Living Landscape

A Biodiversity Action Plan for Greater Sudbury

December 23, 2009

With additional support from:

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Definitions

This Plan uses a few terms that may not be familiar to all readers, especially the way in which the terms are applied in the context of this Plan.

Barrens – The areas within the City of Greater Sudbury that were impacted by past mining and smelting activities, resulting in virtually all of the vegetation cover being destroyed. Semi-barrens have slightly more vegetation cover than barrens, but are still considered heavily impacted.

Biodiversity – The variety of life on Earth, including plants, animals and ecosystems.

Ecological Recovery – In Greater Sudbury, it is the process by which areas damaged by past smelting activities are returning to healthy functional ecosystems.

Greater Sudbury Biodiversity Partnership – an informal association of groups, agencies, institutions, individuals and companies that work individually and collectively to monitor, manage and promote animals, plants and ecosystems.

Interventions – The actions we do to help nature heal the damaged areas in our City.

VETAC – City Council's Advisory Panel on regreening.

Impacted plant communities provide poor wildlife habitat quality – Coniston, 2009

Why a Biodiversity Action Plan?

On March 31st, 2009, the Ecological Risk Assessment (ERA) portion of the Sudbury Soils Study was released. One of the most comprehensive studies of its kind ever undertaken in North America, the ERA evaluated the ecological risks associated with seven Chemicals of Concern (COCs): arsenic, cadmium, cobalt, copper, lead, nickel, and selenium. While the COCs occur naturally in the area, their levels in the soil have increased over the years through particle deposition from smelter emissions.

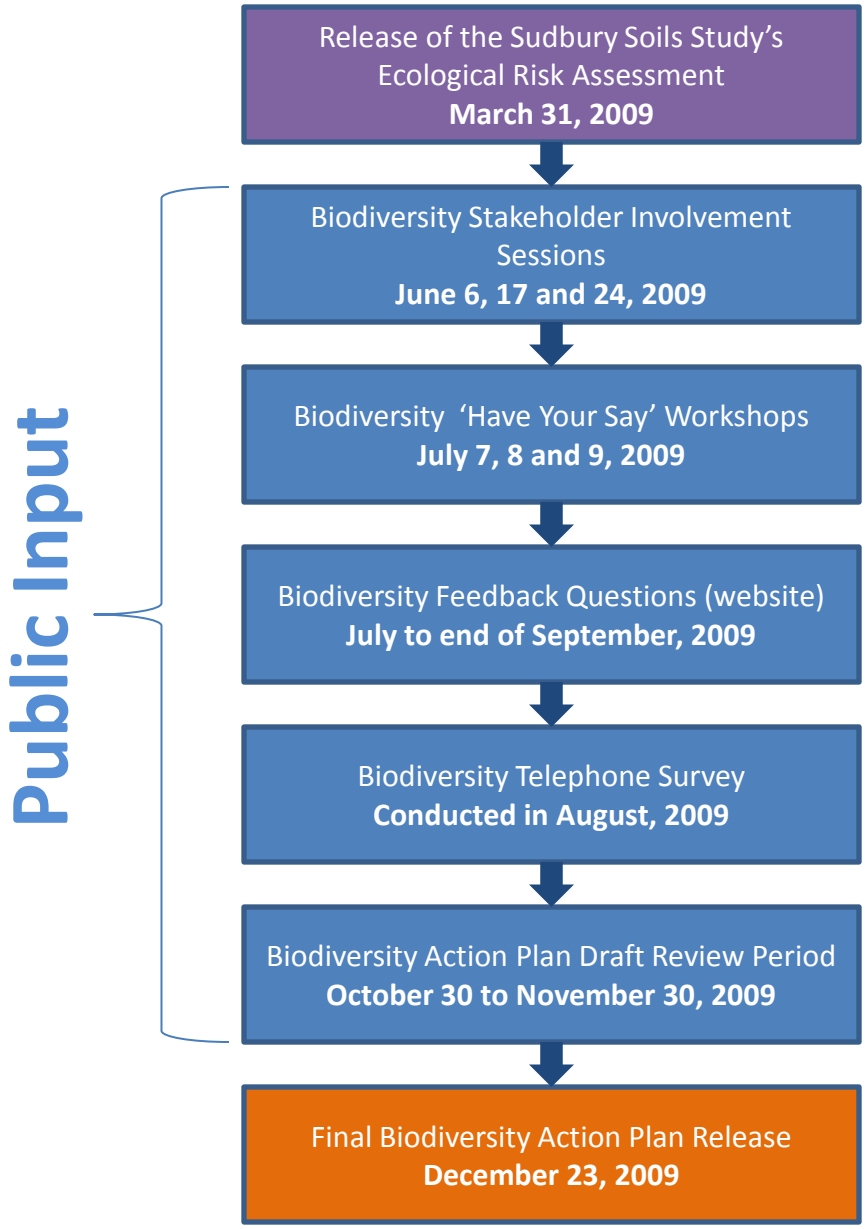
The ERA found that terrestrial plant communities in large areas of Greater Sudbury have been and continue to be impacted by the COCs in soil. The study also found that local plant communities are affected by other factors, such as soil erosion, low nutrient levels, lack of soil organic matter, and soil acidity.

As for wildlife, the ERA concluded that the COCs are not exerting a direct effect on local wildlife populations. The COCs' impact on area plant communities, however, has affected habitat quality and therefore is likely having an indirect influence on birds and mammals in Greater Sudbury.

A Biodiversity Action Plan provides a comprehensive way to address the risks to plant communities and wildlife habitat identified by the ERA. While biodiversity is a broad topic, this Plan focuses primarily on ecological recovery in Greater Sudbury.

