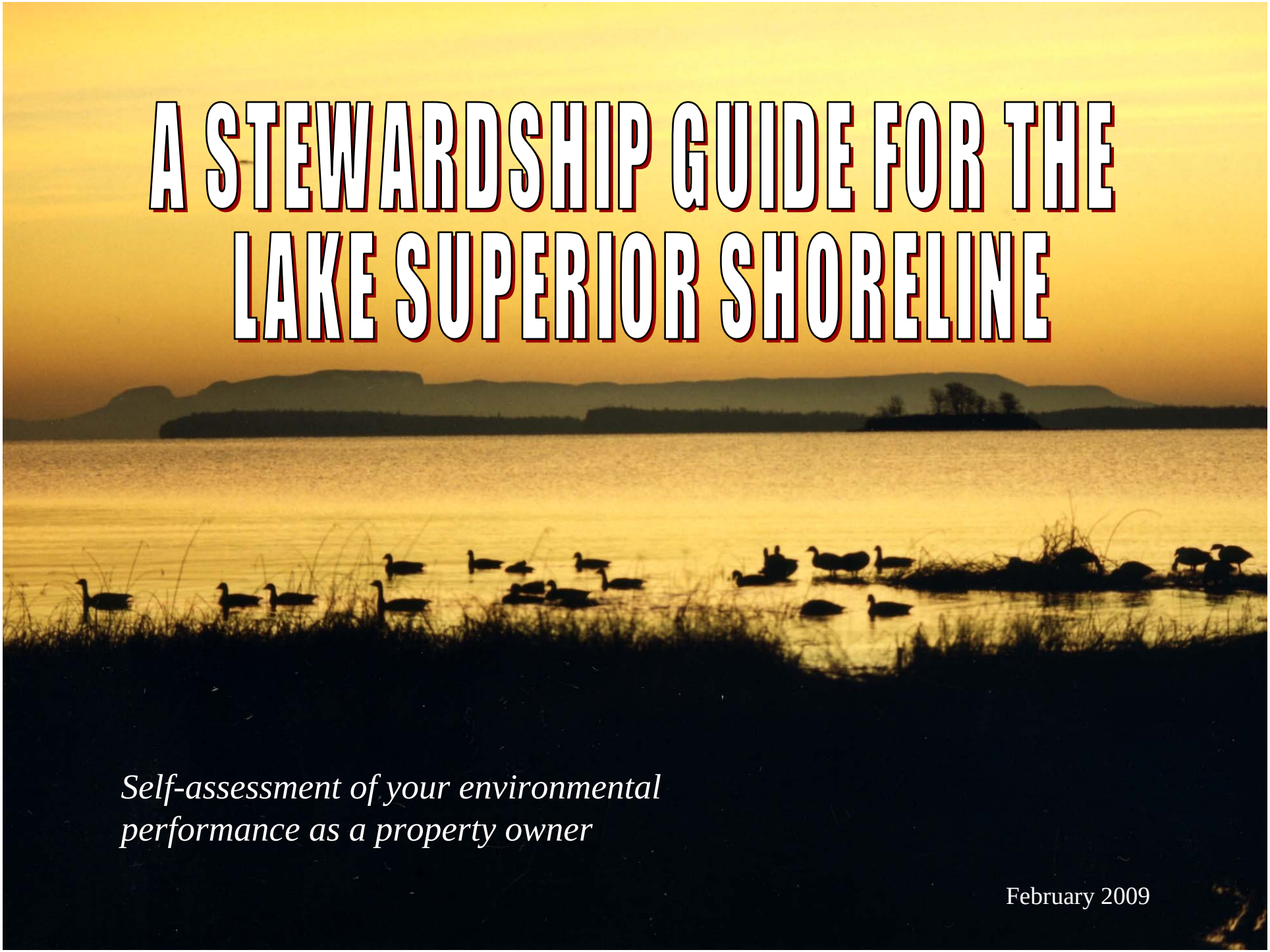

A STEWARDSHIP GUIDE FOR THE LAKE SUPERIOR SHORELINE

Self-assessment of your environmental performance as a property owner

February 2009

Using this Guide… a quick overview

1. Familiarize yourself with the Guide (pg. 4-6).

2. Complete the Worksheets that apply to you. Enter your rating in the boxes provided (starts pg. 18).
(NOTE: If a particular Worksheet does not apply to your situation or property, simply skip over it).

3. Locate the "1"s and "2"s ratings and transfer these to the Action Plan Sheet found at the back of the document. The ratings identify where certain situations or practices on your property could be improved.

4. Use your Action Plan to help you identify priorities and plan short term and long term actions to address them.

The Resource List gives you a lot of sources for further assistance in working through your Action Plan .

Enjoy! This Guide is intended to inform and assist you.

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The Lake Superior Stewardship Guide Introduction

What is the purpose of the Lake Superior Stewardship Guide?

The goal of the Lake Superior Stewardship Guide is to assist in the protection of the natural environment, including groundwater and surface water such as streams, rivers, creeks, wetlands and lakes and the natural landscape features that support these ecosystems.

By protecting natural resources, not only is the natural and cultural heritage of our region being conserved, but the legacy of Ontario's clean water will also be protected for future generations.

By protecting water quality, property owners and residents are protecting their investments. Residents will realize that being a water quality steward and working with the environment will result in savings of time, money and frustration.

This guide is an important tool designed to help individuals make a difference. It provides a framework to allow residents to evaluate and manage their property. Through completion of the worksheets, residents will learn what they are doing right, and where they can improve in protecting water quality.

Silver Harbour Conservation Area

Is this guide for you?

This guide is intended for non-farm rural residents, cottage and property owners along the Canadian shore of Lake Superior from Dorion in the north to the Canada-U.S. border in the south. The focus is on the communities east of Highways 11/17 and 61 within the Area of Jurisdiction of the Lakehead Region Conservation Authority. This area of land stretches over part of Dorion Township, Municipalities of Shuniah and Neebing and the City of Thunder Bay. This guide can also be adapted for shoreline property owners along inland lakes and rivers within the Area of Jurisdiction since water quality protection starts upstream as these lakes and rivers flow into Lake Superior.

The Lake Superior Stewardship Guide Introduction

A Bit of Background

The Lakehead Region Conservation Authority (LRCA) is a local resource management agency working on a watershed basis. Conservation authorities protect people and their property from natural hazards of flooding and erosion; protect natural areas and open space, restore and protect aquatic and natural habitats; and provide recreational and educational opportunities to local residents.

The LRCA Area of Jurisdiction covers over 2,600 square kilometres and extends from the U.S. border to the eastern edge of Dorion Township. There are eight Member Municipalities in our jurisdiction which are the City of Thunder Bay, Municipalities of Oliver Paipoonge, Neebing and Shuniah and Townships of Dorion, Gillies, Conmee and O'Connor.

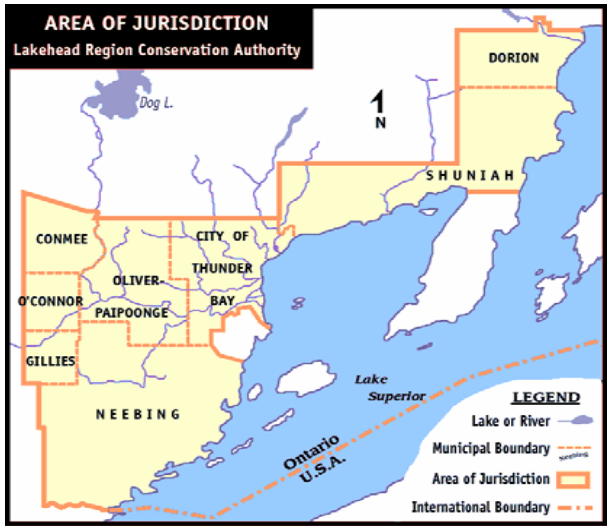
Ontario Regulation 180/06 regulates development in areas where the control of flooding, erosion, pollution or the conservation of land may be affected by development.

Areas considered to be regulated by the Conservation Authority include all floodplains surrounding watercourses including streams, rivers and creeks, Provincially Significant Wetlands, Lake Superior and large inland lake shorelines, ravines, river or stream valleys, steep slopes, talus slopes and property zoned "Hazard Land" or "Use Limitation". On Lake Superior the regulated area extends 15 metres landward from the 100-year high water level and one kilometre into the lake but does not include islands.

Typical activities that may be regulated include construction of all buildings and additions including modification or reconstruction of foundations which support existing buildings, breakwalls, revetments, rubble groynes, jetties, docks, stairs, decks, gazebos, boat ramps, boat storage structures, dredging, temporary or permanent placement of fill, grading, removal of fill or site alteration, retaining walls, bridges, crossings and roads.

Visit the LRCA office to view the regulated area screening maps. If your proposed development is located within a regulated area, the staff at the LRCA will assist you in determining whether or not a permit is required. Staff will review your submitted project information and conduct a site visit, if necessary.

The LRCA has a Level II Agreement with the Department of Fisheries and Oceans (DFO), Ontario Great Lakes Area. The LRCA is responsible for the initial evaluation of proposed work as to its potential impact on fish habitat. During review of proposed works, staff will determine whether or not the project is likely to result in a harmful alteration, disruption or destruction of fish habitat (HADD). Projects not considered to be a HADD, will be issued a Letter of Advice regarding proper techniques to prevent a HADD from occurring. Projects which may likely result in a HADD are referred to the DFO for their authorization.



How to use the Lake Superior Stewardship Guide

This Guide will help you see your property and your actions from a new perspective. This guide will ask you to think about your land, the buildings and structures on your land, and how your actions affect the larger landscape. It will ask you to rate how your actions affect the environment and water quality around your property. Finally, the guide will ask you to consider new ways of using and maintaining your property in order to decrease the risks to natural resources.

The Lake Superior Stewardship Guide has three parts – an **Introduction to Local Ecology,** a **Workbook** and an **Action Plan.**

The Workbook

The workbook includes twelve worksheets to help you rate your activities on your property. A glossary is located at the end of the workbook to help you with terminology.

Pick out the worksheets that apply to your property; you need not do the entire workbook. Read the introductory page for each worksheet. Fill in the box "Your Rating" in the right hand column for each topic that applies to you. For topics that don't apply, write the letters 'NA' (not applicable) in the rating box. If you don't know how you rate, mark the box with a question mark to remind yourself to conduct further research.

For each topic there are four descriptions of either natural conditions or current situations. Each has a number rating:

4 (Best)
3 (Good)
2 (Fair)
1 (Poor)

The Best (or 4) rating describes conditions that protect the environment and water quality or have the lowest potential for environmental damage. The Poor (or 1) rating describes conditions that have the highest potential to affect the environment negatively and require an Action Plan.

Circle the condition that best describes your property. If you circle 1 or 2, mark the rating number for each topic in the matching box at the right hand side of the Worksheet. The purpose of this rating system is not to tally the numbers in the right-hand column, but to identify areas that need improvement on your property. A rating of 1 or 2 indicates room for improvement.

NOTES:
Bold, italic type indicates conditions that may violate federal or provincial legislation or municipal bylaws at the time this document was originally developed. As legislation and policy can change over time, always check with the applicable agency for up to date legislation and requirements.

Example of completed worksheet question:

Topic	Best **4**	Good **3**	Fair **2**	Poor **1**	Your Rating
DURING CONSTRUCTION					
5 Minimizing erosion and/or compaction	Project area is subdivided into smaller projects and done sequentially.	Clear only the area necessary for the project	Large areas are cleared but vegetation is restored.	Entire Property is cleared at once	**2**

The Action Plan

When you have filled in all the worksheets that apply to your property, record the ratings for each topic in the **Action Plan** part of the guide. Remember, some worksheet sections may not apply to your property.

Your 1 and 2 ratings indicate which areas of your property management need some improvement to reduce the risk of environmental damage and water contamination.

Use the information in the Action Plan section to help analyze your potential problems and decide what you can do to solve or control them. Remember, this is **YOUR** Action Plan. It must suit you and your property.

An example of an Action Plan is found on the next page of this manual. A blank Action Plan is found at the end of this manual.

Often, the information in columns 4 and 3 can indicate how to improve your practices. As well, you can consult the **Resource List** at the end of the workbook to find more information for developing your Action Plan.

Sample Action Plan

Worksheet and Topic Number	Page	Worksheet Theme	Rating	Short-term Actions	Long-term Actions
7 – 2	?	Waste Management	2	Get another recycling bin	Generate less garbage
10a – 6	?	Forested Land	1	Check worksheet resources for more info	Plant trees to establish connections
				Decide where connections are needed	
10c – 2	?	Wetlands	2	Talk with tenant farmer about his field	If possible widen buffer and plant
				requirements	wildlife shrubs in it

Where do you fit in?

Broad Scale – A Watershed Perspective

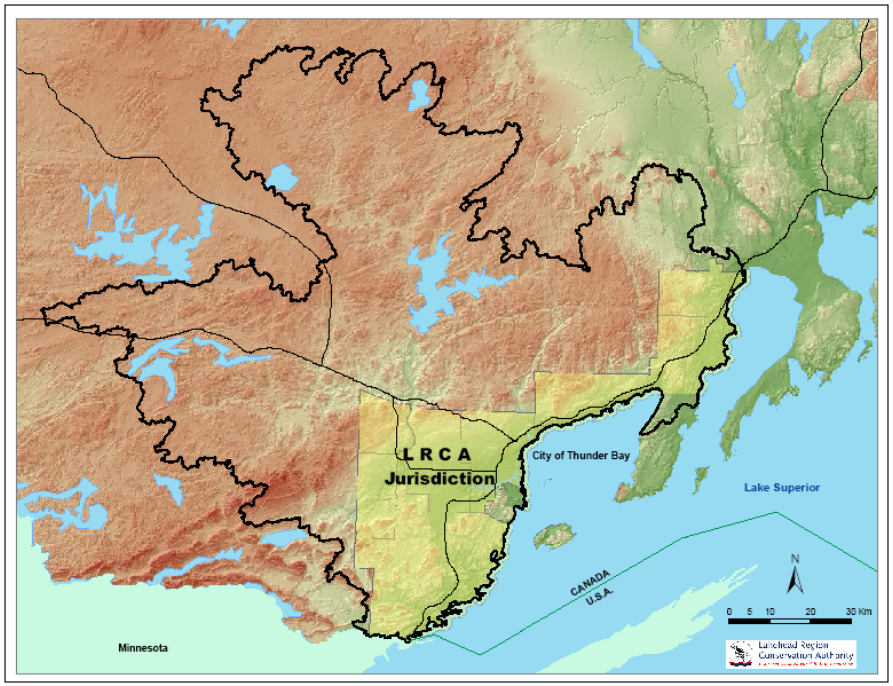
What is a watershed?

A watershed is the entire land/water area that drains into a body of water such as an ocean, lake, river, or pond. The boundaries of a watershed are formed by the highest points in the landscape – they are like all the edges of a bathtub or sink – any water that falls within it will drain downwards to the same outlet.

On its journey towards an outlet or drain, the water within a watershed can pass through different landscape features such as streams, rivers, lakes, bogs and marshes.

The Lakehead Watershed forms part of the Lake Superior Watershed and even larger Great Lakes-St. Lawrence Watershed.

The first step in protecting water quality is to better understand your place in this watershed. Become familiar with local natural features and understand how they function in relation to this watershed and to water quality.



Lakehead Region Conservation Authority (LRCA) jurisdiction within the Lakehead Watershed

Why should you be concerned?

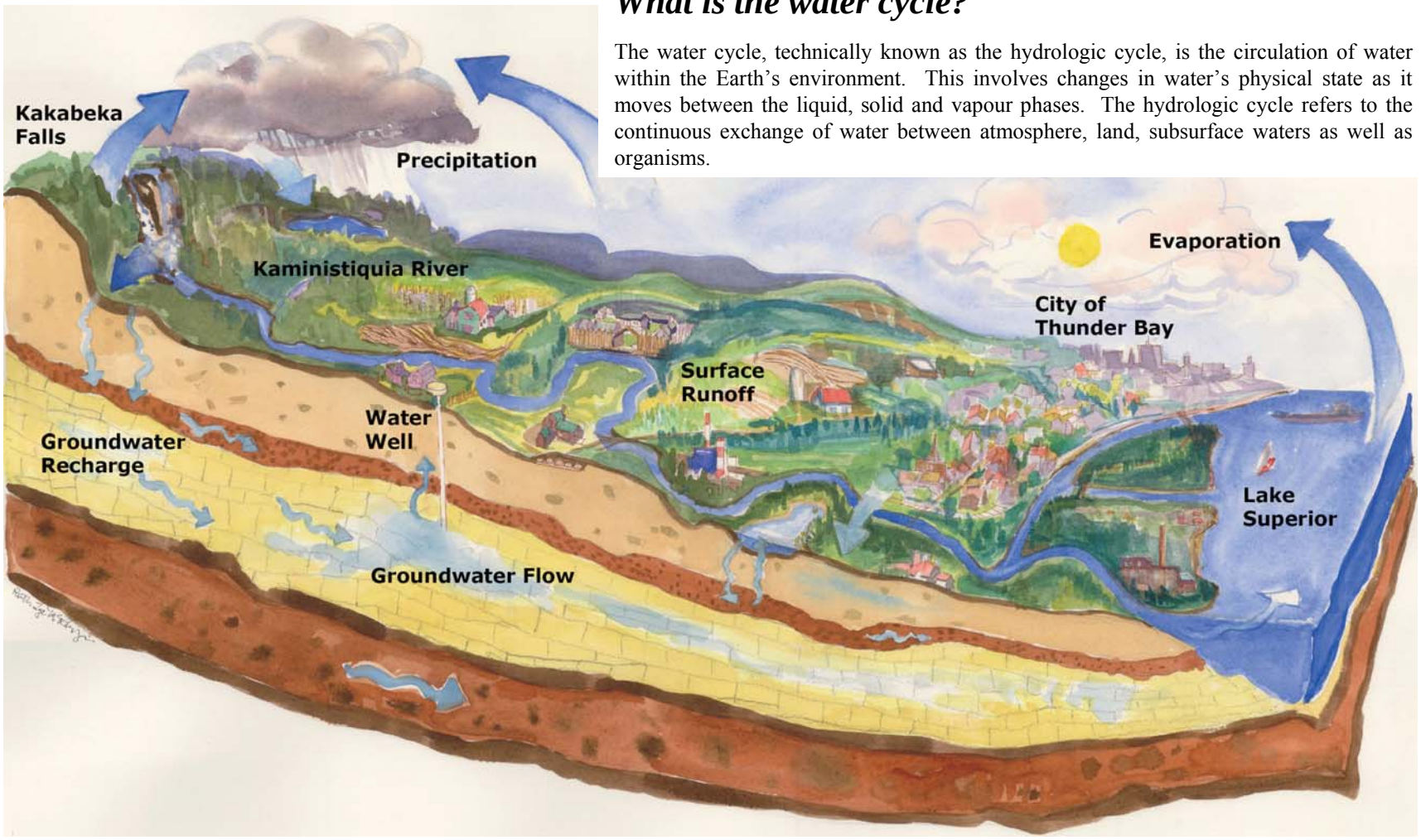
- Precipitation, evaporation and temperature largely determine the quantity of water in a watershed.
- The amount of water moving through the various landscape features at any given time determines the amount of water available for ecosystems and for human use.
- **YOU** live in the Lakehead Watershed. Your actions and those of your neighbours affect water quality in this watershed.

Where do you fit in?

Broad Scale – A Watershed Perspective

What is the water cycle?

The water cycle, technically known as the hydrologic cycle, is the circulation of water within the Earth's environment. This involves changes in water's physical state as it moves between the liquid, solid and vapour phases. The hydrologic cycle refers to the continuous exchange of water between atmosphere, land, subsurface waters as well as organisms.



Where do you fit in?

Local Scale – Lake Superior Shoreline – Dorion Township to U.S. Border

Lake Superior is the largest of the Great Lakes, with a volume of 12,230 cubic kilometres (km^3), a surface area of 82,100 square kilometres (km^2), an average depth of 147 metres and a maximum depth of 406 metres. It is also the largest freshwater lake in the world by surface area and is the world's third-largest freshwater lake by volume. It has the longest hydraulic retention time (191 years), of all the Great Lakes. Theoretically, it would take this long for all the water to replace itself. Initially it appears that this large volume of water can be beneficial to diluting pollutants, but in reality it would take generations to cleanse the waters once polluted. Over 200 rivers feed Lake Superior; the largest include the Nipigon, St. Louis, Pigeon, Pic, White, Michipicoten and Kaministiquia Rivers.

Local geology of the area is of late Wisconsinan age, which were deposited by the retreating glaciers approximately 12,500 years ago. Lacustrine (lake) sediments were deposited by a re-advance of the Superior Lobe approximately 11,500 years ago. Generally, the surficial deposits throughout the area are thin, less than 14 metres thick, with local exceptions. The thickest layer occurs near the mouth of the Kaministiquia River where deposits are up to 50 metres (160 ft) deep.

The bedrock of the region consists entirely of rock dated from the Precambrian age and is over 2.5 billion years old. The rocks have been extensively deformed through metamorphism. Generally, the rocks that are the oldest in the region were volcanic rocks that changed over time, with local intrusions of ultramafic rock (dark coloured with high magnesium and iron content) and felsic rock (light coloured with high silica i.e. quartz or granite).

Above this formation, is a younger sequence of rocks that consists mainly of sedimentary rock from the unique Gunflint and Rove Formations, which contain a complex variety of rock types.

In the northwest of Lake Superior, the formation of three large bays protect the coastline from high energy wave exposure. The coastlines in our region generally have a maximum fetch (the area of open water over which waves are generated by wind) under 50 kilometres compared to 500 kilometres farther east towards Terrace Bay.

The areas along Lake Superior that are exposed to wave action tend to form various types of bluffs, pebble/cobble beaches and boulder beaches. The shoreline areas that form bays or are protected by islands, tend to have low vegetated banks, mixed beaches, cobble beaches, pebble beaches and wetlands. The shore zone ice cover lasts 5 months of the year. There are no dune formations or erosional/dynamic beaches along the Lake Superior Shoreline in the Thunder Bay Area.

The largest development in the region is the City of Thunder Bay, which has a population of 109,016 (Statistics Canada 2001). The City was established in 1971 through the amalgamation of the cities of Port Arthur and Fort William. There are several other major settlements in the region. This includes the Municipalities of Neebing, Shuniah and Oliver Paipoonge, which include the geographical Townships of Blake, Crooks, Pardee, Pearson, Scoble, McGregor and McTavish. The Townships found within the region include Conmee, Dorion, Gillies, and O'Connor.

Where do you fit in?

Local Scale – Lake Superior Shoreline – Dorion Township to U.S. Border

The shoreline from Pass Lake to Dorion is comprised mostly of wetlands and low vegetated banks. The shoreline is protected from wave action by the peninsula at Black Bay. As a Provincially Significant Wetland (PSW), Hurkett Cove, which lies approximately four kilometres north of Dorion on the Lake Superior shoreline, is important habitat for migratory birds and has been named one of the top birding locations in all of Ontario. Hurkett Cove Conservation Area (233 acres/94 hectares) border the PSW on both the north and south shorelines.

Black Bay and the coastline from Hurkett to Thunder Cape on Sibley Peninsula is designated as part of the larger Lake Superior National Marine Conservation Area (NMCA) by Parks Canada. The official designation prevents resource extraction or other operations which may damage the aquatic or terrestrial ecosystems in the conservation area. As well, it is intended to protect historic shipwrecks and archeological sites of Native Americans.

The shoreline immediately north east of the City of Thunder Bay has many small beaches and has traditionally been the location for cottages or summer camps. The area from Thunder Bay to Pass Lake (approximately 35 km) is the only part of the Lake Superior shoreline in the region where depositional sand beaches can be found. The shoreline has several high-use recreational beaches and boat launches. At the mouth of the Blende River the wetland area has abundant wildlife. The area is a preferred nesting site for a variety of wading birds and Peregrine Falcons, and is an ideal location for fish spawning.

MacKenzie Point Conservation Area (2.5 acres/1 hectare) occupies the very tip of a peninsula extending into MacKenize Bay. The bluffs at Silver Harbour were quarried to create the large granite blocks used for the breakwall protecting the City of Thunder Bay shoreline. Most of the rivers and creeks flowing into Lake Superior from this shoreline support cold water migratory fish species. Seasonal fish spawning occurs along the areas of Caribou Island, Amethyst Bay, Mary Harbour, Papoose Islands, Wild Goose Point and Melancon Point. The shoreline is protected from wave action by the Sibley Peninsula. On the peninsula, Sleeping Giant Provincial Park, designated as a Natural Environment Park, is an important area for seasonal fish spawning during the fall including Lake Trout, Herring and Whitefish. The Thunder Cape bird observatory at the tip of the peninsula is a migratory bird landing.

Mackenzie Point Conservation Area

Where do you fit in?

