and redevelopment of brownfields results in two types of ecosystem improvements:

- Reduction or elimination of environmental risks from contamination associated with these properties
- Reductions in pressure for open space conversion as previously developed properties are reused

State of the Ecosystem

Brownfields are abandoned, idled, or under-used industrial and commercial facilities where expansion, redevelopment or reuse is complicated by real or perceived environmental contamination. In 1999, 21,178 brownfields sites were identified in the United States, which was equivalent to approximately 33,010 hectares (81,568 acres) of land (The United States Conference of Mayors 2000). Although similar research does not exist for Canada, and no inventory exists for either contaminated or brownfields sites in Ontario, it is estimated that approximately 50,000 to 100,000 brownfields sites may exist in Canada (Globe 2006).

All eight Great Lakes states, Ontario and Quebec have programs to promote remediation or clean-up and redevelopment of brownfields sites. Several of the brownfields clean-up programs have been in place since the mid-to late 1980s, but establishment of more comprehensive brownfields programs that focus on remediation and redevelopment has occurred during the 1990s. Today, each of the Great Lakes states has a voluntary clean-up or environmental response program and there are over 5,000 municipalities with some type of brownfields program in the U.S. (Globe 2006). These clean-up programs offer a range of risk-based, site-specific background and health clean-up standards that are applied based on the specifics of the contaminated property and its intended reuse.

In Quebec, the *Revi-Sols* program was established in 1998 and is aimed at assessing and cleaning urban contaminated sites for the purpose of reuse. Through this program, it was possible to collect some data on the

number of contaminated sites in Quebec as it was compulsory for the land owner to report this information to complete the application for financing. Based on this program, more than 7,000 sites are included in this inventory.

To encourage redevelopment, Ontario's environmental legislation provides general protection from environmental orders for historic contamination to municipalities, creditors and others. Ontario Regulation 153/04, which came into effect on October 1, 2004, details the requirements that property owners must meet in order to file a record of site condition. Two technical documents are referenced by this regulation, one providing applicable site condition standards, the other providing laboratory analytical protocols for the analysis of soil, sediment and ground water. A Brownfields Environmental Site Registry offers property owners the opportunity to complete an online record of site condition, and this information is then publicly accessible. This registry is currently voluntary. As of October 2005, property owners are required to file a record of site condition before a property's use is changed from an industrial or commercial use to a more sensitive use, such as residential. A record of site condition ensures that a property meets regulated site-assessment and clean-up standards that are appropriate for the new use (Ontario Ministry of the Environment 2006).

The 2003 enactment of the New York State Brownfield Law has resulted in increased interest by private developers and municipalities in the redevelopment of contaminated properties.

Efforts to track brownfields redevelopment are uneven among Great Lakes states and provinces. Not all jurisdictions track brownfields activities, and methods vary where tracking does take place. States, provinces and municipalities track the amount of funding assistance provided as well as the number of sites that have been redeveloped. They also track the number of applications that have been received for brownfields redevelopment funding. These are indicators of the level of brownfields redevelopment activity in general, but they do not necessarily reflect land renewal efforts (i.e., area of land redeveloped), the desired measure for this indicator. Compiling state and provincial data to report a brownfields figure that represents the collective eight states and two provinces is challenging. Several issues are prominent. First, state and provincial clean-up data reflect different types of clean-ups, not all of which are "brownfields" (e.g., some include leaking underground storage tanks and others do not). Second, some jurisdictions have more than one program, and not necessarily all relevant programs engage in such tracking. Third, program figures do not include clean-ups that have not been part of a state or provincial clean-up program (e.g., local or private clean-ups). Several states and provinces do track area of brownfields remediated, although no Great Lakes state or province tracks area of brownfields redeveloped.

Information on area of brownfields remediated from Illinois, Minnesota, New York, Ohio, Pennsylvania, Quebec and Ontario indicate that, as of August, 2007, a total of 18,309 hectares (45,244 acres) had been remediated (Table 1). Available data from eight Great Lakes states, Quebec and Ontario indicate that approximately 32,250 brownfields sites have participated in brownfields clean-up programs since the mid-1990s, although the degree of remediation varies considerably. In Ontario, brownfields redevelopment is planned for 108 hectares (267 acres) of land between 2006 and 2008 for the municipalities that participated in this assessment.