For more information on the Sudbury Soils Study visit:

www.sudburysoilsstudy.com



The Process that We Followed

The two primary, local mining companies, Vale Inco and Xstrata Nickel, accepted to work with the Greater Sudbury community to manage the risks identified by the Sudbury Soils Study's ERA.

This Action Plan is for the benefit of our shared community. So we developed it with the help of community members. Over the past several months, members of this community participated in Biodiversity Stakeholder Involvement Sessions and in 'Have Your Say' Workshops. You also provided feedback through our website questionnaire. Over 600 Sudburians participated in a telephone survey on local biodiversity matters.

Dr. Stephen Monet, Manager of Environmental Planning Initiatives at the City of Greater Sudbury, prepared the Draft Biodiversity Action Plan, taking into consideration the input provided by the community. VETAC reviewed the Draft Action Plan and oversaw the public input process.

The community had a chance to review and comment on the Draft Biodiversity Action Plan before release of the final version in December.

The Biodiversity Action Plan is intended to be a 'living' document, so the community will continue to have an opportunity to provide input into the future. See page 35 for details.

What You Told Us

The message from community members was both powerful and clear:

- When asked which environmental action was most desirable to be undertaken, 49% of Sudburians selected ‘lake and stream clean-up’. This was followed closely by ‘regreening’ (46%), ‘education of the public’ (44%) and ‘wildlife habitat creation’ (38%).

- 66% told us the most important reasons for improving our local environment is to leave a healthier environment for the next generation, and 42% want to improve the quality of our outdoor leisure activities.

We also heard that community members want to get involved, and to act on a sense of personal accountability. We heard that the actions we take should be based on science, while also taking the community’s priorities into account.

And we heard that funding these actions should include significant commitment from Vale Inco and Xstrata Nickel.

Each and every comment we received was valued, and we thank you for your input.

The views and wishes of community members were important contributors to this Action Plan. We hope you see them reflected in the pages that follow.

Impacted landscape near Falconbridge - 2004

“Imagination is everything. It is the preview of life's coming attractions.” **Albert Einstein**

Greater Sudbury – **Year 2050**

Forty years from today…

The wild blueberry bushes are much fewer. A changing climate has made the area far less suitable for their growth.

The hills along the Kingsway, and many parts of the former barren areas, now have pine trees that are more than 80 years old. There's talk about selectively harvesting some trees in the near future. White, red and jack pines still thrive here, at least for a few more decades.

Birds are now abundant in these forests. Some residents have expressed concern over the loud, wild calls of the barred owls at night in some neighbourhoods. Bald eagles have become a common sight, soaring above Lake Ramsey.

Forest fires sometimes erupt, but fortunately fire breaks were created around neighbourhoods years ago in anticipation of the new forests.

The Valley provides much of the fresh and frozen food consumed in Greater Sudbury and northeastern Ontario.

Greater Sudbury's forests, lakes and thriving food industry serve as powerful attractors for students, young families, professionals, artists and retirees. Tourism is booming.

Do these statements accurately describe our City as it will be 40 years from now ?

Today, the ‘bones’ of ancient trees still litter the many barren areas

Impacted landscape near Coniston – 2005

What's the Problem ?

Our mining heritage has brought us prosperity. But it's also had profound impacts on the living systems that nurture, protect, and thrill us.

In the decades past, smelting the ore from the mines created significant amounts of sulphur dioxide. Most plants are highly sensitive to this gas and died as a result. Without plants there was nothing to keep the soil in place resulting in widespread erosion.

Smelting also released metal particles in the air. These particles eventually landed and accumulated in the soil. Many of these metals are harmful to plants when levels get too high. When soil is acidic, as it tends to be in northern Ontario, these metals can be easily taken up by plants, which die or remain stressed.

As a result, over 82,000 hectares (202, 630 acres) in Greater Sudbury were left in a barren or semi-barren state.

Vale Inco and Xstrata Nickel have reduced sulfur dioxide and air-borne metal emissions by over 90% since the 1970s. As a result, some trees and other plants have been able to take hold. But plants still struggle because of the accumulated metals and low organic matter content of the shallow soils that bake in the summer and freeze solid in the winter.

Getting from Here to There

We've come a long way since the early, dusty days of black rock and clouds of sulfur dioxide. We've learned that liming reduces the toxic effects of metals in soil on plants. So we spread lime over 3500 hectares. As a community we also planted more than 12 million trees. Young forests are now growing on formerly barren hillsides. Songbirds and other wildlife are slowly returning to our City. Liming and increasing forest cover in watersheds has also helped the health of our lakes.

We've been working on it for more than 30 years. But we still have a long way to go.

By our calculations about **38,000 hectares** of formerly barren or semi-barren land have never been limed or had trees planted on them. Much of this land still has little more than a few stunted birch trees growing on it.

Bringing back healthy forest ecosystems on affected lands won't be easy. It will take time, energy and renewed commitment. It will take money.

We've shown the world what we can do. Now it's time to finish the job that we started three decades ago.

This Action Plan will help guide us in the right direction.

Barrens near Coniston in 2005 – over 35 years after smelter shut-down

Time heals all wounds ….. the question is how much time is needed ?

Wolf Lake landscape - unaffected by past smelter emissions

Why we need to Help

Wildlife species, from lowly ants to timber wolves, need food, water and shelter to survive. These requirements define a species' habitat. Every species' habitat is different; porcupines don't live in cattail marshes and mallard ducks don't live in spruce forests.

Some larger species, like moose, need different habitats depending on the season.