Local Scale – Lake Superior Shoreline – Dorion Township to U.S. Border

The shoreline along the City of Thunder Bay contains a breakwall, which is approximately 1.2 km in length and serves as protection to the harbour from wave damage. With the exception of some areas such as the mouth of the Current River, Marina Park, some land on McKellar Island and Mission Island, most of the Lake Superior shoreline within the City of Thunder Bay is zoned for Heavy Industrial use. Located within this zone are grain elevators, paper mills, sawmills, shipyards, the Thunder Bay Port Authority and Keefer Terminal. The majority of the shoreline within the breakwall is riprap, with some low vegetated banks making up a small portion of this.

Inside the breakwall, at the mouth of the Neebing-McIntyre Floodway is the Neebing Marsh, a Provincially Significant Wetland (PSW). Located south of the breakwall are McKellar and Mission Islands, each hosting a wetland along the shoreline. Mission Island Marsh is designated a Provincially Significant Wetland (PSW). In addition, part of Mission Island Conservation Area (131 acres/ 53 hectares) is located within the PSW. These islands are important habitat for migratory waterfowl, Peregrine Falcons and Bald Eagles.

The shoreline south of Thunder Bay in Neebing, from Fort William First Nation and Loch Lomond to Pigeon River on the Canada/U.S. border has a mixture of pebble/cobble/boulder beaches and exposed bedrock bluffs greater than 5 metres in elevation. The coastline is more exposed to high-intensity waves and is more jagged with many small peninsulas, inlets, bays, as well as a linear chain of small islands. This area of shoreline is less populated and less developed and contains many ecologically significant features.

Russell Point Area of Natural and Scientific Interest (ANSI) is located 500 metres inland from the shore of Lake Superior, about 15 km due south of Thunder Bay. This ANSI contains a section of raised cobble beaches at the base of a 90 metre high bluff that formed part of the ancient shoreline of glacial Lake Minong. Sturgeon Bay, as a wetland, is important habitat for furbearers (i.e. muskrats and minks), migratory waterfowl and fish. Sturgeon Bay is designated as a PSW. Thompson Island Provincial Park, off the coast from Sturgeon Bay is designated a Nature Reserve because of special geological formations and raised cobble beaches. Similarly, Spar Island, off the coast from Jarvis Bay is designated as an ANSI. The provincial significance of the island arises from its unique geological formations and rare arctic-alpine plant species which can be damaged by human activity. Local and migratory birds find important habitat in the Caldwell Lake PSW, off Jarvis Bay Road East, and the Cloud Bay PSW, at the mouth of the Cloud River.

Little Trout Bay Conservation Area (44 acres/ 18 hectares) provides public access to Lake Superior, walking trails and recreational fishing. Pine Bay is mainly comprised of low vegetated banks. At the mouth of the Pine River, Pine Bay PSW is an active feeding area for colonial waterbirds, a habitat for several species of furbearers and is regionally important for fish spawning. Commercial and recreational fishing have seasonal significance in the area. The area also has local significance as a winter cover for deer and moose.

At the border is Pigeon River Provincial Park. This 949 hectare park is designated as a Natural Environment Park characterized by a spectacular river gorge and two water falls.

Where do you fit in?

Local Scale – The coastal features of the watershed

Wetlands

Where fish start out and hang out

What is a wetland?

Wetlands can occur as both coastal and inland features of the watershed. A wetland is a highly diverse ecosystem that includes swamps, marshes, bogs, fens, pothole lakes and shallow waters. Wetlands occupy a transitional zone between well-drained upland areas and a permanently flooded deepwater habitat. In many wetlands, the land is permanently or intermittently flooded with shallow water. The most common type of wetland along the Lake Superior coastline in the Thunder Bay Area is marsh. It is characterized by herbaceous and aquatic plants such as cattails, rushes, reeds, grasses and sedges. Contact the LRCA before you begin your construction project if your property contains a wetland.

Wetland at Mission Island Marsh Conservation Area

Why are wetlands important?

Hydrologic Processes – Wetlands influence water flows mainly by intercepting surface runoff from neighbouring land, absorbing the water like a sponge, ultimately reducing flooding. Wetlands also help stabilize stream banks and lakeshores to prevent erosion from flowing water or waves. Furthermore, wetlands contribute to the recharge of groundwater and can therefore help to maintain aquifers.

Water Quality – Wetlands help to improve water quality by filtering out sediments, organic or inorganic nutrients and toxic chemicals. This reduces the amount of pollutants found on the surface and in the groundwater. Wetlands also detoxify some pollutants as they pass through the various stages of the wetland.

Wetlands are habitat for the Great Blue Heron

Wildlife Habitats – Wetlands produce an abundance of vegetation that provides food for a diverse groups of species, including insects, fish, amphibians, birds and mammals. They also provide nesting and breeding sites for local and migratory species including species that are threatened or endangered. The abundance of cover and food make wetlands some of the busiest fish nurseries around. Wetlands are among the most biologically productive places on Earth.

Where do you fit in?

Local Scale – The coastal features of the watershed

Riparian Zones

Buffering the bad stuff

The strip of trees, shrubs and grasses that naturally grow along a shoreline is important for fish habitat. This riparian zone, if undisturbed, acts as a buffer between land and water. The network of roots act as both a shoreline stabilizer and a water filter to control erosion and remove impurities from surface water runoff. Leaves and branches break the force of falling rain, and runoff is slowed by the leaf litter and broken twigs. By slowing down the runoff, the riparian zone allows the water to be absorbed into the ground, resulting in less surface flooding and bank erosion.

• The overhanging tree branches create shelter that fish seek out to lie low from predators, lay eggs, find food and shade from direct sunlight.

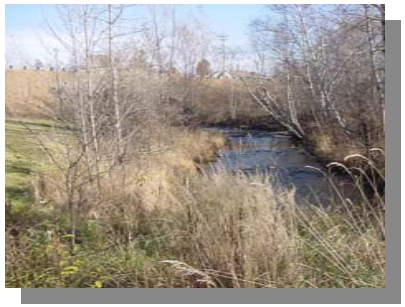
• Riparian vegetation filters out contaminants such as fertilizers and pesticides. Excessive fertilizers entering the watercourse fuel the growth of algae which, in turn, uses up the precious oxygen in the water needed by fish to breath.

• Tree roots stabilize the soil. Bare soil banks become unstable and can easily erode which adds higher levels of silt to the watercourse that can damage fish gills and lead to suffocation of the fish.

Why should you be concerned?

When it comes to large bodies of water like Lake Superior, our greatest potential impacts do not occur where we get in over our heads, but rather where we get our feet wet – the nearshore habitat like wetlands and riparian zones.

No Riparian Zone



Riparian Zone

According to the federal *Fisheries Act*, which protects fish and their habitat, the onus is on landowners or developers to ensure that their shoreline or in-water work does not harmfully alter, disrupt, or destroy (HADD) fish habitat.

Some of the projects that can damage fish habitat include dredging your boat launch, removing aquatic plants, building a bridge, culvert, dock or boathouse or creating a beach.

Department of Fisheries & Oceans (DFO) Operational Statements (See "Fish Habitat" in Resource List pg. 119), provide guidance on different types of activities in or around water. By following these guidelines, your project may not require DFO's review under the *Fisheries Act*.

If you are unsure whether or not your project may harm fish habitat, contact the Lakehead Region Conservation Authority (LRCA). The LRCA has a Level II Agreement with DFO and is responsible for the initial evaluation of the proposed work within the LRCA jurisdiction. Projects not considered to be a HADD will be reviewed by the LRCA and issued a Letter of Advice regarding proper mitigation techniques to ensure a HADD does not occur. Projects which are likely to result in a HADD are referred to the DFO.

Where do you fit in?

Local Scale – The coastal features of the watershed

Bluffs

A land feature that's on the move

Exposed bedrock bluffs are a unique coastal feature along the north shore of Lake Superior. They are common south of Thunder Bay, in Neebing Township near Pigeon River. Shoreline bluffs are also found at Mount McKay, Sleeping Giant Provincial Park and Silver Harbour.

• Bluffs are continuously changing. Natural erosion is an element of bluff dynamics and a normal part of a shoreline environment.

• The materials that make up a bluff determine how vulnerable the bluff is to erosion or slumping. As a bluff erodes, the shoreline recedes.

•The toe of the bluff is where most of the erosion occurs, depending on the force of the waves and the bluff material.

• As waves hit the bluff, material is removed (eroded). Long shore currents deposit this beach material further down the coast.

• The beach found at the toe of the bluff protects the bluff from further erosion because beaches absorb wave energy.

• While some areas are inherently erosion-prone and unstable, natural bluff erosion increases in areas cleared of vegetation, narrow sandy beaches and steep offshore slopes.

• Bluffs often create special microclimates that allow rare plant species, especially arctic-alpine disjuncts, to survive. Bluffs are also important habitat for Peregrine Falcons.

• The presence of groundwater within a bluff can cause instability and slope failure.

Groundwater

An invisible feature of this watershed

Many residents along the Lake Superior shoreline obtain their drinking water from private groundwater wells. Groundwater is a limited and vulnerable resource that needs to be protected. Although groundwater is not seen, it should not be forgotten.

• As rain and melting snow pass through the soil and crevices in the underlying rock, the water is filtered and purified.

• Water will continue to flow downwards through the ground until it reaches an impenetrable layer of soil or rock where it collects, forming an underground reservoir known as an aquifer.

• Aquifers supply water to farms, homes, industry and businesses. This groundwater is the source of drinking water for many people, including Lake Superior shoreline residents.

• The size of the aquifer and the movement of underground water is influenced by the type of rock and soil in the area and the amount of rain that falls in that area. If water is removed faster than it is being replenished, the amount of water in the aquifer decreases, and the height of the water table drops.

• Groundwater contamination is a serious concern. Contaminated water from over-fertilized lawns, septic fields, agricultural runoff, and industrial discharge can seep through the ground and make groundwater unfit for human and animal consumption and use.

Where do you fit in?

Local Scale – The coastal features of the watershed

Boulder Beaches

Boulder beaches are common along the Lake Superior shoreline. They are accumulations of large boulders (≥25cm diameter), the smaller sediments having been washed away by wave action in this high energy environment. Boulder beaches are extremely narrow and often quite steep. Beach widths of 2 metres or less are common.

Rip Rap (Man-made Shoreline)

When natural shorelines are covered with debris to protect the shore from wave-induced bank erosion, the resulting shoreline is termed rip rap. This usually takes the form of large, coarse material, which is inexpensive and locally available. On Lake Superior, most rip rap shorelines are composed of roughly quarried granite blocks.

Rip Rap at Silver Harbour Conservation Area

Pebble/Cobble Beaches

Pebble/cobble beaches are common along the Lake Superior shoreline. They consist of a mixture of pebble (0.2-4 cm) and larger cobble material (4.5-25 cm). Generally these beaches are narrower and steeper than pebble beaches; widths of 2-3 metres are common.

Mixed Beaches

Mixed beaches are also common along the Lake Superior shoreline. They are accumulations of very poorly-sorted sediment including large amounts of coarse sediment (boulders and cobble) and some finer material (e.g. sand). Mixed beaches are typically shallow sloped, very small (less than 100 metres in length), moderately wide, and restricted to pockets/covers between headlands, in well sheltered, low energy environments.

Sand Beaches: Depositional

Depositional sand beaches occur where wave and littoral drift deposited sand has accumulated along a cove or other sheltered environment. Offshore regions tend to be shallow and uniformly sloping. Small coves and bays tend to produce a thinner beach face, which rarely terminates with elevated sand dunes. These thin beach faces are typical of sand beaches along Lake Superior.

Low Vegetated Banks (Grasses or Trees)

Low vegetated banks are sheltered environments almost entirely covered by vegetation, with no erosive bluffs or exposed sediment immediately down the waterline; vegetation covers all land surfaces along the shore. Most exist in low energy environments and are generally gentle in slope.

Natural Hazards and How They Can Affect You

Risks and Challenges

Why should you be concerned?

The areas adjacent to a stream, river, lakeshore or other water body are subject to seasonal and perpetual changes, due to the dynamic nature of wind and water. Streams and rivers migrate and meander naturally, and as water levels rise and fall, banks and shorelines will shift with erosion. While this presents risks and challenges for property owners and residents living near water bodies, both personal danger and costly rebuilding and restructuring efforts can be avoided if you take the time to understand, predict and work with the natural processes that affect your property.


Property damage by Wildgoose Creek -- July 1997

Are there any natural hazard areas on your property? Mapping out your property and its features can be a helpful way to understand the risk and challenges involved.

(See Make a Map of Your Property in *Worksheet #3*)

Natural Hazards and How They Can Affect You

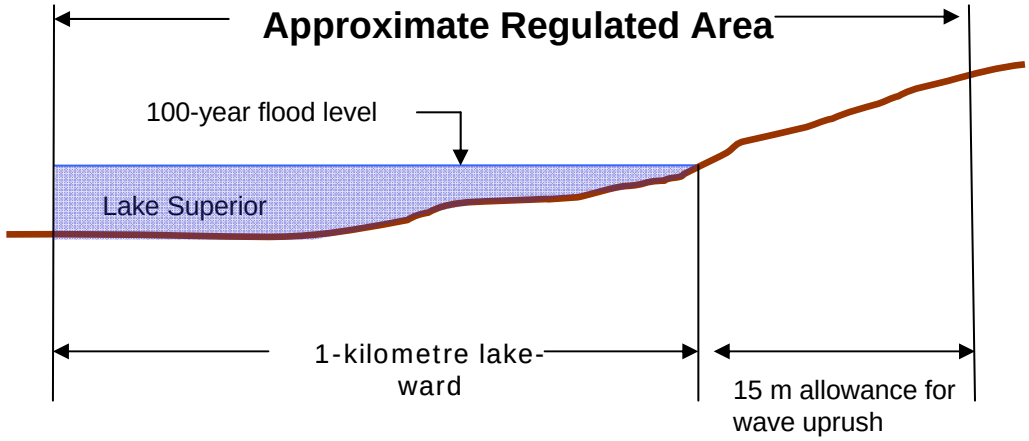
The principle mandate of the Lakehead Region Conservation Authority (LRCA) is to prevent the loss of life and property damage due to flooding and erosion and to conserve and enhance natural resources.

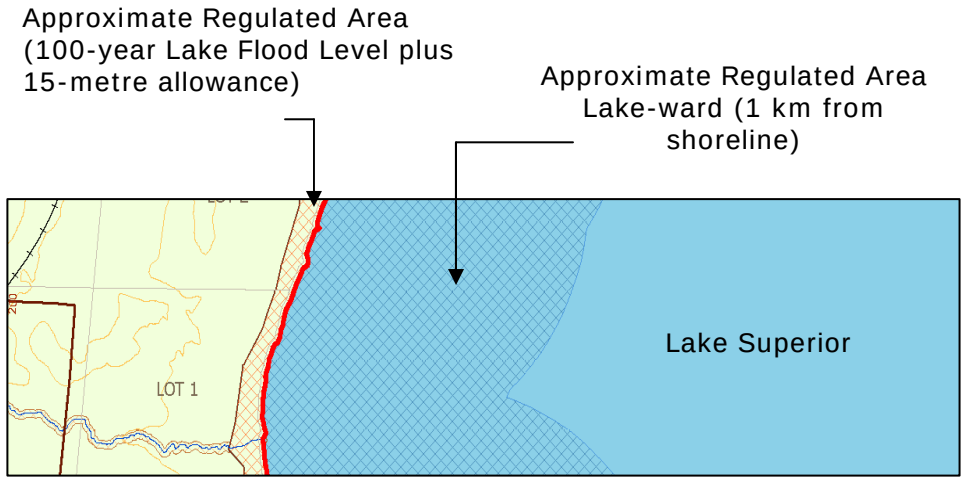
The Ontario Regulation 180/06: *Development, Interference with Wetlands and Alterations to Shorelines and Watercourses* is a key tool the LRCA uses to ensure development in the regulated area does not affect flooding, erosion, pollution or the conservation of land. It protects the mutual needs of the watercourse and the landowners adjacent to it.

The Regulation may affect you if your property is located within the LRCA jurisdiction (see page 3) and is located within the regulated area. Screening maps have been developed to quantify the Approximate Regulated Area and can be viewed at the LRCA office.

The Lake Superior shoreline is also regulated. The lake shoreline Approximate Regulated Area is derived by the 100-year flood level plus an allowance of 15 metres landward for wave uprush. The 100-year flood level, from the U.S. border (Pigeon River) to Jarvis Point, was determined by the Ministry of Natural Resources to be 184 metres above mean sea level. From Jarvis Point to the north limit of Dorion Township, the 100-year flood level was determined to be 183.9 metres above mean sea level. Lake Superior is also regulated one kilometre into the water; however, islands are excluded.

If you are planning to do any work near lakes, rivers, streams or wetlands, you may require a permit from the Conservation Authority.





Worksheet #1 – Buying a Rural Property

Why should you be concerned?

• Rural life is different from city living and can sometimes involve a more active participation in monitoring the immediate environment for your safety.

• Your property may fall within a hazard zone that is governed by particular regulations. If you think this is the case, contact the Lakehead Region Conservation Authority to find out details.

• Your new property may have a private well and a septic system. You will need to know where these are on the property and how to maintain them properly to avoid water contamination.

★

Be sure to also read the Worksheet #3 - *Getting to Know Your Property* for more information.

What can you do?

1. Consider noise, odours and traffic from nearby properties and activities (such as farming and industry) and consider the inconveniences, maintenance and legal restrictions that come with rural/hazard land ownership.

2. If you are planning on altering your shoreline contact the Lakehead Region Conservation Authority prior to initiating your project. You may also require authorization from the Ministry of Natural Resources.

3. If purchasing a 'legal non-conforming' property, check to make sure you can obtain any necessary future permits, i.e. building a septic system.

4. Would you like an open view of the lake? Choose a property that already offers one instead of clearing existing trees and shrubs. Alternatively, contact a certified arborist to help design selective breaks in tree canopies.

5. Visit the property during and immediately following a major rainfall event. Note drainage patterns and any evidence of flooding.

6. Find out if you are purchasing the title to the building and surrounding land or just the building on land owned by a Cottage or Camper Association.

7. Find out if you own the Right-of-Way property along the shoreline. In some cases the Municipality has ownership of the 20 metre (66 foot) strip of land along the shoreline.

Purchaser Checklist

Supplementary Questions for Seller Property Information Statement-Residential.

Adapted, in part, from: **The Living Edge: Your Handbook to Waterfront Living . 2003. Sarah Kipp and Clive Callaway.**

Anyone who is considering purchasing rural and/or hazard land property should ask the seller the following questions in addition to those in the *Ontario Real Estate Association's Seller Property Information Statement-Residential.* This list is only a guide and may not include all possible considerations.

	Yes	No	Unknown	N/A
Is the property serviced by a private well or is water obtained from a surface supply?				
If YES in either case:				
Do you have records of water quality tests?	☐	☐	☐	☐
Do you have well records?	☐	☐	☐	☐
Is the well properly sealed?	☐	☐	☐	☐
Is there an underground cistern?	☐	☐	☐	☐
Is there a seasonal variation in the well water level?	☐	☐	☐	☐
Has the well ever run dry?	☐	☐	☐	☐
Do you know what the normal rate of flow is?	☐	☐	☐	☐
Do you know what the draw down data for the well capacity is?	☐	☐	☐	☐
Is the property serviced by a septic system?				
If YES:				
Is there a permit for the system?	☐	☐	☐	☐
Is the leaching bed over 30 m (100 ft) from surface water or a well?	☐	☐	☐	☐
Has the tank been pumped in the last 3 years?	☐	☐	☐	☐
Does the tank adequately serve the dwelling(s) size?	☐	☐	☐	☐
Is there an effluent lift pump?	☐	☐	☐	☐
Is there a second leaching bed or space for it?	☐	☐	☐	☐
If the property is serviced by a septic holding tank, are there any cracks or holes in the tank?	☐	☐	☐	☐
Is a community or municipal sewer system planned in the next 3 years?	☐	☐	☐	☐
Are there any unregistered easements or unregistered right-of-ways?				
If YES:				
Does access to the property require any unregistered means such as historic use, handshake agreement, unregistered easement, etc?	☐	☐	☐	☐
Does anyone else have unregistered access across the property?	☐	☐	☐	☐
Are there any adjoining road allowances for public water access, including any old shoreline road allowances?	☐	☐	☐	☐
Are there conservation easements on the property?	☐	☐	☐	☐

	Yes	No	Unknown	N/A
Erosion				
Are you aware of any erosion problems or instability?	☐	☐	☐	☐
Are you aware of any neighbours with erosion problems?	☐	☐	☐	☐
Are there erosion control structures or buffers on the property or nearby?	☐	☐	☐	☐
Are there any runoff control measures (culverts, water-bars) in place?	☐	☐	☐	☐
Are there any culverts/creeks that drain into the property?	☐	☐	☐	☐
Is the location of the erosion hazard limit known?	☐	☐	☐	☐
Is the location of the floodplain known ?	☐	☐	☐	☐
Access to water				
Is there access to water?	☐	☐	☐	☐
If so, is it within a reasonable distance for your plans?	☐	☐	☐	☐
If there is a dock, is it pulled out seasonally?	☐	☐	☐	☐
Water levels				
Is any of the property within the 100-year floodplain?	☐	☐	☐	☐
Is the basement, crawl space, or main floor 30cm (1 foot) or more above the floodplain and in compliance with regulations?	☐	☐	☐	☐
Is the 100-year flood elevation and wave reach known?	☐	☐	☐	☐
Zoning				
Are there any special zoning regulations, setbacks, or shoreline protection bylaws?	☐	☐	☐	☐
Does all existing development on the property conform to local zoning bylaws?	☐	☐	☐	☐
Are all existing buildings/structures located fully on the property and adjacent properties been disclosed?	☐	☐	☐	☐

	Yes	No	Unknown	N/A
Plumbing				
Is the existing plumbing system built for year-round use?	☐	☐	☐	☐
Other				
Are there any registered or unregulated ancient burial sites or archaeological relics?	☐	☐	☐	☐
Are motorized sports allowed on any nearby water bodies?	☐	☐	☐	☐
Are there any environmentally significant areas (Provincially Significant Wetlands) or Areas of Natural and Scientific Interest (ANSIs)?	☐	☐	☐	☐
Is the lake or water body heavily used?	☐	☐	☐	☐
Is any beach sand naturally occurring?	☐	☐	☐	☐
Are you aware of any mineral claims on the property?	☐	☐	☐	☐
Are there any temperature inversions which bring smoky air down to the ground?	☐	☐	☐	☐
Are there occasional odours and/or noise from nearby farming or industry?	☐	☐	☐	☐
Is the property part of a Cottage or Camper's Association?	☐	☐	☐	☐
Does ownership include the 20 metre (66 ft) right-of-way along the shoreline?	☐	☐	☐	☐

Worksheet #2 – Before & During Construction

Note: Use this worksheet to help assess the potential opportunities and constraints for your construction projects.

Why should you be concerned?

• Your property is part of a larger landscape, so any project you undertake may not only affect your immediate neighbours, but may also have negative consequences for land and water farther away.

• There may be existing legislation, regulations and zoning that affect your project plans. Regulated areas include all watercourses including streams, river and creeks, wetlands, Lake Superior shoreline, ravines, valleys, steep slopes, talus slopes and areas zoned hazard land or use limitation. Check with your municipal office, the Lakehead Region Conservation Authority or MNR office to ensure that your project is permissible.

• Shorelines of lakes, rivers and streams are protected under Federal legislation such as the *Fisheries Act*. Under this legislation, the onus falls upon shoreline property owners to ensure that they do not "harmfully alter, disrupt, or destroy" (HADD) fish habitat. Offenders may be substantially fined or face criminal charges, as well as restoring the shoreline to it's previous state. Check with the Lakehead Region Conservation Authority to determine whether your project requires LRCA review or DFO Authorization.

• Investigate who owns any shoreline areas of your property – it may not be you. Municipalities often own a 20 metre (66 ft) right-of-way along the shoreline. If the shoreline is owned by the Crown, the Public Lands Act will apply, and a permit may be required for any development – even a restoration project. Only activities permissible under this legislation will be allowed.

• If the property is part of a Cottager or Camper's Association you may need the Association's permission to do work on the property.

What can you do?

1. Make a plan including an inventory of existing plants, features and structures. *See Worksheet #3-Getting to Know Your Property.*

2. Start early and be organized – the permit process may take several months.

3. Protect yourself. Keep records, including permit applications. These can be useful if disputes should arise with agencies or neighbours in the future.

4. Be a land steward: contact the Lakehead Region Conservation Authority office or the MNR if you witness shoreline alteration or potential environmental damage. You can call the MNR toll-free reporting line (24 hours, 7-days a week) or for anonymity, contact Crime Stoppers.

5. Refer to the Department of Fisheries & Oceans (DFO) Operational Statements to learn about the necessary measures required to protect fish and fish habitat before you begin your construction project (See "Fish Habitat" in Resource List pg. 119).

6. Contact the Lakehead Region Conservation Authority to find out if your construction project falls within the Approximate Regulated Area.

7. Contact Transport Canada to find out if your project requires their authorization as part of the Navigable Waters Protection Act.

Before & During Construction: How do you rate?