Remediation is a necessary precursor to redevelopment. Remediation is often used interchangeably with "clean-up," though brownfields remediation does not always involve removing or treating contaminants. Many remediation strategies utilize either engineering or institutional controls (also known as exposure controls) or adaptive reuse techniques that are designed to limit the spread of, or human exposure to, contaminants left in place. In many cases, the cost of treatment or removal of contaminants would prohibit reuse of land. All Great Lakes states and provinces allow some contaminants to remain on site as long as the risks of being exposed to those contaminants are eliminated or reduced to acceptable levels. Capping a site with clean soil or restricting the use of groundwater are

examples of these “exposure controls” and their use has been a major factor in advancing brownfields redevelopment. Several jurisdictions keep track of the number and location of sites with exposure controls, but monitoring the effectiveness of such controls occurs in only three out of the ten jurisdictions.

Redevelopment is a criterion for eligibility under many state brownfields clean-up programs. Though there are inconsistent and inadequate data on area of brownfields remediated and/or redeveloped, available data indicate that both brownfields clean-up and redevelopment efforts have risen dramatically in the mid-1990s and steadily since 2000. The increase is due to risk-based clean-up standards and the widespread use of state liability relief mechanisms that allow private parties to redevelop, buy or sell properties without being liable for contamination they did not cause. Canadian law does not provide liability exemptions for new owners such as those in the U.S. Small Business Liability Relief and Brownfields Revitalization Act (Globe 2006). Environmental liability is a major barrier to successful brownfields redevelopment in Canada. Current owners do not want to sell brownfields sites for fear of liability issues in the future, purchasers of land do not want to buy sites without some level of protection and municipalities assume liability when they become site owners (City of Hamilton Planning and Development Department 2007). The Municipal Statute Law Amendment Act, 2006 which received Royal Assent on December 20th, 2006 removes provincial Crown liens where a municipality chooses to assume ownership of a property that has failed a tax sale. Municipalities are now also able to advertise eligible brownfield properties as “free and clear” of all provincial crown liens upon sale. This change in legislation should reduce some of the issues related to civil and regulatory liabilities.

In 2005, the Government of Canada allocated \$150 million for brownfields remediation. Other initiatives include the Sustainable Technologies Canada Funding, and the Federal Contaminated Sites Action Plan. Also, more financial tools for brownfields redevelopment are available through a Community Improvement Plan (CIP), which allows municipalities to encourage brownfields redevelopment by offering financial incentives. Other grants and loans can be provided to supplement the CIP including an exemption or a reduction in the cost of fees associated with permits, parkland dedications and zoning amendments. Tax incentives can also be provided by municipalities to encourage the cleanup of contaminated sites (Ontario Ministry of Municipal Affairs and Housing, 2006).

Data also indicate that the majority of clean-ups in the Great Lakes states and provinces are occurring in older urbanized areas, many of which are located on the shoreline of the Great Lakes and in the basin. Based on the available information, the state of brownfields redevelopment is mixed and improving.

Pressures

Laws and policies that encourage new development to occur on undeveloped land instead of on urban brownfields are significant and on-going pressures against brownfield development can be expected to continue. Programs to monitor, verify and enforce effectiveness of exposure controls are in their infancy, and the potential for human exposure to contaminants may inhibit the redevelopment of brownfields. Several Great Lakes states allow brownfields redevelopment to proceed without cleaning up contaminated groundwater as long as no one is going to use or come into contact with that water. However, where migrating groundwater plumes ultimately interface with surface waters, some surface water quality may continue to be at risk from brownfields contamination even where brownfields have been remediated.