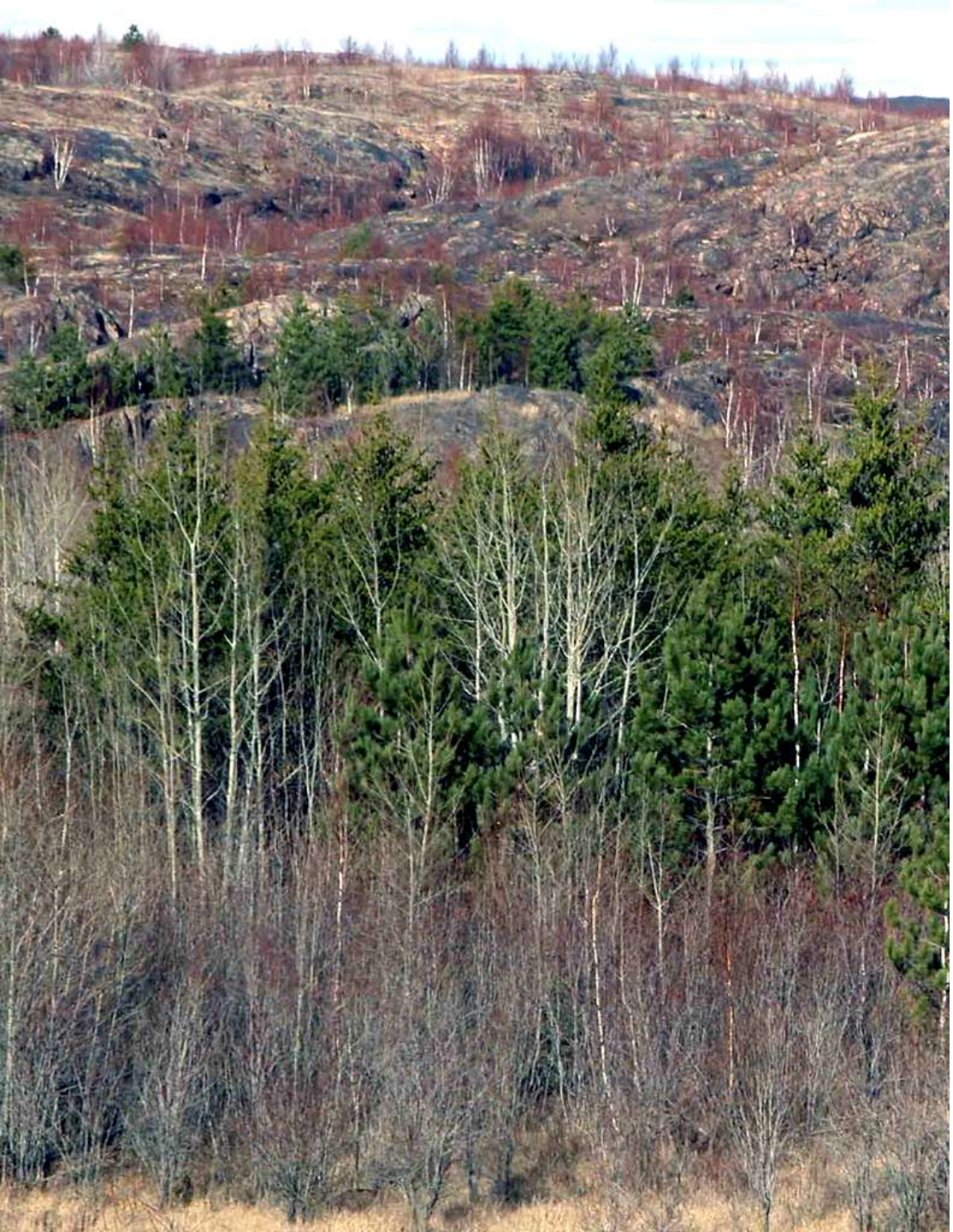
Wildlife habitat is largely defined by the types of plant communities in an area. In turn, the plant communities depend on conditions like moisture, shade and soil types.

As a result, the landscape is like a quilt of different habitat patches.

Greater Sudbury's barrens used to be covered by large patches of spruce and pine forests so it's only natural that nature wants to return the barrens to these types of forests.

But that could take centuries.

There are a number of things we can do to help nature along.



How we can Help – The Basics

Our target habitat might be healthy and diverse spruce or pine forests, but before we can get there we need do a few basic things.

Spreading lime on the affected areas is the first step. Lime makes the soil less acidic so metals present there can't be easily taken up by plants. Lower levels of some metals in plants means healthier plants.

Next, we need to add fertilizer to the soil, which has lost much of its fertility and organic matter due to erosion.

After that we apply a grass and legume seed mixture. These plants cover the ground quickly and create a more suitable environment for the tree seedlings that will follow. The grasses and legumes eventually die out when the trees get old enough to shade the area.

Tree seedlings are then introduced. Mostly pines and spruces are planted, along with smaller numbers of various other tree species, like oaks and maples. Birches and poplars come in on their own.

In a few decades, these seedlings grow into stands of trees that begin to look like forests.

This basic process will be followed into the future.

Transplanted forest floor mats in an otherwise bare tree plantation

Beyond the Basics – Part 1

Forests are more than groups of trees

Groups of planted trees might look like a forest, but they're not. When soil erodes from a hillside, it takes with it all the plants, seeds, insects and micro-organisms that are in the top layer of soil. These are vital to the development of a healthy, diverse forest.

Here's just one way to correct the situation.

After about 30 years, the groups of young planted trees are old enough to shade the ground and keep conditions cool and moist enough for the forest floor species to live. It's now time to focus on planting forest shrubs and wildflowers in these areas. These in turn will attract the many insect communities that will help healthy forest soil to develop.