	Topic	Best 4	Good 3	Fair 2	Poor 1	Your Rating
	PERMITS & REGULATIONS					
1	**Knowledge and understanding of application process**	Planning begins the summer before work is to begin. Check with local Municipality and Conservation Authority to determine if permit is required.	**tip** Make sure you review an updated, legal survey of your property before you begin construction. Erosion or deposition processes may have occurred over time and may be misleading as to where your property ends.		No planning involved. Expect immediate start. **** Necessary permits are not obtained.***	☐ ☐
	PREPARING A SITE PLAN					
2a	**Knowledge of existing natural features of the property**	Thorough understanding of natural features, including long-term history of water levels.	Identification of existing and/or sensitive natural features or areas.	General idea of existing natural features.	No knowledge of existing natural features or sensitive areas.	☐
2b	**Knowledge of effect of construction on existing natural features of the property**	Construction does not impact existing features.	Awareness of the potential for construction impact and precautions taken.	Awareness of the potential for construction impact.	Disregard of potential for construction impact. No precautions taken.	☐

**** These conditions may violate federal or provincial legislation or municipal by-laws***

	Topic	Best 4	Good 3	Fair 2	Poor 1	Your Rating
	PREPARING A SITE PLAN...*continued*					
3	**Site and location of various activity areas**	Intensively used areas and paths are concentrated and located at least 30 m (100 ft) from surface water and away from steep shoreline slopes.		Intensively used areas are not near surface water but in locations contributing to increased erosion, such as at the top edge of steep slopes.	Intensively used areas are near surface water and in locations contributing to increased erosion, such as at the top edge of steep slopes.	☐
4	**Wind and Sun**	All outdoor living areas are sheltered from the prevailing wind.	Where possible, outdoor living areas are sheltered from the prevailing winds.		No consideration given to the prevailing winds and sheltering outdoor living areas.	☐
		Window locations are placed to allow for maximum winter sunlight.	Where possible, window locations are placed to allow for maximum winter sunlight.		No consideration given to the sun exposure in winter.	☐
		Evergreen trees are kept/planted on the northwest face for wind protection. **AND** deciduous trees are kept/planted on the southwestern face for summer shading.	Evergreen trees are kept/planted on the northwest face for wind protection. **OR** deciduous trees are kept/planted on the southwestern face for summer shading.	Landscaping design attempts to use trees strategically to improve energy conservation to a small degree.	Tree placement does not consider climatic factors	☐

tip

Consider adding a natural wind break or snow fence to your design.

	Topic	Best 4	Good 3	Fair 2	Poor 1	Your Rating
	DURING CONSTRUCTION					
5	**Minimizing erosion and/or compaction**	Project area is subdivided into smaller projects and done sequentially.	Only the area necessary for the project is cleared.	Large areas are cleared but vegetation is restored.	Future property is cleared at once.	☐
		Buffer strip of natural vegetation wider than 30 m (100 ft) retained along shoreline or surface water.	Project site requires minimal removal of trees and shrubs in buffer strip.		Buffer strip is bulldozed clear of all existing vegetation.	☐
		Project does not interfere with existing surface runoff patterns.		Project interferes minimally with existing surface runoff patterns.	Project interferes with existing surface runoff patterns.	☐
		Disturbed areas are replanted as quickly as possible with native species.	Disturbed areas are replanted as quickly as possible with non-invasive species.	Bare soil is covered immediately with burlap or mulch.	Bare soil is left exposed.	☐
		Use of machinery is minimal. **AND** machinery used is appropriate to job size.			Heavy machinery is used extensively.	☐

tip

Protect all soil/sand piles from erosion and avoid construction during heavy rain. Review the DFO publication: *Working Around Water? Factsheet Series – Fish Habitat & the Effects of Silt and Sediment* (See "Fish Habitat" in Resource List pg.119).

tip

Place straw bales or silt fences around vulnerable existing features such as wetlands.

	Topic	Best 4	Good 3	Fair 2	Poor 1	Your Rating
	DURING CONSTRUCTION…*continued*					
6	**Location of construction materials and access to construction site**	All construction materials are stored away from downspout openings. **AND** at least 30 m (100 ft) from the shoreline or watercourse.	All construction materials are stored away from downspout openings.	Only hazardous construction materials are stored away from downspout openings, open water or any watercourse.	Construction materials are stored without regard to runoff patterns.	☐
		Concentrate and restrict vehicle access to minimize soil compaction.	Vehicle access is kept away from shorelines, slopes, or other sensitive areas.	Concern about compaction is limited to septic leaching bed.	Vehicles are parked or driven throughout site, contributing to soil compaction.	☐
		Toilet facilities are available.			Toilet facilities are not available.	☐
		The location of buildings and access do not interfere with shorelines or waterways.			**** Location of buildings and access interfere with shorelines, waterways, or runoff patterns.***	☐

tip

Fence or rope off all areas that are not to be disturbed.

tip

If you are undertaking a new construction or major renovation consider obtaining LEED (Leadership in Energy & Environmental Design) certification. Review the Canadian Green Building Council LEED rating system to learn design and construction strategies that improve energy and water efficiency and generate less waste (See "Energy Efficiency" in Resource List pg. 119).

**** These conditions may violate federal or provincial legislation or municipal by-laws.***

Topic	Best 4	Good 3	Fair 2	Poor 1	Your Rating
DURING CONSTRUCTION…*continued*					
7 **Protecting the existing features**	Check if there is a municipal bylaw that protects the trees on your property. Design or plan accordingly.	Develop a plan or design first and then check if there is a municipal bylaw that protects the trees on your property. Proceed accordingly.		**** Cut trees down on your property without checking if a municipal tree-cutting bylaw exists.***	☐
	Protect trees from damage caused by digging and heavy machinery **AND** remove no trees for construction.	Protect trees from damage caused by digging and heavy machinery **AND** clearly mark those trees that need to be felled to avoid unnecessary tree removal.	Trees are not protected during construction but any damage incurred is immediately and appropriately handled.	Damage to tree trunks, limbs, and roots is left unattended.	☐
	Soil grade is not altered **AND** soil around trees is not compacted.	Soil grade is not altered within 3 metres (10 feet) of dripline for any tree intended to be preserved **AND** there is minimal compaction near dripline.	Soil grade is partially altered in sections within dripline **OR** materials are stored within dripline for limited periods.	Soil grade level within the dripline is permanently altered from pre-construction level **OR** soil is compacted around trees.	☐
	Septic bed, well(s) and environmentally sensitive features are protected **AND** distance requirements are respected.	Septic bed, well(s) and environmentally sensitive features, such as wetlands and rare trees, are protected.	Septic bed and well(s) are protected from construction activity.	****Distance requirements are not considered in protecting septic bed, wells, or environmentally sensitive features.***	☐

tip

Check with your local Municipality if there is a tree bylaw that protects the trees on your property.

tip

Plan to be on site any time trees are to be removed.

**** These conditions may violate federal or provincial legislation or municipal by-laws.***

	Topic	Best 4	Good 3	Fair 2	Poor 1	Your Rating
	DURING CONSTRUCTION…*continued*					
8	**Purchasing and location of soil or fill**	No use of off-site soil or fill.	Limited use of off-site soil or fill **AND** awareness of the source of soil or fill **AND** no excess or unnecessary fill is used **AND** approval is obtained.	Limited use of off-site soil or fill **AND** no awareness of the source of soil or fill **AND** approval is obtained.	Excessive use of off-site soil or fill **OR** No consideration for the non-renewable nature of soil **** OR fill is dumped in any fill-regulated area such as a shoreline without a permit.***	☐
9	**Construction materials**	Local non-hazardous materials used where possible **AND** obtained in a responsible and appropriate manner.	Non-hazardous materials used where possible **AND** no use of oil-based paints or varnishes.	Minimal use of hazardous materials where necessary.	Hazardous materials are used **OR** materials sourced unnecessarily from far away or from environmentally-damaging production practices.	☐

tip

**** It is dangerous and illegal to deposit fill in flood-prone or regulated shoreline areas without a permit.***

tip

Know where your topsoil or fill is coming from – it may bring contaminants and invasive species onto your property.

**** These conditions may violate federal or provincial legislation or municipal by-laws.***

	Topic	Best 4	Good 3	Fair 2	Poor 1	Your Rating
	DURING CONSTRUCTION…*continued*					
10	**Construction waste**	Your local Municipality is contacted before construction to learn how to properly sort and dispose of construction waste **AND** it is ensured that contractors dispose of waste appropriately.	Reputable waste removal/disposal company is hired to remove and appropriately dispose of all hazardous waste.	Care is taken to at least prevent paint or solvents from getting into waste water or septic systems, or open surface water.	**** Waste material or excess fill is dumped into open surface water*** **** OR waste material is burned (including burn barrels).***	☐
		Waste containers are clearly and appropriately labeled **AND** waste materials are recycled where possible.	Waste containers are clearly and appropriately labeled		Waste containers are not labeled **AND** recycling of material is not a priority.	☐
		Absolutely no concrete or construction wash water flows into open surface water, towards trees or into septic system.			****Concrete or construction waste water flows into open surface water, or is drained into septic system.***	☐

tip

Paint (any kind) is a hazardous substance. Take it to your local hazardous waste depot. It is illegal to pour paints or thinners into runoff channels or surface water. Inform your painting contractor of your need for compliance.

**** These conditions may violate federal or provincial legislation or municipal by-laws.***

Worksheet #3 – Getting to Know Your Property

Note: Use this worksheet to help assess your property's vulnerability to natural hazards.

Why should you be concerned?

•In rural areas, you are your own **WATER QUALITY STEWARD!**

•As a rural landowner, you are the steward of a property that is a small piece of the larger rural landscape. What you do on your property affects not only your well-being but that of your neighbours and the other creatures that share the landscape and ecosystems that support it all.

•Upstream practices WILL affect your property and your actions will affect downstream users.

•A property's soil and landform can influence water quality by influencing surface water and groundwater contamination, erosion of soil by water and wind and soil compaction.

•Provincial regulations and municipal by-laws may restrict development of any kind and affect how you can use your property

•Knowing your property will ensure you make informed decisions. Talk to neighbours and other local people to be aware of concerns such as informal traditional access on your property for hunting, fishing or hiking etc.

What can you do?

1. You or your legal representative can contact the Lakehead Region Conservation Authority office or Ministry of Natural Resources to learn of any alteration restrictions (especially watercourses, groundwater sources, and shorelines) and how these may affect any future property projects.

2. Talk with long-time residents to learn more about how the property may be affected by natural processes and potential hazards.

3. Make a map of the property. Identify physical characteristics such as soil type, floodplain, and depth to water table, and learn how these can affect the vulnerability of your property and water quality. Accept these natural conditions and modify your activities accordingly to protect yourself and your property.

4. Determine if your property contains any special landscape designations, such as Areas of Natural or Scientific Interest (ANSI), or Provincially Significant Wetlands (PSW). Learn how these designations affect your rights and responsibilities as a landowner.

5. Determine if current services (e.g. water and sewage) are adequate for your planned/intended use of the property.

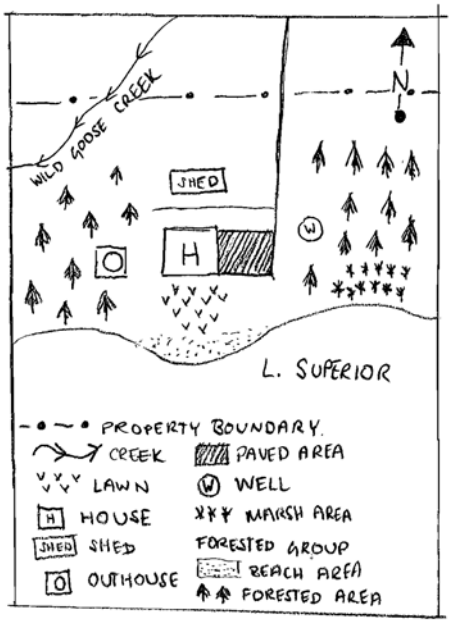
6. Look beyond property boundaries. It is important for you to be able to analyze the potential for surface water contamination, wind and water erosion, and groundwater contamination.

Make a Map of Your Property

For this map, draw the features of your whole property. Aerial and topographic maps will be helpful for this. Try Google Earth online. Flood and Fill Line Maps and Screening Maps of the Townships and Municipalities around Thunder Bay can be viewed at the Lakehead Region Conservation Authority office.

Why make a map?

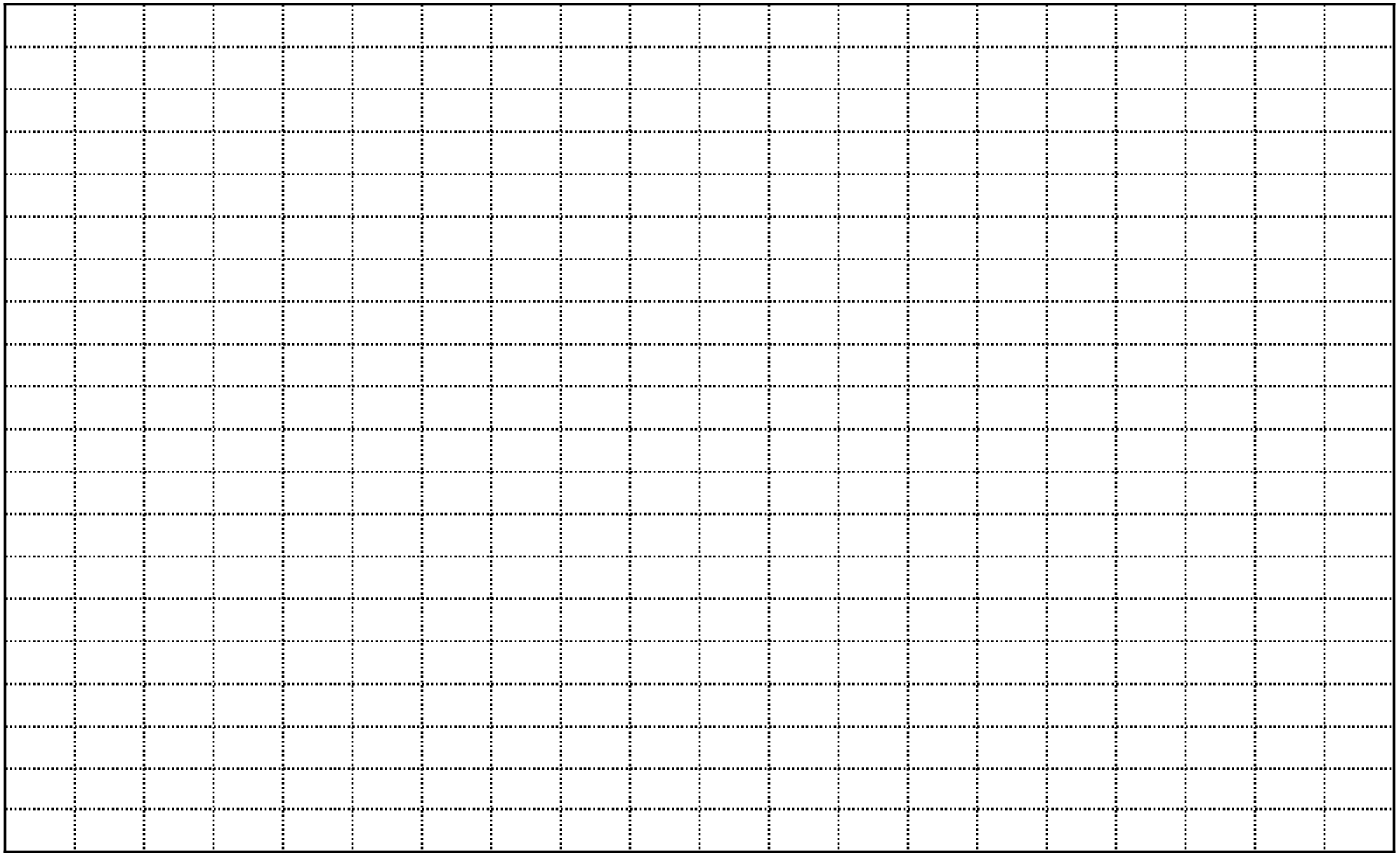
This map will assist your planning and establish the relationship between the various features on your property.



What you should include:

- property boundaries
- north arrow
- any buildings or structures
- roads, trails, any traditional/informal access through your property for hunting, fishing, hiking, etc.
- bridges
- fields, both working and retired
- orchards
- wells (including dry or abandoned wells) and pipes
- septic tank and septic field
- surface water features (stream, pond, lake, etc.)
- springs
- floodplain
- dams, weirs
- drainage ditches, drainage tile outlets
- fences and treed fencerows
- forested areas (plantation and natural)
- wetlands
- utility lines
- communication towers
- easements and right of ways
- known special or sensitive features (e.g. raptor nests, stone piles)

Make a Map of Your Property



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Date: _____

Understanding Risk

Note: Use this page to help assess your property's vulnerability to water contamination.

	LESS RISK			***MORE RISK***
Soil type	Clay-silt loam	Silt loam	Silt-sand loam	Gravel or Sand
Soil depth	Greater than 4 metres (13 feet)		1-4 metres (3-13 feet)	Less than 1 metre (3 feet)
Bedrock	Non-permeable and solid. No direct access from the surface	Semi-permeable limestone or sandstone. No direct access from surface	Any kind. Direct access from the surface	Fractured bedrock – any kind
Depth to water table	Greater than 14 metres (46 feet)	5-14 metres (16-46 feet)	1-5 metres (3-16 feet)	Less than 1 metre (3 feet)

tip

To find soil depth, bedrock, or depth of water table, check your well drilling records, ask a neighbour with a well or call a local well-drilling company.

tip

The risk of pollution is greater in areas where the groundwater table is near the surface or in highly porous soils (e.g. sand, gravel).

Getting to Know Your Property: How do you rate?

	Topic	Best 4	Good 3	Fair 2	Poor 1	Your Rating
	HAZARD LANDS – DETERMINING RISK					
1	**Knowledge of lake processes and hazards**	Understand dynamic nature of shorelines and plan accordingly, with long term outlook and flexibility for change.	Understand dynamic nature of shoreline. No long-term planning for natural change.	Limited understanding of dynamic nature of shoreline. Property management attempts to control any naturally-occurring change.	No understanding of dynamic nature of shoreline. Attempt to control any naturally-occurring change.	☐
		Understand potential hazards affecting your property, such as flooding and erosion **AND** have your own plan to deal with any eventualities.	Understand potential hazards affecting your property.	Limited understanding of potential hazards affecting your property.	No understanding of potential hazards affecting your property	☐
2	**Development and natural hazards**	No development or disturbances within 30 m (100 ft) of water or the erosion hazard limit for bluffs.	Minimal structures or disturbance near beaches/water/bluff edge, constructed in a proper manner and elevated.	Structures or disturbance near beaches, water, or bluff edges constructed in a proper manner and elevated.	Development or disturbance within 30 m (100 ft) of water or the erosion hazard limit for bluffs.	☐
		Know whether or not buildings may be relocated or raised.			No knowledge of whether or not buildings may be relocated or raised.	☐

tip

Existing shoreline protection structures are a good indication that erosion and flooding are a concern.

	Topic	Best 4	Good 3	Fair 2	Poor 1	Your Rating
	HAZARDS LANDS – DETERMINING RISK...*continued*					
3	**Buffers and potential for erosion**	Large expanse of naturally-occurring beach located along lakefront end of property.	Moderate expanse of naturally-occurring beach located along lakefront end of property.	Narrow, natural beach located along lakefront end of property.	No natural beach located along lakefront end of property.	☐
		Large expanses of well-established native species including trees and shrubs adjacent to shoreline or wetland.	Large expanses of well-established native species including trees and shrubs adjacent to shoreline or wetland although punctured with small cleared areas.	Narrow expanses of well-established native species including trees and shrubs adjacent to shoreline or wetland.	No natural vegetation buffer present.	☐
		No development on a bluff **AND** natural vegetation is undisturbed within the 30 m (100 ft) setback area.	Development set behind the erosion – hazard limit for bluffs **AND** natural vegetation is undisturbed within the 30 m (100 ft) setback area.	Development on a bluff set behind the erosion – hazard limit for bluffs **BUT** natural vegetation is disturbed within the 30 m (100 ft) setback area.	Development on a bluff set within the erosion – hazard limit for bluffs **AND** natural vegetation is disturbed within the 30 m (100 ft) setback area.	☐
4	**Home Insurance**	Know whether potential damage to property can be covered by insurance.			No knowledge.	☐

Topic	Best 4	Good 3	Fair 2	Poor 1	Your Rating
HAZARDS LANDS – DETERMINING RISK...*continued*					
5 **Legal considerations**	Municipal zoning bylaws and Official Plan checked to know how property is zoned **AND** property land use is in accordance with this zoning.	Municipal zoning bylaws and Official Plan checked to know how property is zoned.	No regard to whether intended use of property is in accordance with Official Plan or zoning bylaws.	No regard to whether intended use of property is in accordance with Official Plan or zoning bylaws **AND** property land use is not in accordance.	☐
	Exact knowledge of actual property limits, setbacks, conservation easements, floodplain restrictions and right-of-ways **AND** Conservation Authority regulations are observed.	General idea of actual property limits, setbacks, conservation easements, floodplain restrictions and right-of-ways.		No knowledge of actual property limits, setbacks, conservation easements, floodplain restrictions and right-of-ways.	☐
	Vendor provides a notarized statement of the condition of the property.	Vendor provides a Seller Property Information Statement.		Vendor refuses to provide a Seller Property Information Statement. No knowledge.	☐
	Knowledge of ownership of any streams that run through property.			Assumption of ownership of all natural features within property boundaries without inquiry.	☐
	Ensure that there are no fuel tanks buried or otherwise on the property.			No knowledge of fuel tanks buried or otherwise on the property.	☐

tip

Typically, septic systems are not included in home inspections. Make separate arrangements for this.

tip

If a buried, abandoned fuel tank is found, the property owner is responsible for any costs associated with removal or contamination. This is typically not covered under home insurance.

tip

Be careful about where you think your property ends. Municipalities may retain ownership of a 20 metre (66ft) right-of-way along the shoreline. Erection of fences or buildings/structures may require approval.

Worksheet #4 – Private Well Water Supply

Note: Use this worksheet to assess the condition of your well(s) and water supply.

Why should you be concerned?

• Wells can provide a clean and safe supply of water, pumped from aquifers below the ground. If you use a private well, you must manage your own water quality.

• If a well is not constructed or maintained properly, or if a contaminant is spilled within the capture zone of a well, the quality of the water supply could be at risk.

• If your groundwater becomes contaminated, it can affect the health of your family. It may also affect the quality of groundwater supplying other wells, lakes or streams in the area. Your neighbours and community may all be affected. Ultimately, all wells are connected.

•Treating contaminated water, constructing a new well or getting water from another source are all inconvenient and expensive. It is much easier and more cost effective to prevent contamination rather than trying to clean it up.

• Whether you are using a private well or a municipal system, everyone plays a role in source water protection.

• If your water supply comes from a private surface water intake (i.e. directly in Lake Superior), skip to Topic Numbers 13 to 15 in this worksheet. The Ontario Ministry of Natural Resources (MNR) Free Use Policy allows property owners to pump water directly from a lake/river where the water intake is positioned in front of the owner's lawfully occupied land, for household or cottage use only.

What can you do?

1. Make sure the water you drink and the groundwater that supplies your well are protected from contamination. Test your water regularly (minimum once per season). Contact the Thunder Bay District Health Unit.

2. Know where your septic system and well are located, as well as those of your neighbours.

3. Handle fertilizers, pesticides and other potential contaminants carefully.

4. Assume that your entire property recharges your groundwater and contains the capture zone for your well(s).

5. Contact a licensed well professional or your Health Unit to assist with items that get a "2" or "1" rating in this worksheet.

tip

Be familiar with any springs or other groundwater sources on your property. These contribute clean water to the watershed.

Calculate Your Household Water Use

Note: The chart below shows the average amount of water used in the average household. Calculate the average amount of water used in your house for a typical day or week.

Fixture	Average water use	Water use in my household		Water efficiency measure installed	New water use
Toilet	20 litres (5.3 gal.) per flush (standard toilet)	___ flush per day ___ flush per week	____ litres (____ gal.)	Install a toilet water displacement device in the tank – as simple as a plastic bottle filled with sand. Install a water efficient toilet at a cost of $130-$450.	18 litres (4.75 gal.) per flush 6 litres (1.58 gal.) per flush
Shower	10 to 30 litres (2.5 to 8 gal.) per minute	___ minutes per day ___ minutes per week	____ litres (____ gal.)	Install a water efficient showerhead at a cost of $10-$40.	9.5 litres (2.5 gal.) per minute
Bath	60 litres (15 gal.)	___ bathes per week	____ litres (____ gal.)		
Clothes Washer	208 litres (55 gal.)	___ loads per week	____ litres (____ gal.)	Install a water-efficient clothes washer. Do less laundry.	100 litres (22 gal.) per load
Dishwasher	40 litres (10 gal.)	___ loads per week	____ litres (____ gal.)	Install a water-efficient dishwasher.	26 litres (7 gal.) per load
Faucets (bathroom and kitchen)	15 litres (4 gal.) per minute	___ minutes per day ___ minutes per week	____ litres (____ gal.)	Install a kitchen faucet aerator at a cost of $3.	9.5 litres (3.3 gal.) per minute
Leaks	25 litres or more (6.6 gal.) per day (rate of one drop per second)	___ number of leaks	____ litres (____ gal.)		
Total	394 litres (104 gal.)		____ litres (____ gal.)	Conversion factor: Litres x 0.22 = Imperial Gallons	

**** Source: Government of Alberta Ministry of the Environment. 2001. (www.gov.ab.ca/env/water/conservation/residential.cfm)***

Private Well Water Supply: How do you rate?