Management Implications

Programs to monitor and enforce exposure controls need to be fully developed and implemented. More research is needed to determine the relationship between groundwater supplies and Great Lakes surface waters and their tributaries. Because brownfields redevelopment results in both reduction or elimination of environmental risks from

past contamination and reduction in pressure for open space land conversion, data should be collected that will enable an evaluation of each of these activities. For every hectare (2.5 acres) developed in a brownfields project, it can save an estimated minimum of 4.5 hectares (11 acres) of land from being developed in an outlying area (National Roundtable on the Environment and the Economy 2003).

Ontario is expected to add 3.7 million more people to its population in the next 25 years with most of the growth occurring in the Greater Golden Horseshoe (western end of Lake Ontario) (Ontario Ministry of Public Infrastructure Renewal 2006). Brownfields redevelopment needs to be a part of the planning and development reform in order to address the issue of urban sprawl.

Funding and liability issues are obstacles for brownfields redevelopment and can hinder progress.

Comments from the author(s)

Great Lakes states and provinces have begun to track brownfields remediation and or redevelopment, but the data are generally inconsistent or not available in ways that are helpful to assess progress toward meeting the terms of the Great Lakes Water Quality Agreement. Though some jurisdictions have begun to implement web-based searchable applications for users to query the status of brownfields sites, the data gathered are not necessary consistent, which presents challenges for assessing progress in the entire basin. States and provinces should develop common tracking methods and work with local jurisdictions incorporating local data to online databases that can be searched by: 1) area remediated; 2) mass of contamination removed or treated (i.e., not requiring an exposure control); 3) type of treatment; 4) geographic location; 5) level of urbanization; and 6) type of reuse (i.e., commercial, residential, open, none, etc.). A recent development in the province of Ontario is the designation of a Provincial Brownfields Coordinator who will coordinate provincial brownfields activities and provide a single point of access on brownfields in Ontario.

Assessing Data Quality

Insert “x” under the statement that best corresponds with each data characteristic

Data Characteristics	Strongly Agree	Agree	Neutral or Unknown	Disagree	Strongly Disagree	Not Applicable
1. Data are documented, validated, or quality-assured by a recognized agency or organization	x					
2. Data are traceable to original sources	x					
3. The source of the data is a known, reliable and respected generator of data	x					
4. Geographic coverage and scale of data are appropriate to the Great Lakes basin			x			
5. Data obtained from sources within the U.S. are comparable to those from Canada	x					
6. Uncertainty and variability in the data are documented and within acceptable limits for this indicator report		x				

Clarifying Notes:

Acknowledgments

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Other Selected Resources

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List of Tables

Table 1. Summary of acres remediated and number of sites remediated in the Great Lakes basin states, and the provinces of Ontario and Quebec, 1990 – 2007.

Source: Various state, municipal and provincial brownfields coordinators and city planners

†Reflects number of sites that have been subject to a baseline environmental assessment, but not necessarily remediation

*Total reflects number of sites that have been remediated and/or have received closure with the use of Environmental Restrictive Covenants. Acreage remediated not reported for every site prior to 2001.

** Totals incorporate data from the NY Voluntary Cleanup Program (1994-2008, no acreage information), Brownfield Cleanup Program (2003-2008), and Environmental Restoration Program (1996-2008).

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Figure 1. Brownfield site (top) and redevelopment of the same brownfield site (below), Spencer Creek, Hamilton, Ontario.

Source: City of Hamilton

Last Updated

State of the Lakes Ecosystem Conference (SOLEC) 2008

State/Province	Acres remediated	Hectares remediated	Time frame	Sites remediated	Time frame
WI	4,943	2,000	2004-2007	19,092	1994-2007
PA	25,607	10,363	1995-2007	2,307	1995-2007
OH	4,163	1,685	1994-2007	218	1994-2007
MI	not tracked			8,300†	1995-2007
IN*	757	306	1998-2007	164	1998-2007
MN	7,443	3,012	1989-2007	523	1989-2007
IL	13,678	5,535	1990-2007	2,519	1990-2007
NY**	373	151	1996-2008	226	1994-2008
ON	235	95	2002-2005	13	2002-2005
QC	741	300	1998-2002	309	1998-2005
Total	57,940	23,447		33,671	

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