Shrubs and wildflowers can be planted individually from purchased stock. They can also be carefully gathered by cutting small mats from healthy forests. The mats are then placed under older groups of planted trees. In time, plants in the mats will spread. This can't be done everywhere due to cost and availability of material. But with enough small diverse pockets over the landscape the recovery of forest floor vegetation should be faster than leaving nature to do the job alone.

Beyond the Basics – Part 2

Jump-starting life on bare rock

Trees can't be planted on bare rock. They need at least moderate-sized cracks filled with soil.

But bare rock is a habitat too!

In natural systems, bare rock is first covered by lichen communities, which trigger the soil building process. As individual lichens and insects living among them die, organic matter is created. In time, enough organic matter accumulates in the lichen communities to allow small plants to grow. These create more organic matter so that eventually small trees can take hold. Over decades the bare rock becomes completely covered with organic matter and some mineral soil from the bedrock and a forest develops.

Lichens have been returning to Greater Sudbury's barren areas, but the process is slow.

To help nature along, the City's Regreening Program will attempt to jump-start lichen communities by spreading small bits of lichens carefully collected from other sites. These can be rapidly spread by hand. Experience in other parts of the world has shown this to be an effective way of speeding up the process of lichen colonization, which leads to eventual establishment of forests. We'll try it out on a small scale and let you know how it works out.

“We know more about the movement of celestial bodies than about the soil underfoot”

Leonardo da Vinci

Wetlands – giant filters

Wetlands are vital parts of a healthy landscape. They act as giant sponges soaking up rainwater and snow melt and slowly releasing it to streams and lakes. Without their presence spring melts and heavy downpours would quickly run into lakes and streams. As a result, floodings would be much more frequent.

Wetlands also act as giant filters, serving as a buffer between the pollutants, sediments and animal excrement washed off the land, and the receiving water.

Wetlands and aquatic vegetation growing along lakes help to prevent erosion from wave action and provide vital fish habitat. Dozens of other animals, from herons and ducks to muskrats and moose also use wetlands as habitat.

Wetlands need recognition and protection for the valuable services they provide. To that end, the City will continue to implement its Official Plan policies that address wetland protection. Several groups and agencies in our community, including Nickel District Conservation Authority, will continue to promote the benefit of healthy wetlands. The City's Regreening Program will increase the diversity of plants of wetlands in the impacted areas through supplemental plantings.

Lake Ramsey – the drinking water source for nearly half of the Greater Sudbury residents

Lakes & Rivers

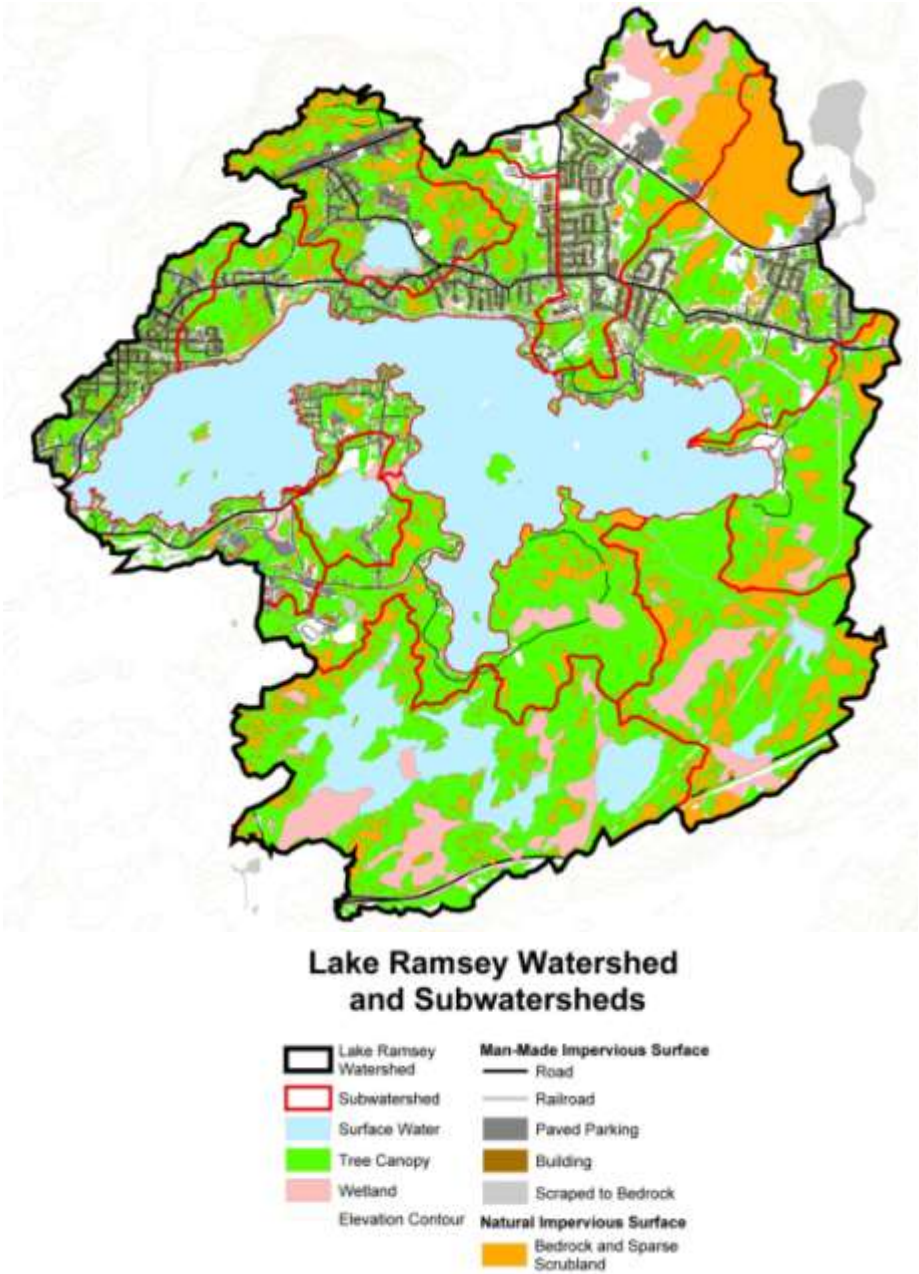
Greater Sudbury's hundreds of lakes are important to us. They need our protection. Several groups and agencies, along with the City, play a role in protecting our lake and river resources.