	Topic	Best 4	Good 3	Fair 2	Poor 1	Your Rating
	LOCATION OF WELL					
1	**Position of water well in relation to potential sources of contamination**	Upslope from all sources of contamination **AND** all surface water moves away from well.	Upslope from, or level with any source of contamination **AND** surface water runoff does not reach well.	Level with most sources of contamination **AND** some surface water runoff may reach well.	Downslope from any source of contamination so that surface water reaches well **OR** water ponds at and around well.	☐
2	**Distance from well to potential sources of contamination**	Greater than 90 m (300 ft)	• 24-90 m (76-300 ft)* (drilled well) • 47-90 m (151-300 ft) (bored/dug well)	• 15-23 m (50-75 ft)* (drilled well) • 30-46 m (100-150 ft) (bored/dug well)	• ***Less than 15 m (50 ft) (drilled well)** **OR** • ***Less than 30 m (100 ft) (bored/dug well)**	☐
	*Note: Drilled wells must have at least 6 m (20 ft) of watertight casing below ground level. If less than 6 m, treat well as a bored/dug well.					
	CONDITION OF WELL					
3	**Condition of well casing**	Good condition. No visible defects **AND** checked annually by certified inspector.	No visible defects **AND** checked every one to two years by certified inspector.	No holes or cracks visible **AND** checked every three years or more by certified inspector.	Holes or cracks visible **OR** can hear water running into well **OR** never inspected.	☐

tip

Always maintain as great a distance as you can between a potential contaminant source and wells or surface water.

**** These conditions may violate federal or provincial legislation or municipal by-laws.***

	Topic	Best 4	Good 3	Fair 2	Poor 1	Your Rating
	CONDITION OF WELL...*continued*					
4	**Condition of well cap**	Excellent condition, commercially manufactured, vermin proof and tightly secured.	Fair condition, commercially manufactured, vermin proof and tightly secured.	Commercially manufactured, vermin proof cap is loose or needs repair.	No commercially manufactured vermin proof cap.	☐
5	**Condition of well venting**	Screened vent in excellent condition.	Screened vent in good condition.	Well vented but not screened.	No well vent.	☐
6	**Condition of surface material around well casing**	Surface material raised above normal ground level beside well casing **AND** no space between well casing and surrounding surface material.	No settling of the surface material around well casing **AND** no space between well casing and surrounding surface material.	Can see settling of surface material around well casing **AND** no space between well casing and surrounding material.	Can see settling of surface material around well casing **AND/OR** visible space between well casing and surrounding surface material.	☐
7	**Casing Depth**	More than 45 m (150 ft) below ground level.	31-45 m (101-150 ft) below ground level.	15-30 m (50-100 ft) below ground level.	Less than 15 m (50 ft) **OR** no casing.	☐
8	**Casing height above ground level**	40 cm (16 in) or more above normal ground level.			***Less than 40 cm (16 in) above normal ground level, in pit or in basement.***	☐
9	**Age of well**	Less than 20 years old.	Less than 40 years old.	40-60 years old.	More than 60 years old.	☐

**** These conditions may violate federal or provincial legislation or municipal by-laws.***

	Topic	Best 4	Good 3	Fair 2	Poor 1	Your Rating
	MANAGEMENT OF PRIVATE WELL WATER SUPPLY					
10	**Type of well**	Drilled – Casing terminates above ground, approved well cap.	Drilled – Casing terminates in a well pit.	Sand point or driven.	Bored or dug.	☐
11	**Backflow prevention**	Anti-backflow devices (such as check valves and vacuum breakers) installed on all faucets with hose connections **AND** air gap of at least 15 cm (6 in) maintained.	Anti-backflow devices installed on some faucets with hose connections **AND** air gap of at least 15 cm (6 in) maintained.	No anti-backflow devices **AND** air gap of at least 15 cm (6 in) maintained.	No anti backflow devices **OR** air gap not maintained.	☐
12	**Unused or abandoned wells**	No unused or abandoned wells.	Unused wells capped, properly protected and maintained **AND** abandoned wells properly plugged and sealed.		***Unused wells not capped or protected OR abandoned wells not properly plugged and sealed.**	☐
13	**Water testing**	Water tested for bacteria more than 3 times a year (including once in the spring) and more than once a year for other parameters (e.g. nitrate levels) **AND** bacteria, nitrate, and other tests (health related) always meet Ontario Drinking Water Standards.	Water tested for bacteria more than 3 times a year and once a year for other parameters (e.g. nitrate levels) **AND** bacteria, nitrate, and other tests (health related) always meet Ontario Drinking Water Standards on the second test (the follow-up check) if first test fails.	Water tested for bacteria more than 3 times a year and not tested for other parameters (e.g. nitrate levels).	Water is not tested **OR** does not meet Ontario Drinking Water Standards on first test or on second test (follow-up check).	☐

tip

Your local Health Unit is a valuable resource in helping you manage the quality of your drinking water. Participate in EcoSuperior's Well Aware Program. Ask your neighbours what their test revealed (See "Private Well Water Supply" in Resource List pg. 121).

**** These conditions may violate federal or provincial legislation or municipal by-laws.***

	Topic	Best 4	Good 3	Fair 2	Poor 1	Your Rating
	SURFACE WATER INTAKES					
14	**Screen**	Filtration screen at water intake to prevent fish, sediment, leaves and other debris from clogging the pipe/hose **AND** condition checked once a year.	**tip** Review DFO- *Freshwater Intake End of Pipe Fish Screen Guideline* available online at: http://www.dfo-mpo.gc.ca/Library/223669.pdf		***No filtration screen.**	☐
15	**Pipe**	Intake pipe is less than 10 cm in diameter **AND** pipe installed underneath a road or the bed of the watercourse obtains approval/permit.	**tip** If you plan to install pipes for water lines underneath the bed of a lake/river, you may be required to follow certain measures to protect fish and fish habitat during construction required by the DFO. Contact the LRCA prior to installation for project review. Also see the DFO Operational Statement titled *High-Pressure Directional Drilling* (See "Fish Habitat" in Resource List pg. 119).		***Pipe installed underneath a road or the bed of a watercourse does not have approval/ permit.**	☐
	Location	Water intake upstream from potential sources of contamination.			Water intake directly downstream from potential sources of contamination.	☐
		Water intake deep enough that it is not a navigational hazard for watercraft **AND** it is moved according to changing water levels **AND** all portions of the pipe lie on the bed of the waterway at all times.	**tip** Review Transport Canada-Navigable Waters Protection Program to determine if your water intake project is considered a minor work or requires approval (See "Navigable Waters" in Resource List pg. 121).		***Water intake and/or pipe is shallow enough to act as a navigational hazard.**	☐
		Water intake deep enough that water does not freeze around it in winter **OR** removed in winter.			Water intake is left frozen in the lake/river through the winter season.	☐

tip

If you pump more than 50,000 litres per day, a Permit to Take Water may be required. Contact your local MOE for further details.

**** These conditions may violate federal or provincial legislation or municipal by-laws.***

Worksheet #5 – Wastewater & Septic Systems

Note: Use this worksheet to determine whether household water is treated safely on your property.

Why should you be concerned?

•In urban areas, household wastewater is treated at a treatment plant before it is discharged into the lake.

•In rural areas, people use a septic tank or similar system to treat household wastewater. All the water that flows down your drains ends up in your septic system. It must be able to safely handle all the wastewater to prevent contamination of ground and surface water.

•Household wastewater contains disease-causing bacteria and viruses, household chemicals, and excess nutrients. All of these contaminants can cause serious health problems.

•Your household drinking water should be tested regularly for total coliform and E-coli. If present, these bacteria indicate that the water is not safe for drinking or food preparation. Your septic tank system could be one source of contamination.

•If your home treatment system has to handle too much wastewater, it will not be as effective and may cause premature failure. Increased use of water, through additional appliances or a second bathroom will increase the load on your septic system.

•Not only can septic system failure be highly inconvenient, it can also be very expensive. In addition, new regulations and higher standards may mean that the system may have to be replaced instead of being repaired or upgraded.

•Facilities such as outhouses and chemical toilets can be effective and environmentally responsible. Contact your local Health Unit or Municipality to learn more.

What can you do?

1. Make sure your septic system is large enough to meet your needs. Look for ways to reduce the amount of wastewater that enters the septic system.

2. Protect your health and the quality of your drinking water by disposing of contaminants properly.

3. Keep your septic system in good repair. Pump the septic tank out regularly (every 3-5 years).

4. Keep trees, shrubs and vehicles out of your septic field.

5. Consider renting a portable toilet when hosting large gatherings.

Wastewater & Septic Systems: How do you rate?

	Topic	Best 4	Good 3	Fair 2	Poor 1	Your Rating
	QUANTITY OF WASTEWATER					
1	**Efficient water use affects septic function**	Conservative water use (less than 180 litres/40 gal. per person per day).	Moderate water use (180-270 litres/40-60 gal. per person per day).	High water use (271-360 litres/61-80 gal. per person per day).	Very high water use (greater than 360 litres/80 gal. per person per day).	☐
2	**Fixtures and maintenance** **tip** Install faucet aerators and use low-flow shower heads.	Water-conserving fixtures throughout house **AND** fixtures are inspected regularly **AND** leaks fixed immediately.	Some water-conserving fixtures throughout house **AND** fixtures are inspected regularly **AND** some leaks are fixed immediately.	No water-conserving fixtures in house **OR** fixtures are not inspected regularly. Problems are fixed when found **AND** some leaks are fixed immediately.	No water-conserving fixtures **OR** leaks are not fixed immediately.	☐
	QUALITY OF WASTEWATER					
3	**Solid waste**	No use of garbage disposal unit in kitchen sink.			Daily use of garbage disposal unit in kitchen sink.	☐
4	**Dissolved waste** **tip** Using less water helps your septic field perform better.	Minimal use of environmentally friendly household detergents and cleaners (0.2 litres per week) **AND** no disposal of household solvents into plumbing system.	Careful use of household detergents and cleaners (0.5 litres per week) **AND** minimal disposal household solvents and cleaning agents into plumbing system.	Moderate use of household detergents and cleaners (1 litre per week) **OR** moderate disposal of household solvents and cleaning agents into plumbing system.	High use of household detergents and cleaners (4 litres per week) **OR** frequent disposal of household solvents and cleaning agents into plumbing system.	☐

	Topic	Best 4	Good 3	Fair 2	Poor 1	Your Rating
	QUALITY OF WASTEWATER...*continued*					
5	**Water softener discharge**	Water softener does not discharge to septic tank.	Water softener discharges to septic tank but the system is properly designed to accommodate discharge water.		Water softener discharges into septic tank not designed to accommodate discharge water.	☐
6	**Grease and oils**	No disposal of household grease or oils into plumbing system **AND** household wastes only.	Minimal disposal of household grease and oils into plumbing system and oil and grease wiped from cooking utensils before washing.	Moderate disposal of household grease or oils into plumbing system **OR** no attempt to reduce disposal of grease and oil from household.	Frequent disposal of household grease or oils into plumbing system.	☐
	DESIGN OF WASTEWATER TREATMENT SYSTEM					
7	**Design and construction**	Has Building Permit or Certificate of Approval **AND** system adequately sized **AND** system installed by a licensed installer.			***No Building Permit or Certificate of Approval*** ***OR system not sized according to regulatory requirements*** ***OR system not installed by a licensed installer.***	☐

tip

Don't park or drive any vehicle or any heavy equipment on the leaching bed of your septic system. Keep trees and shrubs out of the septic leaching bed too.

tip

All septic systems eventually need replacing but with proper maintenance, your system can last 15 years or longer – even with year-round use. The septic tank should be pumped after the first year of use to determine the frequency of pumping. Keep a maintenance record of your septic system (See "Wastewater & Septic Systems" in Resource List pg. 123).

**** These conditions may violate federal or provincial legislation or municipal by-laws.***

	Topic	Best 4	Good 3	Fair 2	Poor 1	Your Rating
	DESIGN OF WASTEWATER TREATMENT SYSTEM...*continued*					
8	**Knowledge of septic system**	Excellent knowledge of overall septic system size, location, and operation.	Good knowledge of overall septic system size, location, and operation.	Limited knowledge of overall septic system size, location, and operation.	No knowledge of overall septic system size, location, and operation.	☐
9	**Septic tank**	Two compartment tank, **AND** septic tank checked every 3 years and pumped as required **AND** good maintenance – baffles and tank checked and no leaks.	Two compartment tank **AND** septic tank checked every 4-5 years and pumped as required **AND** some maintenance and no leaks.	Single compartment tank **OR** septic tank checked every 6-10 years and pumped as required **OR** no maintenance, but no leaks.	Single compartment tank **OR** seldom pumped out – last time more than 10 years ago **OR** no maintenance, no checks, and leaks from tank.	☐
10	**Other treatment system**	Regular maintenance program followed **AND** no mechanical failures **AND** loaded at rate below design capacity.	Regular maintenance program followed **AND** no mechanical failures **AND** loaded at rate near capacity.	Regular maintenance program not followed **OR** occasional failures (once every 2 years).	No maintenance program **OR** frequent system failure **OR** system overloaded.	☐
OR						
11	**Holding tank – no leaching bed connected**	Capacity is higher than design requirements **AND** tanks checked – no leaks **AND** working alarm system.	Capacity meets design requirements **AND** tanks checked – no leaks **AND** working alarm system.	Loaded at design capacity **OR** tanks not checked for leaks **OR** alarm system not working.	***Capacity does not meet recommended guidelines*** ***OR leaks and overflow from tank*** ***OR no alarm system.***	☐

**** These conditions may violate federal or provincial legislation or municipal by-laws.***

	Topic	Best 4	Good 3	Fair 2	Poor 1	Your Rating
	LOCATION OF WASTEWATER SYSTEM					
12	**Distance from wastewater treatment system to nearest surface water (lake, river, etc.)**	Greater than 150 m (500 ft)	61 - 150 m (200 - 500 ft)	15 - 60 m (50 - 199 ft) for: • septic tank • leaching bed • holding tank • other treatment unit	***Less than 15 m (50 ft) from:*** ***• septic tank*** ***• leaching bed*** ***• holding tank*** ***• other treatment unit***	☐
13	**Distance from wastewater treatment system to a well** **tip** Always maintain as great a distance as you can between a potential contaminant source and wells or surface water.	Greater than 90 m (300 ft)	For leaching bed or holding tank: • 24 - 90 m (76 - 300 ft) (drilled well) • 47 - 90 m (151 - 300 ft) (bored/dug well)	For leaching bed or holding tank: • 15 - 23 m (50 - 75 ft) (drilled well) • 30 - 46 m (100 - 150 ft) (bored/dug well) For septic tank or other treatment unit: • 15 - 23 m (50 - 75 ft) (drilled well) • 30 - 46 m (100 - 150 ft) (bored/dug well)	***For leaching bed or holding tank:*** ***• less than 15 m (50 ft) (drilled well)*** ***• less than 30 m (100 ft) (bored/dug well)*** ***For septic tank or other treatment unit:*** ***•less than 15 m (50 ft) (all wells)***	☐
14	**Leaching bed location**	Located more than: •5 m ($16^1/_2$ ft) from any building or structure. • 3 m (10 ft) from any property line.	Located: • 5 m ($16^1/_2$ ft) from any building or structure. • 3 (10 ft) from any building or property line.		***Located less than:*** ***•5 m (16.5 ft) from any building or structure.*** ***• 3 m (10 ft) from any property line.***	☐

**** These conditions may violate federal or provincial legislation or municipal by-laws.***

	Topic	Best 4	Good 3	Fair 2	Poor 1	Your Rating
	LOCATION OF WASTEWATER TREATMENT SYSTEM...*continued*					
15	**Depth to water table or bedrock from bottom of leaching bed trench**	More than 1.8 m (6 ft).	0.9 - 1.8 m (3 - 6 ft).		***Less than 0.9 m (3 ft).**	☐
	COLLECTION OF WASTEWATER					
16	**Sources and amount**	All wastewater is collected for treatment **AND** there is no loss of wastewater that should be treated **AND** no clear water is collected and directed to the septic system **AND** no clear water enters the septic system by infiltration through joints, access port, etc.	**tip** To keep your septic system operating at peak performance, don't let unnecessary clear water enter the system. This means fixing leaks and conserving water. **tip** All downspouts should be diverted away from the septic system to reduce overloading the leaching bed with clear water. An average size home with a roof area of 93 square metres (1000 sq ft) will deposit 930 litres (246 gallons) of water onto the ground after a 10 mm (0.4 inch) summer rain storm.		***Some wastewater does not reach septic system because of leaks in pipes/fixtures** ***OR some wastewater is diverted away from the septic system*** **OR** clear water is getting into the septic system.	☐

**** These conditions may violate federal or provincial legislation or municipal by-laws.***

	Topic	Best 4	Good 3	Fair 2	Poor 1	Your Rating
	DISTRIBUTION OF WASTEWATER					
17	**Subsurface distribution of wastewater** *(septic or other treatment systems)*	Pressure or dosed distribution to leaching bed.	Gravity-fed distribution to leaching bed.		***Drainage directly into septic field, with no septic tank** ***OR piped to anywhere but a septic or other approved treatment system.***	☐
	LOADING OF LEACHING BED					
18	**Leaching bed surface water drainage**	Surface water drains away from leaching bed area.			Surface water drains onto leaching bed area.	☐
19	**Leaching bed loading (visual inspection)**	Soil always firm **AND** no odours.	Ground is seldom wet, or spongy **AND** no odours	Ground is frequently wet, or spongy **OR** odours noticed occasionally.	Ground is always wet or spongy **OR** strong odours noticed frequently ***OR pooling or bubbling of wastewater noticeable on surfaces.***	☐
	HAULED SEWAGE					
20	**Disposal of pumpage from septic tanks, other treatment systems, and holding tanks**	Regulated and certified disposal by a licensed hauler.			***Disposal is not done by a licensed hauler.**	☐

tip

If on clay soil, plant grass over the leaching bed. If on sand, plant beach grass or leave without a ground cover.

**** These conditions may violate federal or provincial legislation or municipal by-laws.***

Gardening and Landscaping

Worksheet #6a – Landscape Water Efficiency

Note: Use this worksheet to learn about water efficiency your gardening and landscaping.

Why should you be concerned?

• There is a limited supply of fresh, clean water.

• As water moves through the ground, it is filtered and purified before it is stored in underground aquifers.

• If water is drawn from these aquifers at a rate faster than it can be replenished by the water cycle, we can experience severe shortages and damage to aquatic systems.

• Prolonged temperature changes, such as heat waves, make the problem worse by lowering the groundwater levels even further.

• While the fresh water supply is shrinking, demand from municipalities, industries and agriculture is always increasing.

• Whether your drinking water comes from a private or a municipal well, we're all pulling water from the same limited source.

What can you do?

1. Find out how much water you use in your landscaping and gardening.

2. Choose proper equipment that is water efficient and maintain it on a regular basis.

3. Consider plants that grow well in local conditions with minimal irrigation.

LANDSCAPE WATER EFFICIENCY: How do you rate?

	Topic	Best 4	Good 3	Fair 2	Poor 1	Your Rating
	WATER MANAGEMENT AND USE					
1	**Knowledge of water use in the landscape**	Water use is monitored regularly and steps are taken to improve efficiency.		Water use is monitored on occasion.	Water use is not monitored.	☐
		Regular monitoring for leaks. Leaks are fixed immediately.		Leaks are required only when they become a problem.	Leaks are not repaired.	☐
2	**Irrigation Equipment type**	Irrigation equipment applies water to plant rooting area only (e.g. drip system).	Low-level sprinkler system.	Mid-level sprinkler or mobile sprinkler head.	Fixed sprinkler head.	☐
3	**Irrigation design**	System is properly designed and sized for the size of the garden or landscape area.			Irrigation system too large for the garden area (water reaches pavement, driveway, etc.	☐
		No ponding of irrigation water.	Water ponds briefly but then infiltrates soil.	Irrigation water ponds but does not run off the property.	Water runoff along the surface and into any underground drains.	☐

	Topic	Best 4	Good 3	Fair 2	Poor 1	Your Rating
	WATER MANAGEMENT AND USE...*continued*					
4	**Watering your plants**	Good knowledge of plant water needs and limitations **AND** soil moisture, water application rate and the volume of water are monitored.	General recommendations followed for water needs of specific plants **OR** soil moisture, water application rate and the volume of water are monitored.	General recommendations for water needs of specific plants known but not always followed.	Water needs of plants are not known.	☐
		Watering schedule is adjusted to rainfall, stage of plant development, use of water gauges, and plant appearance.	Watering schedule is sometimes adjusted according to rainfall, stage of plant development, use of water gauges, and plant appearance.	Monitored watering limited to when establishing new plants.	Watering is not adjusted according to rainfall, stage of plant development, use of water gauges, and plant appearance.	☐
		Water only in the early morning.	Water only in the early morning or early evening.	Water only in the late evening, thereby increasing the chance of fungal disease.	Water during the hottest hours of the day.	☐

tip

Use rain barrels or cisterns to collect irrigation water for plants**.** In the month of June, Thunder Bay receives an average of 85.7 mm of rain (Environment Canada Climate Normals 1971-2000) and when you consider an average roof size of 93 square metres (1000 sq ft), a rain barrel attached to your downspout will collect 7,970 litres (2,105 gallons) of water FREE for lawn and garden irrigation each summer month.

tip

Watering in the morning (versus the evening) lowers the chance of fungal disease in plants.

	Topic	Best 4	Good 3	Fair 2	Poor 1	Your Rating
5	**Water features and ponds**	There is no artificial water feature or pond on the property.	Water feature(s) and landscaping are designed to minimize the amount of light falling on water feature **AND** water is continuously moving in water feature(s) **AND** water feature(s) are located as far from waterways or open natural water as possible.	Water feature(s) are located as far from waterways or open natural water as possible. **tip** If you are planning to construct a pond on your property (i.e. irrigation, livestock watering or aesthetic), you may require a permit for construction and be required to follow certain measures to protect fish and fish habitat. Contact the LRCA prior to pond construction for project review. Also see the DFO Operational Statement titled *Isolated Pond Construction* (See "Fish Habitat" in Resource List pg. 119).	Indiscriminate design, placement and chemical treatment of artificial water features.	☐
		Pond is isolated; not connected by any inlet/outlet channel to a natural watercourse **AND** pond is at least 30 metres away from the ordinary high water mark **AND** riparian vegetation is protected **AND** pond does not alter groundwater.		Pond is created by diverting flow from a natural watercourse into an adjacent pond **AND** pond does not alter groundwater **AND** approval/permit is obtained.	***Pond is created by digging or dredging an area within an existing watercourse or by damming a watercourse*** ***OR pond alters groundwater, temperature, sedimentation or fish migration*** ***OR approval/permit is not obtained.***	☐

tip

Do not stock ponds that have an outflow to a natural watercourse with non-native fish. Contact the MNR before stocking a private pond that is in the floodplain or connected to a natural watercourse where fish could escape.

**** These conditions may violate federal or provincial legislation or municipal by-laws.***

Gardening and Landscaping

Worksheet #6b – Natural Buffers & Shoreline Access

Note: Use this worksheet to learn about living within natural buffer areas.

Why should you be concerned?

•A buffer is an area of natural vegetation that runs along the shoreline, stream or bluff. It extends from the high water mark to the water's edge.

• Natural buffers can include wetlands, beaches, forest corridors, and any native vegetation along the shoreline or bank.

• Natural buffers not only protect the stability of the shoreline, bluff, or bank, but they protect water quality by filtering and purifying water before it enters a watercourse.

• In order to have visual or physical access to water, people sometimes remove all or part of a buffer. This activity weakens the buffer's ability to protect against erosion or poor water quality. This leads to the degradation of ecological function. It can also lead to liability cases with neighbours and criminal charges if fish habitat is harmed.

What can you do?

1. Minimize water access points, avoid access ways through any environmentally sensitive areas including wetlands, bluffs, Provincially Significant Wetlands (PSWs) and Areas of Natural and Scientific Interest (ANSIs).

2. Maintain the existing buffer(s).

3. Restore buffers where they have previously been removed or degraded in consultation with the Lakehead Region Conservation Authority.

4. Divert downspouts into screened rain barrels to reduce erosion.

NATURAL BUFFERS & SHORELINE ACCESS: How do you rate?