The Cooperative Freshwater Ecology Unit, located in the Living With Lakes Centre, has been monitoring and studying our lakes and training young researchers for decades. They've found that our lakes are improving greatly compared to the old days. They've also identified remaining challenges. For example, lakes within the barren areas are still being held back from being even healthier by a lack of organic matter from fallen leaves, tree trunks and woody debris in the water. These elements greatly increase the food and shelter for aquatic organisms, including several fish species.

As a result of these findings, the City's Regreening Program will focus on increasing tree density within a 100-metre belt around lakes. In time, these trees will add leaves, branches and trunks to the water's aquatic system.

The City's Lake Water Quality Program, along with other groups and agencies, will continue to promote best-practices for waterfront residents. This includes protecting or re-planting a wide vegetation buffer along the water's edge.

Although shoreline stewardship is crucial, a lake's ecosystem and water quality are also highly dependent on the land that drains into it.



The types of land cover in a lake's watershed affects its water quality.

Healthy land Healthy water

All the land that drains into a specific water feature, like a stream or a lake, is called a watershed. The greater the amount of tree cover in a watershed, the healthier the receiving stream or lake. That's because all the vegetation in the watershed helps to soak up and filter the rainwater.

The City will continue to map lake and river watersheds, especially those within the impacted area. Watershed maps will help greatly in determining priority lands for regreening.

Stormwater runoff is a major factor that determines the quality of streams and lakes in a watershed.

In general, the more pervious or porous surfaces in a watershed the healthier it is. Pervious surfaces, like lawns, forests and wetlands, allow rain to soak in and retain water, delaying its release to the receiving stream or lake. This decreases the likelihood of flooding, keeps water cooler and reduces sediment deposits and contaminants from surface runoff.

Impervious surfaces, like driveways, roads and roofs, have the opposite effects and reduce the health of a watershed.

Regreening barren areas in Greater Sudbury's watersheds will directly benefit streams and lakes.

The Centre for Ecological Monitoring, numerous professors at Laurentian University and local colleges, the Nickel District Conservation Authority and the City's Regreening Program will continue studying and monitoring the ecological recovery of our local watersheds.

Greening the Urban Landscape

Although much of Greater Sudbury is covered by forests, our City still has large urban areas. Many of these areas don't have much tree canopy cover, which provides shade in summer, provides habitat for birds, lessens rainfall runoff and helps clean the air we breathe. Our urban areas need greening up too !

To achieve this, the City's Operations crews will continue to plant new trees along our urban streets. City parks and neighbourhood greenspaces will receive additional trees as well. To protect the urban tree canopy, the City is currently finalizing a tree cutting bylaw .

Ecological recovery will also need to dovetail with other initiatives. For example, Council appointed a Greenspace Advisory Panel to recommend a system of greenspaces to be protected or enhanced. If approved by Council, some of the greenspaces will receive priority for intervention to aid in their ecological recovery. Others, such as High Falls, will be protected but left untouched.

Likewise, Rainbow Routes trails should also be high on the list for receiving interventions to aid in ecological recovery. The more attractive the trails, the more people will use them.

What tree species will replace those that now make up the Greater Sudbury forests?

A Climate of Extremes

Climate change models indicate that Greater Sudbury is headed for a warmer and wetter climate. We'll be subjected to extremes in temperature and increased droughts and storms.

Depending on the climate change model used, the Canadian Forest Service predicts that by 2100, the majority of our common forest tree species will find the Greater Sudbury area unsuitable. These include Jack pine, red pine, white pine, white spruce, black spruce, white birch, and trembling aspen.

Ecological recovery in Greater Sudbury will need to include species in our plantings that currently grow just to the south of our City. This will need to be continued over the coming decades including ever more southern species as climate change progresses. This type of intervention is called assisted migration. New species introduced to the local area will be tracked to gauge success and research will be required on the effects of climate change on species migration.

In a few decades, plant communities in Greater Sudbury will likely be radically different than they are today. The time to prepare for these changes is

NOW !

Low-bush blueberry in fall

Blueberries

Based on some climate change scenarios, Canadian Forest Service modeling predicts that wild blueberry bushes in Greater Sudbury will be far fewer in the coming decades.

But that won't be for a while yet. In the meantime, blueberries remain important to the local economy and to people's enjoyment of the area. We need to make sure there's plenty of blueberry 'opportunities' for as long as possible. In a few decades, the climate should allow high-bush blueberries to grow. These are taller bushes and have larger berries.

The best blueberry site conditions are provided by the nutrient-poor, acidic sands in the Garson and Falconbridge area. Blueberry fields could be managed in these areas, similar to what is done in New Brunswick, Nova Scotia, Maine, and Quebec's Lac St. Jean region.