	Topic	Best 4	Good 3	Fair 2	Poor 1	Your Rating
1	**Puncturing the buffer**	Buffer is not punctured for access to water.	Only a small puncture in your buffer.	Buffer is punctured but vegetation is allowed to re-establish naturally **OR** punctures are concentrated in one area.	Buffer mostly punctured or non-existent. Vegetation cleared and prevented from re-establishing.	☐
2	**Size of buffer**	Buffer is greater that 50 m (165 feet) wide and in environmentally sensitive areas, buffer is 150 m (500 feet) wide.	Buffer is at least 50 m (165 feet) wide.	Buffer is less than 50 m (165 feet) wide.	There is no buffer present. Grass/lawn extends to property limit.	☐
3	**Composition of buffer**	Buffer comprised of native vegetation.	Buffer comprised mostly of native vegetation and some non-invasive introduced species.	Buffer comprised of some native vegetation and mostly non-invasive species.	Buffer comprised of no native vegetation and mostly invasive and/or non-invasive introduced species.	☐
4	**Property maintenance**	Aware of any especially sensitive buffers, including wetlands and bluffs, and active in protecting them.	Aware of any especially sensitive buffers, including wetlands and bluffs, and plans to protect them.	Aware of any especially sensitive buffers, including wetlands and bluffs. No plans to protect them.	No awareness of any especially sensitive buffers including wetlands and bluffs, and no plans to protect them.	☐
		Aware of exact shoreline property boundaries and jurisdiction including municipal right-of-ways, flood plain and fill regulated areas.	Aware of general shoreline property boundaries and jurisdiction.		No awareness of shoreline property boundaries and jurisdiction.	☐

Topic	Best 4	Good 3	Fair 2	Poor 1	Your Rating
Property maintenance	All trees, woody debris, and leaves are left in place. No alterations.	Vegetation alterations are limited to pruning branches from trees to provide for visual access.	Trees removed to provide access are concentrated in an area. Other vegetation (shrubs, ground cover) is not removed.	Trees are removed throughout to provide visual access.	☐
Shoreline stabilization	Planting native deep-rooted shrub species **OR** bioengineered soft structures that incorporate natural materials (i.e. logs, live stakes, live brush bundles).	Rock rubble or rip-rap embankments with a slope of 1:3 (vertical: horizontal) **AND** filter cloth placed under the rocks to prevent release of sediment.	Placement of baseball to football sized rocks into closed wire cages (Gabion baskets).	Vertical retaining wall of stone or concrete **OR** concrete rubble.	☐

tip

If you need to remove shoreline vegetation to maintain an existing right-of-way (i.e. power lines), try to remove no more than 1/3 of the vegetation, allow the root system to stay intact and use hand tools rather than large machinery. Also see the DFO Operational Statement titled *Maintenance of Riparian Vegetation in Existing Right-of-Way* (See "Fish Habitat" in Resource List pg. 119).

5

tip

Review the DFO publication: *Working Around Water? Factsheet Series – Fish Habitat & Shoreline Stabilization* (See "Fish Habitat" in Resource List pg. 119). Review Transport Canada - Navigable Waters Protection Program to determine if your erosion protection project is considered a minor work or requires approval (See "Navigable Waters" in Resource List pg. 121).

tip

Always contact the Lakehead Region Conservation Authority before the construction of structures or placement or removal of materials in the regulated area (i.e. shoreline) on your property.

tip

If you are planning a major shore protection project, consider a common group effort with neighbours to save construction and consulting engineering costs. Remember: altering your shoreline will effect erosion and deposition processes on the shoreline of others.

Gardening and Landscaping

Worksheet #6c –Trees

Note: Use this worksheet to assess trees on your property.

Why should you be concerned?

Please note that this worksheet applies to small cottage lots – not woodlots.

• Ecologically, trees provide shelter and a food source for wildlife. Their presence is critical to the health of their ecosystems and watershed.

• The roots of trees and shrubs anchor the soil, helping to stabilize slopes and prevent the loss of soil through erosion.

• Trees remove carbon dioxide, one of the main gases involved in climate change, from the atmosphere. They also absorb and store many pollutants that are emitted into the air from industry and cars. This helps to improve the quality of air we breathe.

• Trees can be natural air conditioners. If planted strategically around windows, doors and outdoor activity areas, trees (especially larger, mature ones) can provide shade from the hot summer sun.

• Similarly, in winter, evergreen trees can provide shelter from cold winds. This can lower the heat loss from buildings and help reduce heating costs.

•From a real-estate perspective, trees add value to a property. They not only help to create an established feeling in a neighbourhood or property, they also improve the appearance.

What can you do?

1. Protect existing trees from animal browsing, insect and disease infestation and physical damage from machinery or weather events.

2. Plant appropriate trees where possible. Check with *Worksheet #6d – Plant Selection & Care,* or the Lakehead Region Conservation Authority to ensure that you are not planting invasive species. Native plants are best suited to local conditions.

3. Identify mature and rare trees that you want to protect. Include these in a long-term management plan.

4. Every Arbour Day, make it a family tradition to plant a shrub or tree.

TREES: How do you rate?

Topic	Best 4	Good 3	Fair 2	Poor 1	Your Rating
TREE ECOLOGY					
1 **Understanding and appreciation for the role of trees in ecosystem health**	Proper instructions followed when planting trees **AND** tree species selected to suit existing site conditions **AND** priority given to native species.	Trees planted following proper instructions **AND** tree species selected to suit existing site conditions.	Non-invasive, exotic species are planted.	No consideration given to tree ecology in selection of new trees **OR** invasive species are planted.	☐
	Standing, dead trees are left in place to provide habitat. Only hazard trees are felled and left to rot in place.	Both standing and hazard dead trees are felled and left to rot in place.	Some wood is left to rot and provide habitat while some is removed.	All felled wood is removed from your property.	☐
	Submerged logs are left in place on the bed of lake/river to provide fish habitat.	Submerged cut logs (no root wad or branches) that are located in more than 5 metres of water depth are safely removed.		***Submerged logs that are located in water less than 5 m deep and buried more than 10% of diameter in the lake/river bed are removed.**	☐
	Trees and shrubs on bluffs and other slopes are protected and never removed. Dead trees are carefully felled and left to rot.	Only some trees (e.g. hazard trees) are removed from bluffs and other slopes. Great care is taken to ensure that slope stability is not compromised.	Many trees are removed from bluffs and other slopes. No care is taken to ensure that slope stability is not compromised.	All natural vegetation is removed from bluffs and other slopes ***OR tree limbs that overhang water ways or shores are cut.**	☐

tip

Before you cut a tree down, consider the time it took for it to grow to its current size, and check local tree bylaw requirements.

tip

Review the DFO Operational Statement titled *Submerged Log Salvage* (See "Fish Habitat" in Resource List pg. 119).

tip

Before clearing or trimming trees on a slope, get a certified arborist to help you with your plans.

**** These conditions may violate federal or provincial legislation or municipal by-laws.***

	Topic	Best 4	Good 3	Fair 2	Poor 1	Your Rating
	TREE MANAGEMENT					
2	**Tree maintenance and care**	All trees are protected against browsing, injury, and potential diseases **AND** no healthy trees are removed.	Trees at shoreline and watercourse buffers are protected **AND** no healthy trees are removed.	Trees are not protected **OR** some healthy trees are removed.	Lot is generally cleared.	☐
		Branch pruning is done properly and at the right time to provide lake views from a distance.	Branch pruning is irregular but is done properly.		Trees are pruned carelessly or without regard for tree health and vigor.	☐
		Trees are watered properly and regularly for a minimum of three years after planting **AND** mulch is properly piled at least 3 inches from tree trunk.	Trees are watered during hot, dry periods for the first three years after planting **AND** mulch is properly piled at least 3 inches away from tree trunk.	Trees are watered irregularly **AND** mulch is properly piled at least 3 inches away from tree trunk.	Watering is inadequate during the first three years following planting **OR** mulch is piled too close to the tree trunk, causing damage to the bark.	☐
3	**Knowledge of issues related to tree health**	Have knowledge of potential insect and disease problems in your area **AND** a certified arborist is hired to assess tree health and development and to develop a long-term management plan.	A certified arborist is hired to assess tree health and development and to develop a long-term management plan.	Existing trees are checked periodically for disease or insect infestation.	No consideration is given to tree health or insect problems in your area.	☐

tip

Protect trees during construction by ensuring that there is no disturbance within the dripline.

tip

Be aware of the source of new trees when purchasing and ensure they are infection-free before planting.

tip

If necessary, ensure trees are properly staked after planting and that stakes are removed after two years.

Topic	Best 4	Good 3	Fair 2	Poor 1	Your Rating
TREE MANAGEMENT...*continued*					
Tree root system	Tree rooting zone has adequate soil volume and conditions appropriate to the tree species.	Tree rooting zone is adequate but may need supplemental water or nutrients.	Tree rooting zone is not less than 60 % of appropriate volume and may require supplemental water during dry spells.	Soil volume and growing conditions of tree rooting zone are inadequate for the tree species selected.	☐
Soil	Tree species selected is well suited to existing soil conditions especially soil structure and moisture availability.	Tree species selected is tolerant of existing soil conditions.	Tree species selected will survive in existing soil conditions with occasional supplemental nutrients and water.	Tree species selected is unsuited to existing soil conditions, especially moisture availability.	☐

4

tip

Most tree roots extend beyond the dripline of the tree.

5

tip

Cues for proper species selection can be gained by looking at nearby native or non-invasive trees that are thriving in the same conditions as your property.

tip

Never pile mulch too close to the trunk of a tree. This can damage the bark, possibly girdling and killing the tree.

Gardening and Landscaping

Worksheet #6d – Plant Selection & Care

Note: Use this worksheet to help select appropriate plants for your landscape.

Why should you be concerned?

• Native plants have evolved as part of a greater ecological community. They are well adapted to local conditions, but may have some disease or insect problems.

• Using native species helps to integrate your property into the greater landscape context.

• Native plants are a valuable food source for insects and native wildlife. They also provide valuable habitat for many kinds of species.

• Invasive species can spread into other areas and are difficult to eradicate. They can also introduce disease and require more maintenance such as watering and fertilizing.

• Avoid extensive lawns because they reduce biodiversity.

• Extensive lawns also contribute to erosion and increase the potential for slope instability.

What can you do?

1. Learn about the plant community in your area/region and select plants with the help of Thunder Bay Naturalist Club or a reputable nursery or market garden.

2. Never plant invasive plants on your property and understand which invasive species already exist in your area.

3. Know your soil type and depth. Some areas along Lake Superior have very shallow soils.

4. Reduce your lawn area to only what is needed for particular activities and keep it as far as possible from any water-body or shoreline.

5. Use low maintenance plants that don't require watering or fertilizing.

PLANT SELECTION & CARE: How do you rate?

	Topic	Best 4	Good 3	Fair 2	Poor 1	Your Rating
1	**Plant selection and control**	No use or presence of invasive plants on property **AND** measures taken to eliminate existing invasive plants.	No new planting of invasive plants	No new planting of invasive plants	Continued use of invasive plants.	☐
		Match plant selection to your soil conditions **AND** only native plants.	Plant selection suits local soil and climate conditions **AND** non-invasive plants selected.	Occasional addition of nutrients to support non-invasive plants.	Plant selection does not suit local soil and climate conditions **OR** includes invasive plants.	☐
		Complete eradication and proper disposal of existing invasive plants on your property.	Long-term management plan for the eradication of existing invasive plants.	Short-term management plan for the eradication of existing invasive plants.	No attempts to eradicate invasive plants.	☐
		Aquatic plants are left undisturbed to provide fish habitat and stabilize sediments.	Aquatic plants are removed by approved methods in the appropriate timing window.		***Aquatic plants are removed without regard for fish habitat*** ***OR removed by unapproved herbicide application or in-water dredging.***	☐

tip

When selecting any plant, consider its size at maturity and determine if this is appropriate to the space available.

tip

When planting in a floodplain, ensure that plants can tolerate seasonal flooding conditions.

tip

Review the DFO publication: *Working Around Water? Factsheet Series – Fish Habitat & Controlling Aquatic Plants* (See "Fish Habitat" in Resource List pg. 119).

**** These conditions may violate federal or provincial legislation or municipal by-laws.***

	Topic	Best 4	Good 3	Fair 2	Poor 1	Your Rating
2	**Garden monitoring**	Regular checks to ensure that invasive species have not established in gardens **AND** once spotted, invasive plants are immediately disposed of in an appropriate manner.	Regular checks to ensure that invasive species have not established in gardens.	Occasional checks to ensure that invasive species have not established in gardens **OR** once spotted, invasive plants are immediately disposed of in an inappropriate manner.	No checks to ensure that invasive species have not established in gardens **OR** once spotted, invasive plants are not disposed.	☐
3	**Lawns**	No traditional lawn.	Lawn is limited to a area over the septic bed with no use of pesticides, fertilizers or irrigation.	Lawn is kept to a minimum size and at a maximum distance from any shoreline or bluff edge.	Much of property is given over to lawn **OR** lawn is used to the water's edge.	☐
		Learn about appropriate alternative groundcovers from local experts and plant them **AND** encourage local nurseries to stock native groundcovers.	Allow for a mix of native and non-invasive plants that tolerate some mowing and drought.	Non-invasive plants used that tolerate some mowing and drought.	Species used require extensive use of irrigation, fertilizer or pesticides **OR** use of invasive species.	☐
			Sod is used to establish new lawn.	Establishment of new lawn with seed, subject to erosion.	Bare soil.	☐

tip

If planting a traditional lawn with non-native grass, choose a grass that is hardy, pest resistant and non-invasive.

tip

During hot, dry weather, allow grasses to go dormant.

tip

To gradually remove or reduce the size of your lawn, stop mowing. Gradually, native plants will return.

	Topic	Best 4	Good 3	Fair 2	Poor 1	Your Rating
	PESTICIDE USE					
4	**Pesticide use and application**	No cosmetic pesticide use.	Pesticide alternatives are used.	Pesticides are handled carefully according to instructions and weather conditions AND spot treatment.	Pesticides are applied indiscriminately without concern for application.	☐
	FERTILIZER USE					
5	**Understanding of plant requirements and fertilizer use**	Good understanding of plant nutrient requirements **AND** soil is tested to determine nutrient requirements before fertilizing. Fertilizer used accordingly.	Good understanding of plant nutrient requirements **AND** plant is monitored regularly to detect nutrient deficiencies. Fertilizer used accordingly.	Basic understanding of plant nutrient requirements **AND** occasional monitoring for plant nutrient deficiencies. Fertilizer used regularly.	No consideration for soil condition or plant nutrient requirements **OR** excessive use of fertilizer.	☐
		Fully-composted manure and yard waste is used appropriately to amend soil.	Fully-composted manure and yard waste is used appropriately to amend soil **OR** controlled spot use of fertilizer if necessary.	Occasionally apply fertilizer over the entire garden and/or the lawn.	Over-application of nutrients **OR** poor care taken in following package instructions.	☐
		Locally-produced, well-rotted compost or manure is used.	Local, well-rotted compost or manure is used **OR** slow-release synthetic fertilizer is used.	Well-rotted compost or manure is used but not from local sources **OR** quick-release fertilizer is used but nutrient composition is appropriate to situation.	Quick-release synthetic/commercial fertilizer is used.	☐

	Topic	Best 4	Good 3	Fair 2	Poor 1	Your Rating
	FERTILIZER USE...*continued*					
6	**Application practices and water access**	Nutrient application is a minimum of 30 m (100 ft) from wells, water intakes, streams and water courses **AND** a permanently vegetated buffer, greater that 3 m (10 ft) wide runs between the area of nutrient application and any well, water intake, stream or water course **AND** check to ensure that heavy rain or thunderstorms are not forecasted for at least 24 hours following application.	Nutrient application is a minimum of 30 m (100 ft) from wells, water intakes, streams and water courses **AND** check to ensure that heavy rain or thunderstorms are not forecasted for at least 24 hours following application.	Nutrient application is a minimum of 30 m (100 ft) from wells, water intakes, streams and water courses.	Fertilizer, compost or manure applied to frozen or saturated soils or on slopes where surface run-off is likely ***OR closer than 30 m (100 ft) to wells, water intakes, streams and water courses.**	☐

tip

Test your soil for nitrogen, phosphorus and potassium levels before adding nutrients. Contact a soil testing lab for more details on soil sampling. See the *Yellow Pages* for a listing near you (See "Soils" in Resource List pg. 122).

tip

NEVER compost invasive species unless you are sure that there are no seeds present and that composting will effectively kill the root system.

tip

At the Nursery: what you should ask…

1. What native, local plants do you have?
2. Are they nursery grown or were they harvested from the wild?
3. Is there potential for invasion?
4. How can you control or eradicate it, if necessary?
5. What are the nutrient and water requirements?

**** These conditions may violate federal or provincial legislation or municipal by-laws.***

Dangerous Beauty! … *the problem with invasive species*

Be aware of the plant that can grow anywhere…

A well-intentioned 'gift' from a friend or neighbour may end up taking over your garden and spreading into nearby plant communities where it can have a disastrous impact on the health of that ecosystem. Being invasive depends on site conditions. It is possible that a well-contained plant in your garden may run rampant in a friend's garden. Never accept or give plants if you are unsure.

A database of invasive species sightings across the province is maintained through a partnership between the MNR and the Ontario Federation of Anglers and Hunters (OFAH). Learn to identify invasive species on their website (www.invadingspecies.com). Please report any occurrence of invasive species by calling the Invading Species Hotline (1-800-563-7711). The following is a partial list of invasive plants that are of concern in Ontario.

AVOID THE USE OF THESE PLANTS!

Amur Honeysuckle (Lonicera maackii)
Morrow Honeysuckle (Lonicera morrowii)
Tatarian Honeysuckle (Lonicera tatarica)
Common buckthorn (Rhamnus cathartica)
Glossy buckthorn (Rhamnus Frangula)
Common Reed (Phragmites australis)
Dog-strangling vine (Vincetoxicum nigrum)
Eurasian Watermilfoil (Myriophyllum spicatum)
Water lettuce (Pistia stratiotes)
Yellow Iris (Iris pseudacorus)
European frog-bit (Hydrocharis morsus-ranae)
Fanwort (Cabomba caroliniana)
Flowering Rush (Butomus umbellatus)
Garlic Mustard (Alliara petiolata)
Giant Hogweed (Heracleum mantegazzianum)
Japanese knotweed (Polygonum cuspidatum)
Norway Maple (Acer platanoides)
Purple Loosestrife (Lythrum salicaria)
Curly- leaf pondweed (Potamogeton crispus)
Yellow floating heart (Nymphoides peltata)
Water Hyacinth (Eichhornia crassipes)

Dangerous Beauty! … *the problem with invasive species*

Name: *Bottumus umbellatus*

Common Name: Flowering Rush

Colours: 3 whitish pink umbrella shaped flowers with triangular-shaped stems

Size: Can reach 1 m (3.2 ft) above water

Type: Aquatic perennial

Name: *Potamogeton crispus*

Common Name: Curly-leaf Pondweed

Colours: Reddish brown curly leaves in summer and blue green flattened leaves in winter and shallow roots

Size: 3-10 cm (1-4 in) leaves

Type: Aquatic annual that form surface mats

Name: *Myriophyllum spicatum*

Common Name: Eurasian Watermilfoil

Colours: pale pink to reddish brown stem and green feathery leaves

Size: 12 or more pairs of featherlike leaflets

Type: Aquatic plant that that has seeds but only needs a small fragment to spread

Name: *Lythrum salicaria*

Common Name: Purple loosestrife

Colours: 5-7 purple flowers opposite or in whorls of 3 and stiff 4-sided stem

Size: 1-3 m (3-10 ft) tall

Type: Perennial that prefers wet habitats such as wetlands, marshes, etc.

Tips about cosmetic pesticides & their alternatives…

Why should you be concerned?

• Research studies have found that many cosmetic pesticides are toxic and may cause serious health problems for humans and ecosystems immediately or many years later.

• The presence of pesticides in surface and groundwater may make it unsuitable for drinking.

•When contaminated surface water runs into streams and lakes, it reduces the quality of the water and may harm fish, wildlife and humans.

• Pesticides must be handled carefully to prevent them from getting into any water source.

• Pesticides below tolerance level (set by the government) have been found in Ontario's drinking water. The effects of repeated exposure to very small amounts over a long period of time are still unknown. Chronic health problems may not appear for many years.

What can you do?

1. Inform yourself of alternative non-toxic or lower toxicity chemicals to deal with the problem.

2. Read and follow instructions carefully. Note if weather conditions may affect application.

3. Avoid storing pesticides for long periods of time. Buy only the amount you need and make sure you have a safe storage area. Dispose of empty pesticide containers and rinse water safely.

4. Never pour leftovers down the drain, storm sewer, storm drain, or into open water.

5. Do not apply pesticides on windy days or when it is raining. Wind can cause the pesticides to be transported through the air to locations that were not desired initially. If pesticides are applied when it is raining, there will be an increased chance that they will be washed away, possibly into a nearby water source.

Tips about cosmetic pesticides & their alternatives…

Alternatives

Successful landscapes rely on preventative measures and careful monitoring just like your health.

• Learn about your garden's current situation, such as nutrient composition, soil type, moisture regime and shade tolerances. Add only what is needed and work with what cannot be changed.

•Keep you lawn fed (compost/manure/fertilizer), aerated, de-thatched and maintain adequate soil moisture. Most problems can be avoided if your lawn is in good condition to start with. Lawn grasses go dormant naturally in the last days of summer and will become green again with precipitation in the fall.

• Try old-fashioned remedies for pests, such as Borax© sprinkled around ant nests, insecticidal soap for various insects, and baking soda or sulphur for fungal diseases.

• To make plants less appetizing for the insects, use a garlic spray (10 cloves of garlic in 1 litre/4 cups of water and heat for 5 minutes).

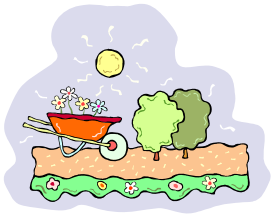
• To get rid of unwanted plants, spray household vinegar (not diluted) on the plant every day until it dies.

• Bring in reinforcements. Create suitable habitat for birds or bats that will eat insect pests.

• Get out the hand tools and dig up unwanted weeds.

The *Cosmetic Pesticides Ban Act* was passed by the Ontario legislature June 18, 2008. The government has not yet determined which products and/or active ingredients will be included in the ban but now is the time to start researching safe and effective alternatives to keep your lawn healthy and beautiful.

These are just a few ideas – more can be found at your public library, the web and your local nursery or plant club. Just ask about pesticide alternatives!



Tips about nutrients

Why should you be concerned?

• Nutrients have an important and beneficial role in plant growth and soil amendments. As plant roots take up nutrients from the soil over time, the soil may become depleted, resulting in less vigorous plant and lawn growth.

• Over-application of fertilizers can result in fertilizer running off the garden or lawn. This can contaminate both groundwater and surface water and encourage algae and algal blooms.

• Our activities both inland and along the shoreline affect the nutrient-loading of our rivers and lakes.

• Water quality protection includes nutrient management and the appropriate use of fertilizers.

•We can all potentially contribute to harmful **eutrophication**, reducing water quality and thereby recreational pleasure.

What can you do?

1. Test to find out the nutrient level in your soil before adding any nutrients.

2. Effectively manage nutrients in an environmentally responsible manner.

3. Reduce your nutrient application volume.

4. Plant species of shrubs and plants that require little or no fertilizers.

N – P – K

Nitrogen (N) for leaf development and vivid green colour.
Phosphourus (P) for root growth.
Potassium (K) for root development and disease resistance.

Lawn Care: How to have a healthy, low-maintenance lawn

tip

When to water? How much?

▪ In hot, dry weather and during water shortages, allow grass to become dormant. Water 7 – 12 mm (0.25-0.5 inch) every 2 or 3 weeks. Grass will look brown but it is dormant, not dead.

▪ Encourage deep rooting by watering infrequently but thoroughly. Your lawn needs no more that 25 mm (1 inch) of water per week.

tip

When to mow? How?

▪ Mow when the grass is as dry as possible.

▪ Leave your grass at least 8 cm (3 in) long. This encourages root growth and lessens moisture loss.

▪Aerating your lawn improves rooting conditions.

tip

Fertilizing

▪ Leaving grass clippings on the lawn can increase soil fertility up to 50 %.

▪ If you do use a fertilizer, choose a slow-release product. The nutrients are released slowly, preventing 'lawn burn' and groundwater contamination.

tip

Dealing with weeds

▪ Remove unwanted plants from lawn by hand using long handled tools. It is easier to remove weeds when the ground is damp. Alternatively, pour boiling water over the exposed roots of unwanted plants.

▪ Spread a layer 8-10 cm (3-4 in) thick of natural mulch overtop your garden. This will prevent weed seeds from germinating.

▪ If you do use a pesticide, directly spray only those plants that you want to get rid of. Avoid spraying the entire lawn.

▪ Appropriately dispose of invasive plants. Check the Resource List for information on the control of invasive species.

Worksheet #7 – Waste Management

Note: Use this worksheet to learn about how you can help manage your waste.

Why should you be concerned?

• The millions of tonnes of garbage produced in our communities every year is quickly filling up existing landfill sites.

• It is increasingly difficult to place new landfill sites. No one wants to live near one.

• If a Municipality's landfill site is full and a new nearby location cannot be obtained, residents must pay more to have their waste transported elsewhere.

• Recycling saves natural resources, energy and water by using already manufactured items instead of more natural resources.

• Durable products may initially be more expensive but they are generally a better long-term investment and will keep from entering landfill sites longer.

• There is the potential that leachate from landfill sites may contaminate groundwater.

• Open burning of garbage in barrels, woodstoves, fireplaces, outdoor furnaces or open pits releases a large number of pollutants. Burning of garbage at home, cottage and farm is one of the largest known sources of dioxins and furans in Ontario.

What can you do?

1. Consider how you can personally generate less waste.

2. Inform yourself of initiatives that are redesigning products, packaging, and manufacturing processes to reduce waste. Support them through your purchasing power.

3. Recycle effectively. Contact your local Municipality to learn what items can be recycled in your community and how you should prepare them for recycling (i.e. rinse, bundle, sort, etc.).

4. Compost food and yard wastes. Don't use kitchen sink garbage disposals as garborators.

5. Use refillable and reusable containers and products as much as possible and purchase durable products that won't need short-term replacement (i.e. reuseable travel coffee mug).

6. Watch for Waste Reduction Week/Hazardous Waste Disposal Days in your community. Encourage your local Municipality to support recycling programs and similar events.

WASTE MANAGEMENT: How do you rate?

Topic	Best 4	Good 3	Fair 2	Poor 1	Your Rating
MINIMIZING THE WASTE THAT COMES 'IN'					
Purchases	Instead of buying, always attempt to borrow, rent or share any items possible **OR** purchase used items.	Purchase or use only what you need and avoid accumulating unused products.	Purchase more than is necessary **AND** recycling as much as possible, including donating items.	Purchase more than is necessary **OR** throw away unwanted items into regular household garbage.	☐
	Preference given to items that are durable, reusable, and/or recyclable and can be recycled locally **AND** take-out or disposable food/beverage containers are seldom used.	Preference given to items that are durable, reusable, and/or recyclable and can be recycled locally **OR** cottage recyclables stored and taken home to recycle.	Disposable or single serving items purchased even when alternatives available **AND** minimal effort is made to recycle or reuse.	Frequently purchase disposable, or single serving items **OR** no effort to recycle or reuse.	☐
	Choose items that have no packaging **AND** always re-use carry-out grocery bags or bring a reusable tote bag.	Choose items that have minimal packaging **OR** always re-use carry-out grocery bags or bring a reusable tote.	Choose items with packaging that is recyclable in your Municipality.	No consideration given to product packaging **OR** plastic carry-out bags are accepted and then discarded.	☐

1

tip

Use your purchasing power to help minimize waste and protect water quality.

Topic	Best 4	Good 3	Fair 2	Poor 1	Your Rating
MINIMIZING THE WASTE THAT GOES 'OUT'					
Re-using and recycling	Reduce the number of items you use.	Reuse as many items as possible.	Recycle as many items as possible.	No consideration given to reduce consumption or reuse items **OR** recyclable items not sorted but disposed of at landfill.	☐
	Both sides of a sheet of paper are used **AND** all paper is recycled.	Both sides of a sheet of paper are used **OR** all paper is recycled.	Most paper is recycled and all paper purchased contains some recycled content.	Paper is not recycled.	☐
	Check with local Municipality to learn what items are recyclable and how they should be prepared for recycling **AND** comply with all applicable practices in your community.		Most recyclable items are recycled.	Little or no attempt made to participate in local recycling programs **** OR waste is burned / a burn barrel is used.***	☐
	Food scraps and yard wastes are properly composted regularly, on site.		Food scraps and yard wastes are composted occasionally.	Food scraps or yard wastes are thrown in regular household garbage **OR** a garborator or garbage disposal is used.	☐

2

tip

Redirect or place your newspaper and magazine subscriptions on hold while you are away from home.

tip

To reduce packaging buy larger volumes (more product for less packaging) bulk or concentrated products.

**** These conditions may violate federal or provincial legislation or municipal by-laws.***

	Topic	Best 4	Good 3	Fair 2	Poor 1	Your Rating
	MINIMIZES THE WASTE THAT GOES 'OUT'...*continued*					
3	**Composting practices**	Household compost is rodent proof **AND** compost composition is monitored and mixed regularly **AND** compost is used on-site.	Compost composition is monitored and mixed regularly **AND** compost is used on-site.	Household compostable waste is sent to local composting facility.	No composting. Food scraps and yard waste is thrown in regular household garbage.	☐

Know your numbers…

Beverage and food bottles

Beverage and food bottles, detergent and ice cream containers

Clear deli food packaging, vegetable oil bottles

Carry-out grocery bags, bread bags, frozen food bags

Margarine and yogurt containers

Foam cups, trays, and foam take-out containers

Bottles containing several resins

Check with your Municipality to learn which numbers can be recycled in your local program. Look on the bottom of plastic containers to learn what number they are.

Worksheet #8 – Proper Handling, Storage & Disposal of Chemicals

Note: Use this worksheet to learn about management of fuels, pesticides and typical household chemicals.

Why should you be concerned?

• Petroleum products contain toxic compounds, such as benzene, which can cause cancer.

• Some toxic chemicals are colourless and odourless and can go undetected in water that has not been tested for contamination.

• Contaminated water or soil greatly devalues property and is very expensive to clean-up. Clean-up may not even be possible in some cases.

• A property owner may be held liable for contaminating any water source.

• Vapours from some chemicals such as fuels can ignite or cause explosions.

• Pesticides have been found in amounts below the tolerance levels set by the government in Ontario's drinking water. We don't know the effects of repeated exposure to low amounts over a long period of time. Chronic health problems may not appear for many years.

What can you do?

1. Inform yourself of alternative non-toxic or lower toxicity chemicals to deal with the situation.

2. Avoid storing chemicals. Buy only the amount you need and make sure you have a safe storage area. Contact your local Municipality to learn how you can dispose of empty chemical containers and rinse water safely.

3. Never store fuel or any chemical on your property where it may come in contact with water.

4. Read and follow instructions carefully. Note if weather conditions can affect application.

5. Never put chemical leftovers down the drain, storm sewer, storm drain or into open water.

CHEMICALS: How do you rate?

	Topic	Best 4	Good 3	Fair 2	Poor 1	Your Rating
	FUEL CHEMICALS					
1	**Vehicles and machinery**	Regular checks ensure vehicles and machinery are not leaking.		Irregular checks to ensure vehicles and machinery are not leaking.	Never check to ensure vehicles and machinery are not leaking.	☐
		Any fluid spills are cleaned up immediately. Rags are disposed of appropriately.	Any fluid spills are cleaned up immediately.	Some spills are cleaned up immediately.	Drips and spills are not cleaned up.	☐
		Used oil, antifreeze, and other wastes are appropriately recycled.	Used oil, antifreeze, and other wastes are disposed of at landfill.	Used oil, antifreeze and other wastes are allowed to accumulate on your property.	**** Used oil, antifreeze and other wastes are dumped down the storm sewer, in a ditch or on the ground.***	☐
		There are no unused or decommissioned vehicles on the property **AND** no dirty car parts, wastes or chemicals.	There are no unused or decommissioned vehicles on the property **AND/OR** dirty car parts and vehicle wastes/chemicals are kept out of reach of storm water runoff.	There are no unused or decommissioned vehicles on the property **AND/OR** dirty car parts and vehicle wastes or chemicals are left on unpaved areas outside.	***There are unused or decommissioned vehicles on your property*** **** AND/OR Car parts and vehicle wastes or chemicals are left near water courses.***	☐

tip

Keep your vehicles regularly serviced to check for oil, antifreeze or gas leaks.

**** These conditions may violate federal or provincial legislation or municipal by-laws.***

Topic	Best 4	Good 3	Fair 2	Poor 1	Your Rating
FUEL STORAGE					
Portable fuel storage	All fuel is used up regularly so that storage is not required anywhere on the property.	A minimal amount of fuel is stored in safe, approved, original-sale, and clearly labeled containers **AND** liquid fuel containers have a spout to prevent spills.	Fuel is stored in safe, approved, original-sale, and clearly labeled containers.	Fuels are stored in unmarked, open or unapproved containers.	☐
	Distance between petroleum storage and nearest surface water is greater than 150 m (500 ft).	Distance between petroleum storage and nearest surface water is 61-150 m (200-500 ft).	Distance between petroleum storage and nearest surface water is 30-60 m (100-199 ft).	**** Distance between petroleum storage and nearest surface water is less than 30 m (100 ft).***	☐
	Distance between petroleum storage and well(s) is greater than 90 m (300 ft).	Distance between petroleum storage and well(s) is 24-90 m (76-300 ft) for a drilled well **OR** 47-90 m (151-300 ft) for a bored/dug well.	Distance between petroleum storage and well(s) is 15-23 m (50-75 ft) **OR** 30-46 m (100-150 ft) for a bored/dug well.	**** Distance between petroleum storage and well(s) is less than 15 m (50 ft) for a drilled well*** ***OR less than 30 m (100 ft) for a bored/dug well.***	☐

2

**** These conditions may violate federal or provincial legislation or municipal by-laws.***

Topic	Best 4	Good 3	Fair 2	Poor 1	Your Rating
ABOVE GROUND FUEL TANK STORAGE					
3 **Gasoline and diesel fuel tanks**	No fuel tanks are present above or below ground anywhere on the property.	All tanks are made of steel and have a protective, anti-corrosive coating **AND** ULC approved.		**** Steel tank with no protective coating*** ***OR fibreglass tank*** ***OR not ULC approved.***	☐
	Tanks are regularly checked for leaks.		Tanks are tested monthly for leaks.	Tanks are not checked for leaks.	☐
	The water table is located more than 3 m (10 ft) below the surface under the fuel tank.		The water table is located consistently 1.5 m (5 ft) to 3 m (10 ft) below the surface.	The water table is located consistently less that 1.5 m (5 ft) below the surface.	☐
	Inactive tanks are decommissioned and properly removed.			Inactive tanks are abandoned.	☐
	Tanks sites are checked for contamination. If found, it is immediately reported.			Tanks sites are not checked for contamination **OR** if found, not immediately reported.	☐

tip

If a spill or leak occurs, report it immediately to the Spills Action Centre at the MOE by calling:
1-800-268-6060

**** These conditions may violate federal or provincial legislation or municipal by-laws.***

	Topic	Best 4	Good 3	Fair 2	Poor 1	Your Rating
	ABOVE GROUND FUEL TANK STORAGE...*continued*					
4	**Heating oil tanks**	All types of tank(s) are located more than 3 m (10 ft) from any building.	Tank(s) with a capacity of less than 2500 litres (550 gallons) are located 3 m (10 ft) or less from any building.		Fuel tank is located inside a building. **** OR tanks(s) with a capacity greater than 2500 litres (550 gallons) are located less than 1.5 m (5 ft) from a building.***	☐
		Tanks are ULC approved, monitored for leaks, and proper vent pipe used **AND** protective coating maintained.			**** Tanks are not ULC approved or monitored for leaks*** ***OR no vent pipe used*** ***OR protective coating not maintained.***	☐
		Tank less than 5 years old.	Tank less than 10 years old.	Tank less than 20 years old.	Tank more than 25 years old **OR** age of tank unknown.	☐
		Fuel delivery system between fuel storage and appliance is installed by a registered contractor and inspected annually for leaks.			**** Fuel delivery system between fuel storage and appliance is not installed by a registered contractor*** ***OR not inspected annually for leaks.***	☐

tip

**** If you have underground storage of fuel, you are not in compliance with regulation.***

**** These conditions may violate federal or provincial legislation or municipal by-laws.***

	Topic	Best 4	Good 3	Fair 2	Poor 1	Your Rating
	COSMETIC PESTICIDES, HOUSEHOLD CLEANERS AND NON-FUELS					
5	**Cleaning products**	All household cleaning products are non-toxic and non-harmful to humans **AND** minimal quantities are used.	Most household cleaning products are non-toxic and non-harmful to humans.	Typical chemical cleaners are used properly **AND** minimal quantities are used.	No consideration given to a product's toxicity **OR** more than is necessary is used.	☐
6	**Total amount of pesticide and other non-fuel chemicals stored**	No chemicals used any time.	Chemicals are not stored longer than immediate use period.	Small amount of chemicals stored for longer than immediate use period.	Large quantities of chemicals stored for longer than immediate use period.	☐
7	**Distance from chemical storage to nearest surface water source**	Greater than 150 m (500 ft).	60-150 m (200-500 ft).	30-60 m (100-199 ft).	Less than 30 m (100 ft).	☐
8	**Distance from chemical storage to well**	Greater than 90 m (300 ft).	23-90 m (76-300 ft) for a drilled well **OR** 46-90 m (151-300 ft) for a bored/dug well.	15-23 m (50-76 ft) for a drilled well **OR** 30-45 m (100-150 ft) for a bored/dug well.	Less than 15 m (50 ft) for a drilled well **OR** less than 30 m (100 ft) for a bored/dug well.	☐
9	**Chemical solution mixing**	Chemicals are mixed in well ventilated area, on an impervious surface, and far from any open drain or open water source.			Chemicals are not mixed in well ventilated area **OR** surface is not impervious **OR** mix far from any open drain or open water source.	☐

	Topic	Best 4	Good 3	Fair 2	Poor 1	Your Rating
	COSMETIC PESTICIDES, HOUSEHOLD CLEANERS AND NON-FUELS...*continued*					
10	**Chemical storage area and containers**	Stored in a water-proof locked cabinet or storage container. The container itself stored in a garage or shed with a concrete floor that does not contain any drains.	Stored in a garage or shed with a concrete floor that does not contain any drains.		Stored with human or animal food **OR** stored in residence **OR** stored in a garage or shed with a concrete floor that contains drains.	☐
		Sill installed in cabinet to contain any spills.	No sill installed in cabinet.		No sill installed in cabinet **AND** garage/shed has floor drains that leads to a water source, drainage ditch or soil	☐
		Garage or shed is well ventilated to outside.			Garage or shed is not ventilated to the outside.	☐
		Emergency numbers are posted nearby.			No emergency numbers are posted nearby.	☐
		All chemicals are in clearly marked containers.			Containers not labeled.	☐
		Storage/use of chemicals before the expiration date.			Storage/use of chemicals after the expiration date.	☐

	Topic	Best 4	Good 3	Fair 2	Poor 1	Your Rating
	COSMETIC PESTICIDES, HOUSEHOLD CLEANERS AND NON-FUELS...*continued*					
11	**Disposal of pesticide sprayer rinse water**	Sprayer rinse water is applied only to plants listed on the label **AND** more than 9 m (30 ft) from surface water source **AND** more than 61 m (200 ft) from well.	Sprayer rinse water is applied only to plants listed on the label **AND** less than 9 m (30 ft) from surface water source **AND** 45-60 m (150-200 ft) from well.	Sprayer rinse water is applied only to plants listed on the label **AND** less than 9 m (30 ft) from surface water source **OR** less than 45 m (150 ft) from well.	Sprayer rinse water is applied to plants other than those listed on the label **OR** dumped into open water source **OR** dumped near a well.	☐
12	**Return, rinsing and disposal of chemical containers**	Use of returnable or refillable containers **AND** rinse water is used as per label instructions.	Triple or pressure rinsed containers or empty bags taken to municipal landfill **AND** rinse water is used as per label instructions.	Triple or pressure rinsed containers or empty bags taken to municipal landfill **BUT** rinse water is allowed into septic system or storm drain.	**** Inappropriate disposal of un-rinsed containers including burning them.***	☐
13	**Emergency plan and clean up equipment for spills**	Emergency plans easily accessible, outlining actions to be taken in case of spill, leak, fire or explosion **AND** cleanup equipment available.	Emergency plan easily accessible, outlining actions to be taken in case of spill, leak, fire or explosion.	Emergency phone numbers posted nearby **AND** general plan in case of emergency.	**** No emergency plan prepared*** ***OR no spill cleanup equipment ready nearby.***	☐

**** These conditions may violate federal or provincial legislation or municipal by-laws.***

	Topic	Best 4	Good 3	Fair 2	Poor 1	Your Rating
	DISPOSAL OF ANY CHEMICALS					
14	**Disposal of hazardous chemicals or materials**	No unused vehicle batteries stored on the property.			Unused vehicle batteries are stored on the property.	☐
		Expired household batteries are taken to a hazardous waste facility.		Expired household batteries are thrown in the regular garbage and taken to a landfill.	Expired household batteries are not disposed of.	☐
		Disposal is unnecessary because appropriate amount of chemical purchased and used up.	Leftover hazardous substances are given to others in proper and clearly labeled containers for appropriate use as soon as possible.	Chemical waste is properly disposed of at a hazardous waste facility.	**** Hazardous substances are poured down the drain, on the ground, burned or taken to a landfill.***	☐

tip

If you have leftover chemicals, such as paint or turpentine, ask your neighbours or friends if they need it for a current project.

**** These conditions may violate federal or provincial legislation or municipal by-laws.***

Typical Hazardous Household Chemicals

Typical Hazardous Household Chemicals:
(Taken directly from *Home*A*Syst, An Environmental Risk Assessment Guide for the Home* 1997 available for purchase online. See "Chemicals" in Resource List pg.???)

Household Waste

- Ash/sludge from burned household waste
- Light bulbs/lamps (contain mercury)
- Waste motor oil
- Plastic wraps and containers (hazardous only when burned)
- Pesticide or solvent containers
- Empty containers from other product categories listed here

Clothing and Fabric Care Products

- Mothballs
- Dry-cleaning fluids
- Spot removers (solvent based)
- Shoe-leather polishes

Hobby and Recreation Products

- Artist paints and solvents
- Charcoal lighter fluid
- Strong acids/bases *
- Bottled gas
- Household batteries (may contain mercury or cadmium)

Pesticides

- General use and 'restrictive use' pesticides
- Old and/or unwanted pesticides

Building/Wood Cleaners and Repair Products

Any building and wood cleaners with the following ingredients:

- Wood polishers
- Products for wood floor and panel cleaning

Building and equipment maintenance products:

- Strong acids/bases *
- Lead-based paint
- Oil/alkyd paints and primers
- Marine and exterior paints containing mercury and/or pesticides
- Aerosol paint products
- Stains and finishes
- Roof coatings and sealants
- Rust removers
- Silicon and other lubricants
- Adhesive removers
- Paint and finish preparation products
- Adhesives (glues, caulk)
- Wood-preserving products
- Products for brush or spray-gun cleaning
- Water repellents for wood and cement
- Solvents such as those used in degreasers, paint thinners, stains and varnishes

Vehicle Maintenance Chemicals

- Antifreeze, oil and grease, transmission fluid
- Solvents for oil and grease removal/disposal
- Engine/car parts cleaners such as carburetor and brake cleaner
- Paints and paint preparation products
- Lead acid batteries
- Tire cleaners
- Rust removers
- Ignition wire dryer
- Gasket removers
- Aerosol paint and primer products

NOTE:

**** A strong acid/base can be identified by noting if there is a hazard warning label that recommends using skin protection or to avoid breathing in vapours or aerosol mists. Also, if the product is intended for commercial use or if is intended to manage difficult stains or dirt on hard surfaces.***

Worksheet #9 – Lake Recreation

Note: Use this worksheet to learn about enjoying the lake in a sustainable way.

Why should you be concerned?

▪ Being in close proximity to the lake or waterfront is probably the reason why you purchased your property. It is important that everyone contributes positively to ensure water quality in the lake is safe for it's users.

▪ Fuels, wastewater and other hazardous or toxic chemicals associated with motorized recreational watercraft can contaminate the lake, destroying fish habitat and making the water unsuitable for use.

▪ Invasive species are easily transported between water bodies and can quickly invade, driving native species away and destroying the natural ecosystem.

▪ Waves from the wake of motorized recreational vehicles can cause shoreline and channel erosion and damage water nesting areas for fish and waterfowl.

What can you do?

1. Operate an engine-less watercraft such as a canoe or kayak, or use a 4-stroke engine boat.

2. Reduce boat wake and its effects on shorelines, channels and aquatic nesting areas by decreasing your speed on the water.

3. Rinse off your craft (with water) every time it is hauled out of the water. This will prevent invasive species from being transported and spreading to other water bodies and water courses.

4. Never dispose of waste (including fish guts) in the water. Dispose of them properly on land.

5. Don't expand your beach by removing vegetation and/or dumping sand.

6. Choose not to build docks or boathouses. Not only do they damage sensitive ecosystems along shorelines, they are not practical because of high intensity waves and water level fluctuations on Lake Superior. Use a public boat launch or marina instead.

Lake Recreation: How do you rate?

	Topic	Best 4	Good 3	Fair 2	Poor 1	Your Rating
	BOATING					
1	**Boat engine and maintenance**	Boat/watercraft does not have an engine.	Boat has four-stroke engine that meets or exceeds emission standards **OR** use an electric motor on board with a battery and an outboard propeller.	Boat has a modern direct injection two-stroke engine.	Boat has an older two-stroke engine.	☐
		Boat has a portable fuel container that is filled far from any open water.	Boat is refueled on board but great care is used to prevent spills or overfilling. Any spills are cleaned up immediately.	Little care is taken to prevent fuel from getting into open water.	No care is taken to prevent fuel from getting into open spaces **** OR fuel is dumped into open water.***	☐
		Bilge is cleaned out at an approved local marina bilge pump-out facility.	Disposable cloths are used for cleaning bilge. These and any fuels from inside the bilge are properly disposed of at the local hazardous waste facility.	Bilge cleaners (including biodegradable ones) are rarely used.	**** Black or grey water is discharged into the lake or water body instead of an approved pump-out facility.***	☐
2	**On-board waste**	All garbage is kept on board in a designated area until it can be properly disposed of or recycled back on land.		Food scraps are rarely thrown overboard **AND** plastic waste is never thrown overboard.	Food scraps, plastic waste and any other on-board waste is thrown overboard.	☐

tip

Check your engine regularly for any leaks including the fuel line, clamps and filters.

tip

Keep a tray under the battery to catch any acid spills.

**** These conditions may violate federal or provincial legislation or municipal by-laws.***

	Topic	Best 4	Good 3	Fair 2	Poor 1	Your Rating
	BOATING					
3	**Boat use** **tip** Take any oils or boat craft fluids to your marina or local municipal hazardous waste collection site. *See Worksheet #10.*	Within 150 metres (500 ft) of shore, means taken to reduce wake from watercraft **AND** turn off propellers when in shallow waters to avoid stirring up lake bottom.	Within 30 m (100 ft) of shore, speed of any power-driven vehicles reduced to 10 km/h (5.4 knots or 6.2 mph).		No consideration given to the noise/disturbance of lake bottom from watercraft **OR** boat near nesting birds or other wildlife near or on the shore	☐
4	**Watercraft launching and hauling**	Watercraft and trailer not stored in the water **AND** when launching the watercraft, trailer is submerged for as little time as possible.	Watercraft and trailer are stored in the water for use period **AND** watercraft and trailer are checked for any plants/wildlife/fish that may be clinging to the watercraft or trailer.	**tip** The speed limit and the type of watercrafts permissible on a water body can be changed. Petition your Municipality to apply to the MNR for a change in designation under the Ontario Boating Restriction Regulations.	Watercraft and/or trailer sits in water for longer than use period **OR** clinging plants/wildlife/fish are not removed from watercraft or trailer, and disposed of properly.	☐

	Topic	Best 4	Good 3	Fair 2	Poor 1	Your Rating
	DOCKS, BOAT LAUNCHES AND BOAT HOUSES					
5	**Dock and boathouse construction**	Floating, cantilever, non-permanent or post-supported dock or boathouse that does not disturb the lake bottom.	Open-faced cribs built from timber and filled with rock **AND** cribs are placed at least 2 metres out from the high water mark.	Vertical planking along the sides of the dock that restricts water movement.	Solid dock made from steel sheeting or concrete.	☐
		Building materials include untreated cedar or hemlock timber.	Building materials include stainless steel and plastic.		Building materials include creosote- treated wood, pressure-treated wood, painted steel or concrete.	☐
6	**Boat launches**	Use public/Municipal boat launches.	Boat launch is placed where natural launch amenities exist (i.e. gentle slope, break in the buffer) without having to alter the shoreline.	Boat launch is built from concrete with proper approvals from the Conservation Authority and/or MNR.	***Boat launch is built with no approval/permit.***	☐
7	**Boat launch dredging**	Use alternatives to dredging: Drive around obstacles such as shoals, stumps or rocks **OR** use an offshore mooring during low water levels.	Dredging activity has necessary approval/permit **AND** minimize the size and depth of the area to be dredged **AND** dredged sand, silt or clay is disposed above the high water mark.		***No approval/permit*** ***AND dredging activity occurs during local fish spawning and nursery times of the year*** ***AND no care is taken to protect fish habitat.***	☐

tip

Use the LRCA public boat launches at Silver Harbour or Little Trout Bay Conservation Areas along Lake Superior.

tip

Review the DFO publication: *Working Around Water? Factsheet Series – Fish Habitat & Building Materials* (See "Fish Habitat" in Resource List pg. 119).

tip

Review the DFO Operational Statements titled *Dock and Boathouse Construction, Moorings, Timing Windows and Routine Maintenance Dredging* (See "Fish Habitat" in Resource List pg. 119).

tip

Check with Transport Canada to see if your dock/boathouse construction or boat launch dredging requires approval (See "Navigable Waters" in Resource List pg. 121).