The City, with the help of VETAC, will prepare a blueberry management plan that will identify ways to protect and derive greater community benefit from our wild blueberries.

Photos: The Foodshed Project

Biodiversity & Food

Biodiversity is not only important to the natural environment, but also to our crops and livestock. Reduced diversity of crops and livestock means fewer traits available for selective breeding to guard against diseases, insect pests, or changing climates. Biodiversity also impacts available pollinators and soil quality.

Plant varieties and animal breeds represent decades or centuries of careful selection for specific traits and adaptability to local conditions. Prior to industrialization, these varieties and breeds were not only essential to local human populations but also added to the special character of a place. Hundreds of varieties exist for many of our common vegetables, for example, each with very specific characteristics, tastes, and growing requirements.

Yet, the diversity of the species that feed us is being reduced at an alarming rate due to the spread of industrial agriculture, which relies on relatively few varieties and breeds.

The Greater Sudbury Food Charter, which highlights the importance of biodiversity to the environment and food crops, was approved by City Council in 2004. Groups in Greater Sudbury, like the Sudbury Food Connections Network, The Foodshed Project, and Eat Local Sudbury, are working to promote eating locally and enhancing the diversity of garden crops. Seed exchanges, a Biodiversity Garden Planner, and a Food Biodiversity Workshop series are examples of the many projects to help **YOU** participate in saving food diversity in your own backyard.

Peregrine Falcon Photo: Don Johnston

Species At Risk

Species at Risk are those whose populations are low enough to merit special actions to prevent them from becoming extinct or from disappearing from the Province. An independent committee of scientific experts determines how imperiled a species is and then assigns it to one of four categories: Extirpated, Endangered, Threatened or Special Concern.

As soon as a species is listed as endangered or threatened, it, along with its habitat, are automatically protected from harm, under Ontario's Endangered Species Act.

Species can become at risk due to a number of reasons. These include habitat loss, pollution, changing land use activities, as well as the spread of invasive species.

More than 190 of Ontario's wild species are at risk, and some of these, like the Peregrine Falcon, occur in Greater Sudbury. The City's Official Plan includes policies that relate directly to the protection of the habitat of Species at Risk.

Species at Risk will be considered in planning and implementing the interventions associated with ecological recovery in Greater Sudbury.

Species at Risk stewardship and recovery is a key part of protecting our biodiversity. Ontario's Biodiversity Strategy includes a set of principles, goals and actions we all can take to protect and recover Species at Risk.

Visit the Ontario Species at Risk website for more information:
http://www.mnr.gov.on.ca/en/Business/Species/

Tracking Change

Tracking or monitoring the changes to the recovering ecosystems is vital. It tells us whether the interventions are making a difference; if additional interventions are needed; and if interventions in an area should be ended and nature left to do the rest.

The Cooperative Freshwater Ecology Unit has been monitoring lake ecosystems in Greater Sudbury for decades. An equivalent, coordinated effort is now needed for ecosystems on land.

So what needs to be tracked ?

The number of different native plant species in a recovering forest is important as is the size and health of the trees. Numbers and variety of frogs and salamanders in wetlands and adjacent forests also can provide insight as to the health of these systems. Many birds are very choosy about their habitat so they make excellent indicators of a healthy forest at all stages of its development. Even the variety of insects in the forest soils speaks to its health.

Although most of the monitoring will be undertaken by professional biologists, there will be opportunities for skilled naturalists to continue participating in specific monitoring projects, such as marsh monitoring and forest bird monitoring.

“My greatest reason for hope is the spirit and determination of young people, once they know what the problems are and have the tools to take action.” **Dr. Jane Goodall**

World Youth Day 2002 – regreening participants

National Historica Fair 2003 – regreening participants

Education for Life

We never stop learning. Educational opportunities arising from Greater Sudbury's ecological recovery should be many and remain accessible to all.

The City's Regreening Program has provided hands-on learning opportunities for more than 30 years. The Program has worked with countless schools, as well as colleges, universities and organizations, including seniors and faith-based groups.

Building on its solid reputation and educational experience, the City's Regreening Program will continue to provide leadership and support in identifying, planning and coordinating educational opportunities in collaboration with various participating organizations. The Regreening Program will continue conducting field trips, facilitating tree planting events, giving talks in classrooms and providing information to the public at important community events like Earth Day.

In collaboration with the Greater Sudbury Biodiversity Partnership, the City's Regreening Program will host an annual biodiversity forum, develop an electronic newsletter and electronic journal, and develop a local biodiversity website.

Research

Greater Sudbury's ecological recovery has been the source of much research by universities and colleges. Research has focused not only on plants, but also on insects, fish, amphibians, reptiles, birds and mammals. Results have been profiled at scientific conferences the world over.

Scientific research will remain an important component of the ecological recovery of Greater Sudbury. Research results will continue to be used to refine specific interventions and operations when appropriate. Research will also be required early on to identify baselines, plant community targets, and protocols for long-term monitoring of ecological recovery.

Every year, several university students undertake research projects on local ecosystems. These projects are important and their findings should be communicated more broadly to the public. The City will host an annual Biodiversity Forum to allow these students, and their professors, to showcase their findings to the Greater Sudbury community. The Forum will also allow local naturalist groups, agencies and others to share their projects, findings, and concerns.

Results from research and other information on local biodiversity will also be shared through an electronic newsletter, an electronic journal and a biodiversity website hosted by the City. Data and information on local biodiversity will require some means of storage and retrieval to ensure their lasting contribution to our understanding of ecological recovery. An information strategy will be developed over the next two years.

Working Together

We understand the meaning of ‘shared responsibility’. We’ve all taken part in healing our landscape.