**** These conditions may violate provincial or federal legislation or municipal by-laws.***

	Topic	Best 4	Good 3	Fair 2	Poor 1	Your Rating
	FISHING					
8	**Permits and Regulations**	Fishing license obtained **AND** check with your nearest MNR office for local catch regulations **AND** are familiar with the Recreational Fishing Regulations Summary **AND** when possible, fish from shore or off a pier.			▪***No fishing license obtained*** ***OR*** ▪***quota is exceeded.***	☐
	ACTIVITIES ALONG THE SHORE					
9	**Beach access**	Use public beaches **AND** access along the shoreline is minimal.	Access shoreline or trails using specific locations **AND** keep to the trail to avoid trampling.	Access shoreline or trails using several locations **OR** trails or stairs are built without consulting the local authorities first.	Plants, wildlife or other natural elements are removed or disturbed from most of beach access **AND** trails or stairs are built without consulting the local authorities first.	☐

tip

To prevent the spread of invasive species, never dump your bait bucket remains in the water if it contains water from another water body.

tip

Bring your family out to the Lakehead Region Conservation Authority's Family Fishing Day in July at Hazelwood Lake.

tip

Check for beach postings before you go swimming and don't go in water if you can't see your feet from the waist height of an adult. *Escherichia coli (E. coli)* levels may be high.

tip

Avoid hiking or using any all-terrain vehicle or snowmobile on bluffs, banks, and along shorelines, especially during the spring thaw.

**** These conditions may violate provincial or federal legislation or municipal by-laws.***

	Topic	Best 4	Good 3	Fair 2	Poor 1	Your Rating
	ACTIVITIES ALONG THE SHORE...*continued*					
10	**Minimizing disturbance**	Never remove or move wildlife or natural artifacts such as logs, vegetation, shells, or nests **AND** waste is disposed of properly.	Natural artifacts or wildlife are seldom removed or moved **AND** waste is disposed of properly.		No consideration for ecosystem or slope disturbance **OR** waste is not disposed of properly.	☐
11	**Beach Creation** **tip** Review the DFO Operational Statement titled *Beach Creation for Residential Use* (See "Fish Habitat" in Resource List pg. 119).	Beach is placed above the high water mark **AND** vegetated strip or small berm exists to prevent beach sand from entering into the water **AND** obtained approval/permit.	Beach is placed below the high water mark **AND** pea-sized gravel is used instead of sand **AND** vegetation removal is minimized **AND** obtained approval/permit.	**tip** Fill placed along the shoreline may require a permit from the LRCA. **tip** Make sure permission is granted by the owner of the shoreline before creating a beach (i.e. Municipality-owned Right-of-Way or Camper/ Cottager Association land).	***No approval/permit*** ***AND fill is placed in the floodplain*** ***AND no consideration to protect fish habitat through sediment and erosion control measures*** ***AND vegetation removed indiscriminately.***	☐
12	**Campfire safety**	Check with your local Municipality regarding campfires **AND** always exercise caution with any fire.	Check weather conditions and local fire bans before starting a campfire.		Ignite an outdoor fire without consideration of bylaws or weather restrictions **OR** burn plastic products or wood covered or soaked in hazardous chemicals.	☐

**** These conditions may violate provincial or federal legislation or municipal by-laws.***

Worksheet #10 – Living with wildlife

Note: Use this worksheet to learn more about how your actions affect wildlife species.

Why should you be concerned?

• It is important to accommodate wildlife on your property. They were there long before you were, so respect their home too.

•It is also important to ensure that wildlife don't become a problem, preventing you from enjoying your property.

• Learn about local wildlife; they can be very beneficial and even indirectly decrease your property maintenance, costs and efforts (e.g., songbirds or bats can decrease insect pest populations).

• Protecting local wildlife is key to a healthy ecosystem and watershed.

• There is incredible wildlife diversity along lakeshores and other water courses. Shoreline biodiversity is increasingly threatened by human activity and development.

What can you do?

1. Protect natural habitats and species that depend on specialized conditions.

2. Ensure that any buildings or structures on your property are appropriately built and sealed to prevent wildlife infestation.

3. Learn about Species-At-Risk and take a proactive role in protecting and expanding the quality of their habitat in the landscape whenever possible.

4. See the landscape as an integrated whole and support initiatives that connect important wildlife habitat areas together.

5. Provide space and resources for wildlife in specific areas so that they don't become a nuisance in human activity areas.

6. Work with neighbours to create continuous habitat along shorelines and water courses.

Living with Wildlife: How do you rate?

	Topic	Best 4	Good 3	Fair 2	Poor 1	Your Rating
	RESOURCES FOR WILDLIFE					
1	**Familiarity with local wildlife**	Thorough understanding of wildlife in your area and their seasonal patterns **OR** continually seek to learn how you can provide habitat for local wildlife.	Good understanding of wildlife in your area and their seasonal patterns.	Basic familiarity with local wildlife **AND/OR** general idea of wildlife seasonal patterns.	No knowledge **OR** no consideration for wildlife on your property **OR** immediately take action to exterminate without sufficient knowledge.	☐
2	**Wildlife habitat planning**	Development and implementation of a wildlife habitat plan that enhances habitat resources for desired wildlife **AND** plan seeks to link habitat on property with the larger landscape using ecological corridors.	No formal plan exists but property management includes wildlife habitat enhancement **AND** property management links habitat on property with the larger landscape using ecological corridors.	Property provides some wildlife habitat and this is protected and preserved.	Property is managed with no regard to wildlife habitat requirements.	☐
		Trees, shrubs and other plants on your property provide food for birds.	Bird seed is available but vermin are kept out of feeders.	Birds are expected to forage elsewhere beyond your property.	Bird feeders are readily accessed by vermin.	☐

Topic	Best 4	Good 3	Fair 2	Poor 1	Your Rating
RESOURCES FOR WILDLIFE...*continued*					
Providing wildlife habitat	Extensive buffers are created or conserved beside wet areas and the property contains several woody and herbaceous plant species, offering a large range of wildlife habitats including wetlands.	Numerous buffers are created beside wet areas and the property contains several woody and herbaceous plant species, offering a range of wildlife habitats and good water quality protection.	A few buffers are present but contain no woody species, offering a limited range of wildlife habitats but do offer some water quality protection.	No buffers present.	☐
	Natural bird-food sources, nest boxes and perches are strategically placed and managed to include species that provide specific 'services' (e.g. fly, mosquito, or garden insect control) **AND** are cleaned regularly **AND** are all more than 1.5 metres (5 ft) above the ground.	Natural bird-food sources, nest boxes and perches are available but not strategically placed and only managed for species that provide specific 'services' (e.g. fly, and mosquito control).	Natural bird-food sources such as berry-bearing shrubs are provided.	Natural bird-food sources, nest boxes, or perches are not present.	☐
	Change bird bath water at least 3 times per week **AND** screens placed on water catching barrels/cisterns.	Screens are placed over rain-barrels and other water-catching items to prevent wildlife drowning.	There are no water opportunities for wildlife.	Stagnant water is present near the house or outdoor living areas **AND/OR** rain-barrels are not screened.	☐

3

tip

Adhere predatory bird silhouettes onto windows into which birds commonly fly.

tip

Don't leave indoor lights or yard lights on at night. They attract animals and insects.

	Topic	Best 4	Good 3	Fair 2	Poor 1	Your Rating
	PREVENTING ACCESS					
4	**Sealing your buildings**	All crevices, openings, conduits, pipes, seams, and soffits are properly sealed **AND** checked regularly.	All crevices, openings, conduits, pipes, seams, and soffits are properly sealed **AND** checked yearly.	All doors and windows have a tear-free screen.	Seals are not checked or maintained.	☐
	AVOID ATTRACTING NUISANCE WILDLIFE					
5	**Food and waste scraps** **tip** Keep your BBQ clean to avoid attracting wildlife.	All food/waste (including pet food and birdseed) is stored indoors (including garage or shed) in insect/rodent-proof containers **AND** bird feeders are not used in the summer.	Garbage is stored outside, but in insect/rodent-proof containers.	Compost-free garbage is stored outside but all empty food/drink containers are rinsed.	Garbage (including food) is stored outside and inappropriately maintained **OR** insect/rodent-proof containers are not used **OR** bird feeders are used in the summer.	☐
6	**Preventing unwanted browsing on plants**	Chicken wire wrapped around the trunk of young trees. Tree is checked every year to ensure the wire is not girdling the tree.	Plastic coil around trunk of young trees.	No protection used but damaged tree left in place.	No protection used **AND** damaged trees are removed. It is likely that with food gone, wildlife will browse another tree.	☐

	Topic	Best 4	Good 3	Fair 2	Poor 1	Your Rating
	PET MANAGEMENT					
7	**Controlling access**	Cats are kept indoors **AND** all cats and dogs wear their license tags and have up-to-date rabies shots **AND** dogs are confined to a fenced run.	Cats are belled and kept on a leash.	Pets are allowed outside unleashed but are supervised.	Pets are allowed to roam freely outside and are unsupervised.	☐

tip

If bitten by an animal, including domestic pets, seek medical attention and notify your local Health Unit.

DEALING WITH NUISANCE WILDLIFE

tip

Be cautious: never approach an animal if you are not sure of its behaviour.

Control measures for nuisance wildlife are regulated by provincial legislation. Contact the nearest Ministry of Natural Resources (MNR) office if you have any questions or concerns regarding nuisance wildlife (i.e. beavers, black bears).

Managing the interactions between wildlife and residents will continue to be a challenge. The significant contribution that residents are making toward the conservation of biodiversity will continue to be a key in preserving our natural landscape and in protecting the quality of our water.

FINDING A DEAD ANIMAL

tip

Notify your local Health Unit upon discovery of any dead birds where cause of death is not immediately apparent.

If you find a dead, injured, abandoned or nuisance animal (including birds, fish and other aquatics) on your property or elsewhere, contact the nearest Ministry of Natural Resources (MNR) office for advice and to report the incident. Be prepared to provide information regarding the location, condition and number of animals/fish.

Worksheet #11 – Lowering Your Energy Bill

Note: Use this worksheet to find out how to improve your energy efficiency.

Why should you be concerned?

▪ Increasing energy costs means that the average home owner will have to pay more to be comfortable.

▪ As the world's demand for energy continues to increase, so will the cost of energy. To protect yourself against growing costs, invest in homes, vehicles, appliances, electronics, and practices that consume less energy.

▪ Greenhouse gas concentrations are increasing, leading to alterations in average temperatures known as climate change. Emitted gases also threaten air quality and have resulted in a record high number of 'Smog Days'.

▪ Climate change may cause an increase in extreme weather events such as droughts, ice storms, floods and hurricanes.

What can you do?

1. Realize that small changes can have a cumulative effect in protecting our environment, including air and water quality.

2. Ensure that your home is tightly sealed, properly insulated and that all mechanical systems such as heating and cooling are operating efficiently. Have a professional conduct a home energy audit of your house and ensure that heating/cooling systems receive regular maintenance.

3. Choose energy-efficient appliances and electronics such as those with an EnergyStar label.

4. Reduce the amount of driving that you do, especially in urban areas, and choose the most fuel-efficient vehicle for your needs.

5. Reduce the amount of greenhouse gases that you produce annually.

Topic	Best 4	Good 3	Fair 2	Poor 1	Your Rating
BUILDINGS					
Heating and cooling units **1**	Use the most energy efficient heating and/or cooling units for your needs, upgrading if necessary **AND** choose a unit that carries the EnergyStar label.	Use the most energy efficient heating and/or cooling unit for your needs, upgrading if necessary **OR** choose a unit that carries the EnergyStar label.	A window air conditioning unit is used but it is removed during the winter **OR** if it is fixed in place, it is sealed with caulking or tape and covered with an airtight, insulated jacket.	Heating or cooling unit is inefficient and no upgrading planned **OR** older than 15 years.	☐
	Heating and cooling units are serviced yearly by a licensed heating contractor **AND** furnace filters are cleaned or replaced every two months and air conditioner filters are replaced monthly (central air filters are cleaned or changed at the beginning of the warm season each year).	Heating and cooling units are serviced yearly by a licensed heating contractor **OR** furnace filters are cleaned or replaced every two months and air conditioner filters are replaced monthly (central air filters are cleaned or changed at the beginning of the warm season each year).	Heating and cooling units are serviced immediately when malfunctioning or when a problem is suspected.	Heating or cooling units are seldom maintained **OR** filters are not changed as per energy efficiency recommendations.	☐
	Regularly check that vents, air intakes and chimneys are not blocked and that seals around them are intact **AND** retrofit fireplaces or older woodstoves with a new advanced combustion model.	All chimneys are cleaned and inspected annually **AND** pilot lights of gas fireplaces or wall heaters are turned off in the summer.	Occasionally check that vents, air intakes and chimneys are not blocked **OR** retrofit fireplaces or older woodstoves with a new advanced combustion model.	Fireplace dampers are left open, when not in use **OR** heat inefficient fireplaces or older woodstoves are used regularly.	☐

tip

Seal and insulate warm air ducts.

tip

In winter, naturally warm your home by ensuring that sunlight can enter through all south-facing windows. Close drapes or shutters in the evening.

In summer, close windows and doors during the day, especially those along the south and south-west facing wall. Open in the evening to catch cool breezes.

Topic	Best 4	Good 3	Fair 2	Poor 1	Your Rating
BUILDINGS...*continued*					
Lights	Minimize light-bulb use by maximizing the use of natural lighting **AND** all incandescent light bulbs are replaced with EnergyStar-Qualified compact fluorescent light bulbs.	Lights are turned off when not in use **OR** motion detectors or automatic timers are installed on outdoor lights.	Attempt to minimize light bulb use **AND** EnergyStar-Qualified compact fluorescent light bulbs used in the most commonly used areas.	Everyday practices do not attempt to minimize light-bulb use **OR** lights are left on for a prolonged period of time such as overnight or while occupants are away.	☐
Building components	Hire a professional to conduct an energy audit and develop an energy plan of your home (see Resource list) **AND** inform yourself of alternative energies such as solar power and wind energy.	Check regularly for drafts or leaks around doors, windows, baseboards, ducts, attic hatches, window air conditioning units and electrical outlets/switches. **AND** immediately take the appropriate action to fix the situation.	Check occasionally for drafts or leaks throughout the building.	Seldom check for drafts or leaks **OR** condensation or frost appears on windows.	☐
	All duct work is located in heated and/or cooled space within the building **AND** weather stripped.	All duct work is located in heated and/or cooled space within the building.	Some duct work is located in unheated and/or un-cooled space (e.g. attic, garage) **AND** insulated.	Ducts are not insulated and outside heated/cooled space **AND** ducts have no weather-stripping around joints.	☐

2 tip

Re-arrange your workspace and activities to be near south facing windows and free light.

3 tip

Install storm windows and doors over single-pane windows and use weather-stripping around all joints.

Alternatively, install double-glazed windows that carry the EnergyStar label.

	Topic	Best 4	Good 3	Fair 2	Poor 1	Your Rating
	BUILDINGS...*continued*					
4	**Building design**	Construction uses R-2000 building practices and technologies **OR** construction aims for LEED Green Building certification.	Energy efficiency is an important factor in building design and layout.	Passive solar heating used where possible.	Building is difficult to heat in winter, and difficult to cool in summer.	☐
5	**Heating and cooling practices**	Use a programmable system and, in the winter, lower your thermostat at night and while you are away during the day **AND** in the summer naturally cool the building by closing blinds/shutters/ drapes, and using awnings **AND** strategically place trees outside the building to provide shade in summer and reduce blowing winds (to provide warmth) in winter.	Use a programmable system and in the winter, lower your thermostat at night and while you are away during the day **AND** use a ceiling fan, especially in rooms with high ceilings or with electric baseboards to help circulate the air. In winter ensure that blade direction pushes warm air downwards.	In the winter, lower the thermostat at night and while you are away during the day **AND** in the summer set your air conditioner to 24°C (75°F) while you are at home and raise it when you leave.	Heating and cooling systems are not adjusted to time of day or activity within the space **OR** no attempt is made to adopt practices that minimize energy use.	☐

tip

Review the Canadian Green Building Council LEED rating system to learn building designs and technologies that use less energy, water and natural resources and generate less waste (See "Energy Efficiency" in Resource List pg. 119).

tip

Every 1°C that a thermostat is lowered results in 2% savings in energy costs. The most cost-effective change is to lower it by 3°C.

	Topic	Best 4	Good 3	Fair 2	Poor 1	Your Rating
	WATER HEATING AND USE					
6	**Hot water use**	Most laundry is rinsed using cold water and hot water is seldom used for laundry **AND** length of showers is minimized.	Length of showers is minimized and a low flow shower head is used.	Hot or warm water is left running while bathing or washing dishes or produce.	Clothes are often washed or rinsed using hot water **OR** no attempt to minimize amount of hot water that is used.	☐
7	**Water heaters**	High-efficiency water heater unit that heats water only when it is necessary **AND** water heater is turned off when building is not in use for a prolonged period of time.	Non-plastic hot water pipes are insulated for the first two metres of pipe from the water heater.	An electric water heater is used, but it is uninsulated.	Water heater is left on year-round, regardless of use **OR** water heater tank is inefficient or not insulated.	☐
8	**Hot tubs and pools**	Location optimizes use of natural wind shelter or shade from climatic factors **OR** there is no pool or hot tub.	Water is heated with solar panels **AND** water is covered with a thermal blanket to trap heat.	Water is not heated with solar panels **AND** pump timers are used to regulate the temperature and duration of water heating.	No actions taken to ensure that heat energy is not lost from water when air temperatures drop **OR** pump timers are not used for pools/hot tubs.	☐

	Topic	Best 4	Good 3	Fair 2	Poor 1	Your Rating
	APPLIANCES AND ELECTRONICS					
9	**Energy efficiency**	Always purchase high energy efficient EnergyStar appliances, especially the refrigerator, oven, dishwasher, and laundry washer/dryer **AND** electronics such as computers and printers that go into 'Standby' mode when not in use.	Always turn off and unplug appliances that are not in use, especially older, inefficient appliances **AND** minimize the use of appliances and electronics.	Locate the refrigerator or freezer away from heat sources (including other appliances) or windows **AND** keep the refrigerator between 1.7°C (35°F) and 3.3°C (38°F) and the freezer unit at –18°C (0°F).	Energy efficiency is not considered when purchasing appliances or electronics **OR** no action is taken to improve the energy efficiency of appliances or electronics.	☐
	tip Choose front-loading washing machines or water-efficient top-loading models with the EnergyStar label.					
		During hot weather, all baking, washing, drying, and ironing are done early in the morning or in the evening **AND** whenever possible, clothes are hung to dry.	Dishwasher is used but always runs full and is set to the 'no-heat' or 'air-drying' option **AND** clothes washer/dryer are almost always runs full and cold settings are used most of the time.	Dishwasher is used but always runs full **AND** clothes washer/dryer are almost always run full and cold settings are used often.	No consideration given to actions or practices that minimize energy.	☐
	tip Set your computer to use the energy-saver mode when not in use.					
10	**Maintenance**	Check appliances regularly to ensure that seals remain in good condition, especially refrigerators and freezers.		Appliances rarely checked to ensure that seals remain in good condition, especially refrigerators and freezers.	Appliances never checked to ensure that seals remain in good condition especially refrigerators and freezers.	☐

Worksheet #12 – Water Runoff

Note: Use this worksheet to assess how well your property minimizes the potential for water runoff and property damage.

Why should you be concerned?

• Surfaces such as roofs, paved areas, bare soil, and sloped lawns all contribute to the volume of water runoff because they impede water infiltration into the ground.

• Runoff carries soil, pet faeces, salt, pesticides, fertilizers, oil and grease, fuels, leaves, litter, and other possible pollutants into streams, ponds, wetlands, lakes and oceans.

• Water that flows into storm drains or ditches is transported and discharged eventually into Lake Superior, untreated.

• Polluted water runoff degrades the lake, rivers, and wetlands. Soil makes the water murky and damages fish habitat. Nutrients such as phosphorus encourages algae that can crowd out other aquatic life and change the chemistry of the water.

• Water runoff is not only a problem for water quality. It can also flow into basements and cause extensive property damage including erosion, slope instability and flooding, which decreases property value.

• Erosion can reduce property value and cause significant property damage.

•Without vegetation at the shoreline, contaminants flow directly into the lake.

What can you do?

1. Minimize the amount of water runoff from your property.

2. Minimize the area of your property that is used as a path or driving surface and use water permeable materials for driveways and pathways.

3. Do not locate any impermeable surface near the shoreline or adjacent to any water course.

4. Foundation tiles and municipal drain outlets should not be in erosion-prone areas.

5. Reduce the amount of potential pollutants on your property that can be carried by water runoff.

6. Encourage the use and infiltration of storm water within your property boundaries.

Water Runoff: How do you rate?

	Topic	Best 4	Good 3	Fair 2	Poor 1	Your Rating
	SURFACES					
1	**Surface Permeability**	All driving/parking/walking and patio surfaces are water permeable **AND** gravel and woodchips are used to surface walkways and driveways. Minimal compaction.	Porous paving such as interlocking bricks used to surface driveway and lanes. Additional parking spaces are not paved.	Paved surfaces are located far away from any water course.	All paths, parking, driveways and outdoor patios are paved regardless of proximity to watercourse **AND** walking surfaces not restricted to paths. Foot-traffic compaction throughout.	☐
2	**Extent of impervious surfaces and slope**	Driveway is minimal and follows natural contours **AND** there are no other impervious/compacted areas.	Driveway is minimal but does not follow natural contours.	Driveway extensive but follows natural contours.	Extensive driveway and paved surfaced areas that does not follow natural contours **OR** compacted and/or paved surfaces run straight down a slope.	☐

	Topic	Best 4	Good 3	Fair 2	Poor 1	Your Rating
	SURFACES					
3	**Areas of bare soil**	No areas of bare soil.	Grass or non-invasive groundcover planted immediately to prevent erosion.	Non-invasive groundcover planted immediately to prevent erosion.	Bare soil left uncovered and unplanted.	☐
		Temporary bare areas are mulched **AND** straw bales, diversion ditches and silt fences are used to trap sediment.		Some areas are mulched to prevent erosion.	No regard given to sediment loss through surface water runoff.	☐
		All plant beds have minimum 8 cm (3 in) depth of mulch.	Plant beds have 2.5-5 cm (1-2 in) depth of mulch.	Most plant beds are mulched to a depth of 2.5 cm (1 in).	No plant beds are mulched.	☐

tip

Cover newly-seeded lawns lightly with straw mulch to a cover of 50% to prevent erosion.

tip

Organic material, like leaves, swept or blown into street sewers, possibly provide a breeding spot for mosquitoes over winter. Try to sweep out gutters.

	Topic	Best 4	Good 3	Fair 2	Poor 1	Your Rating
	POTENTIAL POLLUTANTS					
4	**Car Washing**	Cars and trucks are occasionally washed at commercial car wash.	Cars and trucks taken to commercial car wash or spray booth.	Cars, trucks, or other items are washed on a lawn or gravel driveway.	Cars, trucks or other items are washed on a driveway, street or other paved area.	☐
5	**Application and use of pesticides, fertilizers, de-icers and salts, pool and other outdoor chemicals**	Spills are cleaned up immediately **AND** applications are delayed until after rain.	Spills are cleaned up immediately on paved surfaces.		Spills are not cleaned up **OR** applications are not delayed to avoid rain.	☐
6	**Grass clippings, leaves and other yard wastes** **tip** Ensure that your winter snow pile is not close to any shoreline or water course. Melt water may cause erosion and contamination.	Grass clippings, leaves, and other yard wastes are swept off paved surfaces and away from water flow routes **AND** plant material is not placed on bluff slopes or over the top of banks where it can kill slope vegetation and cause slope instability **OR** leaves and other yard wastes are composted.	Leaves and other yard wastes are left to compost on site. **tip** To avoid sending your dirty, soapy water into a water course or lake, wash your car on the lawn, or take it to a commercial car wash or spray booth where the dirty water is treated and recycled.	Leaves and other yard wastes are collected in appropriate containers and left for municipal collection.	Grass clippings, leaves and other yard wastes are left on driveways, streets, and other paved areas to be carried off by stormwater **OR** yard waste is burned on-site.	☐

	Topic	Best 4	Good 3	Fair 2	Poor 1	Your Rating
	POTENTIAL POLLUTANTS...*continued*					
7	**Pet and animal wastes**	Animal and pet wastes are flushed down the toilet **OR** contact local Municipality to determine most appropriate means of disposal.	Animal waste is collected and placed in appropriate container for transportation to landfill.	Animal wastes are left to decompose on grass or soil. Wastes are scattered over a wide area.	Animal wastes are left on paved surfaces, concentrated in pen or yard areas, or dumped down a storm drain or in a ditch.	☐
	DRAINAGE					
8	**Downspouts, gutters and drains**	Roof gutters, downspouts and basement drains installed and cleaned regularly. **AND** downspouts not directed at nearby gullies.	Downspouts are not directed at or into nearby gullies.	Downspouts direct drainage onto impervious surfaces	Roof gutters, downspouts and/or basement drains not checked/cleaned regularly **** OR downspouts and roof gutters are aimed at adjacent properties without an intercepting swale or ditch in between, onto septic tile beds or into nearby gullies.***	☐
9	**Surface water drainage**	All surfaces are sloped away from the house at a minimum slope of 2%.	Any paved surface is sloped away from the house at a minimum slope of 2%.		Paved or compacted surfaces do not slope away from the house by a minimum slope of 2%.	☐

tip

Use rain barrels to catch rainwater that can later be used to water gardens during low rain-periods. Cover the rain barrel with a screen to prevent mosquito breeding.

tip

Clogged gutters on a single house can produce over one million mosquitoes a season.