Some of us have been involved for years in local groups, clubs or associations that help promote and restore our local ecosystems or wildlife. Some of us are employed by colleges and universities, conducting ecological research and educating tomorrow’s environmental professionals. Some of us are employed by agencies or companies that manage and protect our ecological systems. While these agencies, educators, students and groups operated more or less in isolation, in 2009, many of these came together to form the Greater Sudbury Biodiversity Partnership.

The Greater Sudbury Biodiversity Partnership will work individually and collectively to help restore, protect, research, monitor and manage our natural systems and wildlife. The Partnership will also promote and educate on the importance of our local biodiversity.

Importantly, the Biodiversity Partnership will provide opportunities for people like **YOU** to get involved in restoring our ecosystems, creating and managing wildlife habitat and tracking plants and animals in our City.

Everyone Can Get Involved

There's much **YOU** can do to green up our City and help increase biodiversity:

- ❑ Plant shrubs and trees on your property.
- ❑ Join a garden club and learn how to propagate plants for regreening our City.
- ❑ Volunteer to help with the Ugliest Schoolyard Contest and help regreen a place where kids grow and learn.
- ❑ Get involved with a local naturalists group or fish and game club to learn about wildlife habitat projects.
- ❑ Adopt-a-hill for your group to apply lime and plant trees and shrubs.

There's also a host of different wildlife monitoring initiatives **YOU** can get involved with, like:

- ❑ Frog Watch Ontario
- ❑ Ontario Turtle Tally
- ❑ Canadian Lake Loon Survey
- ❑ Christmas Bird Count
- ❑ Project FeederWatch
- ❑ Marsh Monitoring Program
- ❑ Ontario Forest Bird Monitoring Program

Seen individually these might seem like very small actions, but together they really make a difference.

Find out more at www.greatersudbury.ca\biodiversity

Moving Forward - Pulling It All Together

Liming, tree planting, lichens, blueberries, lakes and streams. How do we pull all these elements together and know when to do what and where?

The answer is the 5-Year Operations Plan. This plan will identify the interventions that will be applied to specific areas within a five-year period. The plan will be used to determine specific requirements for liming, tree planting, understory plants, and labour.

The Operations Plan will need to consider a large number factors, including property access; traffic volumes due to road re-construction in summer; plant availability from various sources; aerial liming; and more.

VETAC has considerable experience in coordinating multiple considerations in the development of operations plans. As such, VETAC will oversee the development of the 5-Year Operations Plan.

The 5-Year Plan will also identify research requirements to measure progress of local ecological recovery.

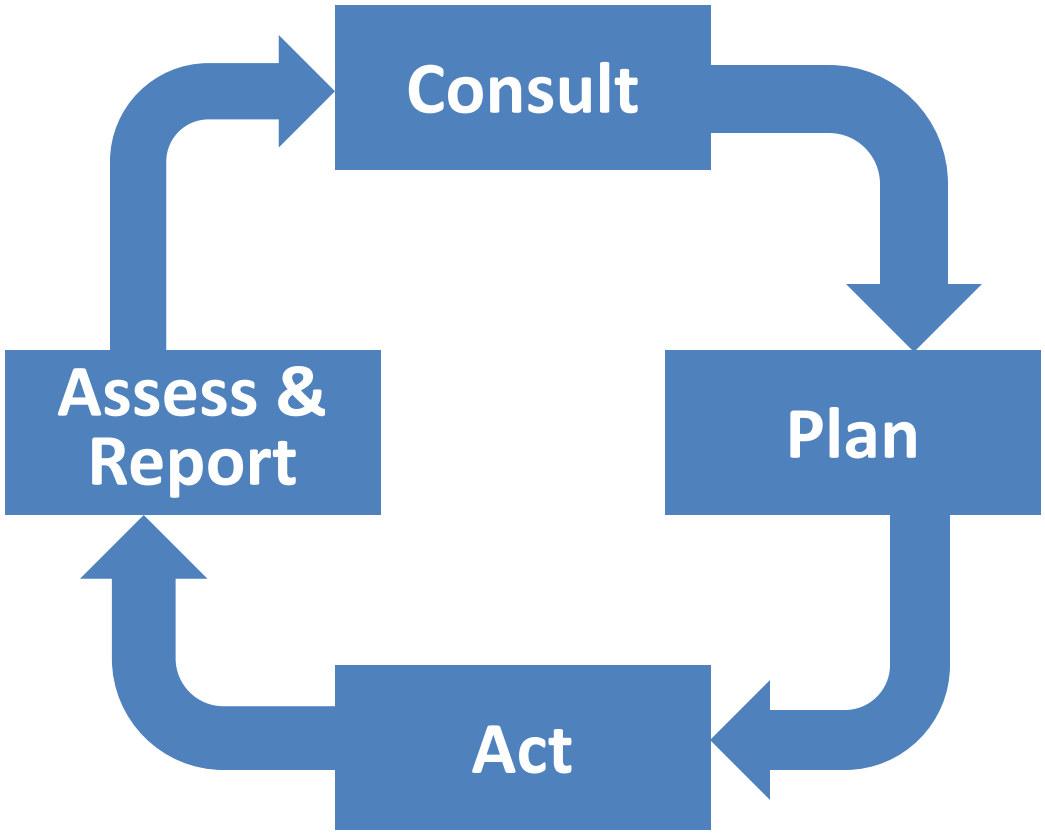
In addition to the 5-Year Operations Plan, the actions, responsibilities and timelines for various elements of this ecological recovery plan are outlined in the tables that follow.

Interventions

What	Who	When
Liming, Fertilization, and Seeding	City (by hand) Vale Inco (by air)	Ongoing: • 25 to 50 ha per year by hand depending on terrain. • 100 to 150 ha per year through aerial liming
Planting of tree and shrub seedlings	City, Vale Inco, Xstrata Nickel & Volunteers	Ongoing – Target of ½ million conifer seedlings per year starting in 2010 and 5000 shrubs and hardwood seedlings. May be any combination of the above in a given year.
Lichen 'seeding' on bare rock	City	• To be evaluated from 2010 to 2014. • Widespread use if outcome of trials are positive.
Planting forest shrubs and wildflowers	City	Ongoing but dependent on availability of stock
Transplanting of forest floor 'mats'	City	• Ongoing in tree plantations over 20 years old. • Dependent on availability of donor sites
Collecting seeds and propagating native plants	City and other partners	• Ongoing • Need to establish community partners for growing plants from local seed sources
Planting trials to determine suitability of plants for 'assisted migration' due to climate change	City	Ongoing – initiated in 2009

Community-based Initiatives

What	Who	When
Development of 5-Year Operations Plans	City (oversight by VETAC)	• First plan to be developed in 2010 to address the period 2011 to 2015. • Annual reporting to the community.
Host an annual Biodiversity Forum	City with assistance from other Greater Sudbury Biodiversity Partners	First Biodiversity Forum to be held in early 2010.
Conduct research on ecological recovery, including wildlife populations and reproductive success	Various researchers from colleges and universities	Ongoing
Develop a biodiversity website, an electronic newsletter and electronic journal to inform the community on matters relating to local ecological recovery, plants, animals and ecosystems.	City with assistance from other Greater Sudbury Biodiversity Partners	• Website and first electronic newsletter should be completed by early 2010. • First electronic journal issue should be completed by mid-2011.
Develop biodiversity curriculum	City and the school boards along with Greater Sudbury Biodiversity Partners	• Initial discussions in 2010. • Pilot project(s) in Fall 2010.
Develop a blueberry management plan	City and other community partners	• Discussions in 2010. • Draft Plan by end of 2011.
Conduct research to identify baselines, plant community targets and protocols for long-term monitoring of ecological recovery	City and other community partners	Initial research objectives outlined in first 5-Year Operations (2011-2015).



The Biodiversity Action Plan will lead to actions, which in turn will lead to assessment of and reporting on the results of the actions. Reporting will lead to consulting with the community before revising the Biodiversity Action Plan.

Reporting

Transparency. Accountability.

These are two words we heard loudly and clearly when speaking with community members. It's important to know not only *what* we're doing, but how we're managing it, how it is being paid for, and how we are measuring our progress.

So we have created a structure for our efforts that ensures transparency and clearly outlines accountabilities.

Oversight: The biodiversity initiative is overseen by the City's Regreening Program and VETAC. As the City's Advisory Panel on Regreening, VETAC has been improving our City's environment for more than 35 years, and is currently Chaired by Dr. Peter Beckett of Laurentian University.

Measurement/Reporting: Under VETAC, an annual report will be prepared detailing progress made in the prior year, outlining priorities and actions for the coming year, and providing an overview of funds spent in the previous year, and budget for the coming year. The first report will be published in early 2011.

A website dedicated to Greater Sudbury's biodiversity will be maintained by the City and will showcase accomplishments in ecological recovery in our community and will provide information on biodiversity-related events.

Funding

Despite the remarkable achievements we've made together in regreening our community, the work that remains is daunting. It won't be completed in a few years. It will take decades.

Regreening our City has been costly. So far, the City's Regreening Program has cost upwards of $24 million since 1978. Aerial liming, tree planting and other reclamation projects conducted by Vale Inco and Xstrata Nickel have cost millions more. Future ecological recovery costs will be at least as great as those that have brought us this far.

As involved members of this community, both Vale Inco and Xstrata Nickel have committed to the long-term support of ecological recovery efforts. Vale Inco has committed $1.25 million to the Regreening Program over the next five years, and Xstrata Nickel has committed $1 million over the same time period. This combined budget of $2.25 million over the next five years is, in annual terms, more than five times the recent company commitments to the Regreening Program. These budget commitments are in addition to the funds committed by each company to their independent activities including aerial seeding, land reclamation, tree planting and other environmental activities. Further, both companies have committed to financially supporting the City's Regreening Program long-term and to periodically re-evaluate budget requirements for the Program. Budget commitments and sources will be detailed in the annual report.

As in the past, the City of Greater Sudbury will assess the funding of its popular Regreening Program as part of the annual municipal budget process. Other funding partners, such as Tree Canada, may provide continued support as opportunities permit.

Next Steps

There's a lot of work to be done in the coming years. Just as the environment around us evolves and changes, so will this Action Plan.

We see this Action Plan as a 'living document' for the community, one we will review regularly and update according to our changing landscape, and to the priorities of our community.

Accordingly, we want your views on the Action Plan.

Address your comments to **Stephen Monet, Manager of Environmental Planning Initiatives**, and send them by:

- Post: PO Box 5000, STN A, 200 Brady Street, Sudbury, ON, P3A 5P3
- Fax: (705) 673-2200
- Email: stephen.monet@greatersudbury.ca

A 5-Year Operations Plan that will cover the years 2011 to 2015 will be developed in 2010. The Operations Plan will provide the details as to what specific actions will be done in this time period and what areas will be worked on.

Now, let's get to work !

For more information, visit the biodiversity website at:

www.greatersudbury.ca\biodiversity


“Learn from yesterday, live for today, hope for tomorrow. The important thing is not to stop questioning.”
Albert Einstein