**** These conditions may violate federal or provincial legislation or municipal by-laws.***

Glossary

4-stroke engine: Boat engine constructed similarly to that of a car. Its emissions are cleaner, it is quieter, more durable and has better fuel economy than a 2-stroke engine.

100-year flood level: Elevation (metres above sea level) calculated through engineering studies or flow models based on the probability that the level of flood water can be expected to equal or exceed this point, on average, every 100 years. For Lake Superior, the Ministry of Natural Resources has determined the 100-year flood level to be 184 metres above sea level from the International border (Pigeon River) to Jarvis Point and 183.9 metres above sea level from Jarvis Point to the northern limit of Dorion Township (entire Thunder Bay Lake Superior Shoreline). Also known as 100-year high water level, 100-year high water mark or 100-year floodplain.

Air gap: An air space (open space) between the hose or faucet and the level of liquid. This is one way to prevent backflow of liquids into a well or water supply.

Air intake/ventilation: A permanent opening that allows outside air to flow into a heating and cooling system. It is critical that there is adequate air intake and that the air that is brought and distributed through the building is not contaminated.

Amendment (soil): Organic or inorganic material that is added to the soil for the purpose of improving its texture, nutrients, moisture-holding capacity and infiltration rates.

Anti-backflow device: Check valve, vacuum breaker or other mechanical device that prevents liquids from flowing backwards through a water supply pipe to a well or surface water source. Also called an anti-back siphoning device.

Approved containers: A portable container made of metal or other material that has been approved for use by the Underwriter's Laboratories of Canada (ULC), the Canadian Standard Association (CSA), or Transport Canada. An approved container must have a certification label such as jerricans - CTC-5L, BTC-5L, ICC-5L, DOT-5L, TC-5L.

Approximate Regulated Area: Floodplain adjacent to all water courses plus all streams, rivers and creeks, Provincially Significant Wetlands, lake shorelines, ravines, valleys, steep slopes and talus slopes, and property zoned "hazard land" or "use limitation" that is identified on screening maps and affected by Ontario Regulation 180/06. For Lake Superior, the Approximate Regulated Area is derived by the 100-year high-water level plus an allowance of 15 metres landward for wave uprush. Lake Superior is also regulated 1 kilometre into the water.

Aquifer: An underground layer of rock and sand that can store water, and lies above a layer of clay or other impermeable material that does not allow water to flow to lower depths. Aquifers can be present at various depths depending on the location of the impermeable material. They are an important well water source.

Arborist: *See* Certified Arborist.

Area of Natural and Scientific Interest (ANSI): Areas identified by the Ministry of Natural Resources as containing natural landscapes or features that have been identified as having life or earth science values related to protection, scientific study, education and natural heritage appreciation. Such designation helps to protect representative and special natural areas, plants and animals.

Atmosphere: The layer of air surrounding the earth that is primarily composed of nitrogen and oxygen, and held in place by gravity.

Backflow: The unwanted reverse flow of liquids in a piping system.

Baffles: Inlet and outlet devices in a septic tank, designed to reduce the transfer of solids to the leaching bed. They also prevent fats, oils, and grease from discharging to the leaching bed. They increase the amount of solids retained, prevent plugging of inlets and outlets, and prevent rapid flow of wastewater through the tank.

Beach: A band of variable width, typically of sandy material located adjacent to the lake. The sand is deposited and removed by the action of waves and currents.

Benzene: An organic compound, in the form of a ring, with the molecular formula C6H6. It is known to cause cancer in humans. It is a natural component of petroleum (crude oil and gas) and it is an important industrial solvent and precursor in the production of many drugs, plastics, rubbers and dyes.

Glossary

Berm: A low earthen or sod wall adjacent to a ditch. Berms can control erosion and deposition by reducing the rate of surface runoff.

Bilge: The lowest part inside a boat's hull or frame where water, fuel, oil, and other hazardous chemicals can collect.

Biodegradable: The ability of a substance or material to break down into harmless substances by living things such as microorganisms and bacteria.

Bioengineered soft structures: The harvesting and planting of dormant cuttings or branches from tree and plant species in order to prevent shoreline erosion. These cuttings are arranged into individual stakes (live stakes) and/or put into bundles. Cuttings are usually taken from dogwoods and/or willows. This is mainly because the cut branches of these species are able to take root and grow on their own. As the cuttings grow and extend their root structure, the soil becomes more stable.

Block heater: An electric heater that heats the engine of a car so that it is easier to start in cold weather. This also reduces pollution because cold engines have much higher emissions.

Bluff: A high, steep bank at the water's edge. All of the bluffs along the Lake Superior shoreline are bedrock bluffs.

Boat wake: The wave(s) that spreads behind a boat as it moves forward through the water.

Bored Well: Large diameter well constructed by using specialized Earth boring equipment. Casting material is usually concrete or corrugated steel. These wells are typically 60 to 90 cm (24-36 in) in diameter.

Browsing: A mode of feeding by herbivores, such as deer or rabbits, in which leaves and outer shoots are removed from trees and shrubs.

Buffer: An area of natural vegetation that runs along the shoreline, stream or bluff. It extends from the high water mark to the water's edge. Also referred to as a buffer strip, filter strip or riparian zone.

Building permit: A Municipality-issued document that regulates construction and enforces Building Code compliance.

Burlap: A coarse, canvas-like fabric made from the fibers of jute, hemp or cotton plants.

Burn barrels: Open burning of household waste in barrels that results in very high levels of toxic chemicals emitted in the smoke.

Burning: The controlled use of fire to dispose of paper or cardboard containers. Smoke from the fire must be directed away from buildings, highways, roads or public outdoor areas and must not affect people or animals. Municipalities may have burning bylaws that prevent such fires or regulate how they must be carried out.

Cantilever dock/boathouse: A cantilever dock typically relies on the shoreline or on a shoreline structure for its entire anchorage. Some docks may have intermediate supports very close to the shoreline. The end of a cantilever dock juts out over the water, appearing to float on air. Cantilever docks are suitable for almost any type of environment and have a very small environmental footprint.

Capture zone: See Well capture zone.

Carbon dioxide: A colourless, odourless gas occurring naturally in the atmosphere, but also released through the burning of fossil fuels.

Carpooling: The shared use of a vehicle typically to commute to work, often by people who each have a car but travel together to save costs and decrease pollution.

Casing: See Well casing.

Certified Arborist: A professional trained in the planting, care and maintenance of individual trees and a current member of the International Society of Arboriculture.

Cistern: A storage tank/basin for rainfall that has been collected from a roof or some other catchment area. Also known as a rain barrel.

Clean up equipment: Includes absorbent materials (e.g. sawdust, soil or kitty litter) to soak up spilled liquids, and shovel, broom, empty pails to gather solids and absorbed liquids.

Glossary

Clear water infiltration: Entry into a septic system by water that does not need treatment, such as rainwater or sump pump.

Climate change: The gradual change in global temperature which in turn causes changes in climate around the world. It is caused by the emission of gases that trap the sun's heat in the Earth's atmosphere. Gases that contribute to global warming include carbon dioxide, methane, nitrous oxide, chlorofluorocarbons (CFCs), and halocarbons (the replacements for CFCs). Carbon dioxide emissions are primarily caused by the use of fossil fuels for energy.

Coastal Wetland: An areas that is permanently or temporarily submerged, or saturated for at least part of the year. Unlike upland wetlands, coastal wetlands don't transition into drier communities.

Coliform organisms: Harmful bacteria usually found in polluted water. If they are found in a water sample, it indicates that the water is not be safe for drinking or food preparation.

Compaction (soil): Compression of soil that decreases the spaces between soil particles. This hinders the movement of air and water into and through the soil. Consequently the soil holds less water and surface runoff and erosion occurs. Soil compaction may be caused by ongoing pedestrian traffic, one time or ongoing vehicular traffic, construction equipment or the storage of materials.

Compost: Organic material resulting from the natural breaking down or rotting of plant and animal material by bacteria, fungi, and other organisms. It is used to enrich soil.

Compostable: Items that will decompose naturally and enrich soil, such as food and yard wastes.

Condensation: The process by which water vapour becomes a liquid.

Conservation Authority (CA): Responsible for the management of the local watershed and floodplains within the watershed.

Conservation easement: A legally binding agreement not to develop part of a property, but to leave it "natural" permanently or for some designated period of time. The property still belongs to the landowner, but restrictions are placed both on the current landowner and on subsequent landowners. The easement becomes part of the land deed so that all future property owners are bound by the terms of the easement; regulated under Ontario's *Conservation Lands Act* and *Ontario Heritage Act.*

Contaminant: Anything which can cause pollution. Septic systems, stored pesticides, fuels, pet wastes, furnace oil, paints and cleaners are all possible contaminant sources. Contaminants may be colourless and/or odourless.

Contaminate/Contamination: Alteration of a material by the introduction of a chemical or other substance so that the material is unfit for a specified use.

Creosote-treated wood: Wood preserved by pressure treatment with the pesticide, creosote, to protect it from insect attack and decay; primarily used for utility poles, bridges, dams, retaining walls and railway ties. As a highly toxic compound, exposure to creosote may present certain health hazards, including cancer.

Crib: A crib is a cubic frame of large timbers (made of a durable wood such as Douglas-fir, larch, or hemlock) filled with rocks that lie in the shallow water off the shoreline. Horizontal planks for a dock or boathouse are placed on top of the cribs, above the water. Timbers continually submerged in water can last 50 years or longer without treatment. Crib docks are not suitable for deep-water applications.

Crown Land: Publicly owned land, typically under the jurisdiction of the provincial government and administered on behalf of the people.

Dampers (fireplace): A metal flap-like device that when closed, prevents outside air from entering the house and heated air from escaping. When in the open position, it allows smoke and heat to flow up the chimney. A traditional damper is located where the firebox and the flue meet. Alternatively, dampers can be mounted on top of a chimney and this type is more energy efficient, although they can not be used with gas fireplaces or wood stoves.

Deciduous trees: Trees that shed their leaves in the fall.

Glossary

Deposition: The geological process whereby material is added to a landform (e.g. beach shoreline). The material is eroded and transported from elsewhere by wind, water or ice. Also referred to as sedimentation.

Design capacity: The total daily sanitary sewage flow that the septic system is designed to handle. The Ontario Building Code (OBC) determines wastewater flows.

Dioxins: A group of chlorinated organic chemicals with similar chemical structures. Dioxins have no uses. They are formed unintentionally and released as byproducts of human activities such as waste incineration, fuels combustion, chlorine bleaching of pulp and paper, or pesticide manufacturing. They are also formed by natural processes such as forest fires and volcanoes.

Downspout: A vertical conduit used for draining water from the roof gutters of a building.

Drainage Pattern: The network of water courses (streams and rivers) that drain a watershed(s) into a lake or water body. Also called runoff pattern..

Dredging: The removal or displacement of any material from the bottom of a lake or stream using heavy machinery to widen or deepen the channel. It can harmfully alter, disrupt or destroy the areas in which fish live, feed and reproduce and can also re-suspend contaminants settled on the bottom, affecting water quality.

Drilled well: Wells that are constructed using percussion or rotary drilling machinery. Casing is usually plastic or metal pipe with a small diameter; 10 to 20 cm (4 to 8 in) across. Drilled wells can be very deep.

Dripline: The outer extent of a tree's branches. The dripline is used as a rule-of-thumb indication of the extent of a tree's root system, though most roots in fact extend beyond the dripline.

Driven well: *See* Sand point well.

Duct: A tube or conduit, usually made of sheet metal that carries cooled or heated air from one place to another in a building.

Dug well: Large-diameter well often constructed by power shovel, backhoe or by hand.

E-coli (Escherichia coli): Harmful bacteria that comes from human and animal feces. If *E-coli* is found in drinking water, it is not safe for drinking, food preparation or bathing.

Ecological Corridor: An area of vegetation, typically linear that is similar or the same in nature as wildlife habitat areas, allowing wildlife to move between habitat areas. The size of the corridor determines its effectiveness as a safe means of movement.

Ecosystem: A complex, natural system created and maintained by the interaction and interdependency between all living organisms and their particular environment. Any action taken at any level in this interacting system has a potential domino effect on every other organism or element within the ecosystem.

EnerGuide: A rating system managed by Natural Resources Canada that helps consumers compare the energy efficiency between appliance models and buildings.

Energy Audit: A thorough assessment of how much energy a building uses, conducted by an energy audit professional. It pin-points the areas where the building is losing energy, and includes suggestions on how to improve energy efficiency.

Energy consumption: The amount of energy that is used. This is affected by the energy efficiency of all objects and materials in a space.

Energy efficiency: Reducing as much as possible, the total amount of energy used to complete an activity. The most effective way to determine the energy efficiency of a building is to have a home energy audit done by a service professional.

EnergyStar: An internationally recognized symbol for energy efficiency. In Canada, the international EnergyStar symbol is monitored and promoted by Natural Resources Canada's Office of Energy Efficiency.

Emergency plan: A plan of action to deal with an emergency. The plan should include: location of emergency equipment, emergency telephone numbers, cleanup methods, and steps to follow in case of spill or fire.

Glossary

Emissions standards: Emission standards limit the amount of pollution that can be released into the atmosphere from sources such as industry, power plants, vehicles and small equipment such as lawn mowers.

Emissions (vehicle): Pollutants such as unburned gases and smoke that are produced during combustion in an engine and released into the air.

Erosion: The geological process by which soil or rock is worn away by water, wind, or other forces.

Erosion-hazard limit: A setback distance determined by considerations that include the 100 year erosion rate (the average annual rate of recession of a bluff extended over a one hundred year time span), plus an allowance for slope stability and an erosion allowance.

Eutrophication: A process by which a water body becomes rich in dissolved nutrients. The nutrients encourage algal blooms and plant growth which depletes the oxygen in water, threatening aquatic life. This process can be accelerated by human activity.

Evergreen trees: Trees that retain their leaves or needles year-round.

Exotic (plant): An exotic species (also known as an introduced species) is an organism that is not native/indigenous to the place or area where it resides and instead has been accidentally or deliberately transported to the new location by human activity. Exotic species can often be damaging to the ecosystem to which they are introduced.

Exposure: Contact with a gas, liquid or solid. Exposure can happen by swallowing (oral), skin contact (dermal) or breathing in dust or vapour (respiratory).

Faucet aerator: A round case at the mouth of the faucet that contains a mesh-like disk, through which the water flows. Low-flow faucet aerators save water as well as any energy used to heat that water.

Fertilizer: Any organic or inorganic substance that is applied to the soil in either liquid or granular form to improve plant growth and vigour.

Fill: Material that is brought from elsewhere and added to the existing landscape, such as soil, gravel, sand or loam. Fill regulations exist and are administered by your local Conservation Authority.

Fish Habitat: "Spawning grounds and nursery, rearing, food supply and migration areas on which fish depend directly or indirectly in order to carry out their life processes" (Canada Fisheries Act, Sec. 31.5).

Fisheries Act: A federal law administered by the Department of Fisheries and Oceans and Environment Canada to protect fish and fish habitat. It prohibits the destruction or damage of fish habitat and the discharging of substances that may harm fish or fish habitat.

Fixed sprinkler head: Sprinkler head affixed seen in place more or less permanently.

Floodplain: The area adjacent to a water body or water course that becomes covered with water during high water levels. Often this occurs following snowmelt or an extreme rainfall event. Floodplains are regulated by your local Conservation Authority.

Forest corridor: A linear remnant of a forest community. It is too narrow to be viable as habitat but can have the important role of connecting other larger isolated or separate areas of forests, creating the effect of a continuous forest. This allows animals and other species to travel through disturbed landscapes.

Foundation tiles: A drainage system by which groundwater can be transported away from your basement. Water travels the path of least resistance down to the basement foundation, through a gravel bed into the drainage tile (pipe that has perforated holes along its length) which leads the water to an outlet away from the house. Also known as weeping tile.

Fuel: A material that can be transformed into usable energy.

Fuel economy: A description of the amount of fuel required to move a vehicle over a given distance.

Fungal disease: Any fungus harmful or lethal to plant growth.

Furans: A family of chemicals that are formed during combustion. They are extremely toxic.

Glossary

Garbage: A general term used to describe household items that are no longer desired. It can include packaging, plastics, treated wood, old furniture, even newspaper and junk mail. Also called trash.

Garborator: A type of garbage disposal system that functions through the kitchen sink. Food scraps go into the municipal water or septic system.

Grey water: Wastewater from household uses such as dishwashing or bathing.

Groundwater: Fresh water that has seeped through the soil and rock on the Earth's surface and naturally collects forming a reservoir, the top of which is referred to as the water-table. This water supplies wells and springs and is the source of most people's drinking water.

Gullies: Resemble large ditches or small valleys. Gullies can form on slopes that have been cleared of vegetation after a large rainfall event; from water running over loose soil that causes significant deep cutting action.

Gunflint Formation: A narrow band of generally iron-rich and cherty rocks that extends from Gunflint Lake on the Minnesota-Ontario border to near Schreiber, Ontario. Cherts are glassy rocks (bright red and yellow) with high silica content that are ideal for producing sparks. The first fossils of microorganisms ever found were inside the cherty rocks; aged at 1.9 billion years old.

Habitat: The environment that provides what an organism requires for survival and reproduction. Specialist species have the ability to live in only one type of habitat, eat only a few types of food, or tolerate a narrow range of climatic or environmental conditions.

Hazard land: An area prone to flooding or erosion such as properties located within a floodplain, on beaches, bluffs, or subject to strong winds, wave activity, etc. Formally recognized and managed in municipal Official Plans and zoning by-laws. *Also known as hazard zone or use-limitation.*

Hazard tree: A tree or any component of a tree that has sufficient structural infirmity to be identified as having a high risk of falling and causing personal or property damage.

Hazardous wastes: Substances that can be dangerous to humans or animals and must be disposed of in a manner as to not pollute groundwater.

Health Unit: A provincial health agency that administers health promotion and disease prevention programs through local offices.

Herbaceous: Non-woody plant material or vegetation. A herbaceous plant goes dormant or dies back every year.

High water mark: The highest level to which a body of water rises and remains for a sufficient period of time so as to change the characteristics of the land; there is some evidence or mark on the landscape that indicates the height of flooding by water and the natural vegetation shifts from aquatic/wetland species to upland species. *See* Ordinary high water mark and 100-year high water mark.

Holding tank: A sealed tank to hold household wastewater until the tank can be pumped out by a septic pumping company, rather than a septic field.

Household chemicals: Any chemicals normally used within the house such as detergents or cleansers.

Impervious surface: A solid surface that does not allow water or other substances to pass through.

Incandescent light bulb: A glass bulb that contains a glowing wire filament that, when heated to white hot by electrical resistance, generates light. Tends to lose 95% of energy due to the air as heat.

Infiltrate/Infiltration: Allowing water or other substances to pass through pores or spaces in soil. Also *percolate/ percolation.*

Inorganic fertilizer: A synthetically-made chemical mixture that is applied to plants to promote growth. Plants nutrients are immediately available for plant roots to absorb. Consequently, the risk of over-applications or 'burning' is higher.

Invasive species: A plant, animal or aquatic organism (not native to the area) which typically spreads quickly and may be difficult to control or eradicate. These species are of concern because they can be detrimental to other species and threaten ecosystems.

Irrigation: The process of drawing water from a concentrated source (well, pond, municipal water system, etc.) and applying it to your garden or landscaping.

Glossary

Landfill: A site specially engineered for the permanent disposal of solid waste on land, constructed so that it will reduce hazard to public health and safety.

Lawn: A mown or smooth expanse of vegetation typically comprised of one or more grass species.

Leachate: Liquids that have percolated through soil and carry contaminants.

Leaching bed (trench type): Consists of trenches of buried distribution pipe. Each pipe is set in a bed of stone in a trench. Wastewater leaves the septic tank and flows through the distribution pipe into the soil through perforations in the pipe. See septic leaching bed.

Leaching bed loading: Refers to the volume of wastewater in relation to the capacity of the leaching bed. Increased household water use can overload the system.

Legal Non-Conforming: Buildings or structures which existed before the current municipal zoning by-law was passed. When existing uses do not conform to the regulations in a new zoning by-law, their prior legal existence ensures their continuation as a lawful use. This means that some variations of use can legally exist without requiring an amendment to the zoning by-law.

Legislation: Law or set of laws made by a law-making body. Also referred to as Statutes or Acts.

Liability: An obligation that legally binds a person to be responsible for their actions, including restoring damage to others.

Loading: *See* Leaching bed loading.

Loam: Soil containing a mixture of clay, silt and sand that is typically loose, well-drained and rich in organic matter. It is considered best for the growth of most plants. The exact ratio of sand, silt and clay determines texture and other soil characteristics.

Low-flow shower head: A shower head that restricts the flow of water and forces it through very small apertures. It uses 8-9 litres (about 2 gallons) per minute while a conventional showerhead uses 15-19 litres (3-4 gallons) or more per minute. It is easy to install and can be fitted to most standard shower arms.

Low-level sprinkler: Sprinkler where water stream reaches a low height; type often seen on residential properties with direct, pulsed water jets.

Management Plan: A (typically) paper document that outlines the guidelines and recommended practices to be implemented over the full rotation cycle of the selected trees in order to achieve current and future goals of the owner.

Manure: Any animal or plant material that is used to fertilize soil but is not yet broken down or decomposed by bacteria, fungi, or other micro-organisms.

Metamorphism: The gradual change of rock chemistry over time through heat, pressure and the presence of liquids.

Mid-level sprinkler: Sprinkler where water stream reaches a moderate height; type often seen on residential properties for children's recreational use.

Mooring: A floating platform anchored to the bottom of a water body in open water (using concrete anchor blocks, chains, rope and floats) and away from the shoreline. It is used to secure a boat or to hold a channel marker in place as a navigational aid. Moorings alleviate the need for boats to set temporary anchors and therefore reduce damage to the bed or bottom of a lake from shifting/dragging anchors.

Mulch: Loose, organic materials such as woodchips, bark, and straw, or a mixture thereof. When applied around a plant, mulch protects the plant, suppresses weeds and retains moisture. Re-apply as mulch breaks down over time.

National Marine Conservation Area (NMCA): Area designated by Parks Canada that is representative of Canada's diverse marine environment. The area is protected from activities such as undersea mining and oil and gas exploration. The area is intended to protect historical and ecological features and promote conservation and marine research and recreation.

Native species: Plant and animal species that have evolved in a specific area over a period of time prior to human activity; species that are adapted to and occur naturally in a specific location. Also referred to as naturally-occurring species or indigenous.

Natural Processes: A series of changes or actions that occur within an ecosystem to maintain its health or regulation.

Glossary

Non-Invasive: A plant with a low potential to spread quickly or become difficult to control or eradicate. Local native plants are typically not invasive.

Non-native species: A plant or animal species that did not evolve naturally in the specified location and has arrived by human influence.

Non-renewable: Something that cannot be replaced by nature once it is used up or that regenerates only over a very long period of time.

Non-toxic: A substance that is not poisonous or will not cause harmful health effects.

Nuisance or Problem wildlife: Any wildlife that causes damage to your property or is a potential threat to health and safety.

Nutrients: Any element needed for plant growth. Usually refers to elements added to the soil or garden as fertilizer. Commonly used nutrients are nitrogen (N), phosphorus (P), and potassium (K). Animal (including human) waste contains nutrients that, when available in excess, can become a pollutant.

Nutrient management: The responsible and appropriate application of nutrients (especially nitrogen) to plants, with the purpose of improving plant growth and soil conditions, in such a way as to protect surface and groundwater from nutrient contamination.

Official Plan: A municipal policy document that outlines basic principles to guide future development within an area. Available at the municipal office or community library.

Ontario Drinking Water Standards: The minimum water quality standards set by the Ontario Ministry of the Environment to protect public health. It is advisable that drinking water meets these standards.

Open-faced crib: *See* crib.

Ordinary high water mark: The usual or normal or average annual level to which a body of water rises at its highest point and remains for a sufficient time so as to change the characteristics of the land. Ordinary high water marks fluctuate based on the last few years of climatic conditions (e.g. recent low water levels on Lake Superior). It is NOT the same as the regulated 100-year high water mark. *See* High water mark or 100-year high water mark.

Organic fertilizer: A product that promotes plant growth that is derived from animal or vegetable matter such as compost. Nutrients are released at a slower rate that facilitates plant absorption and therefore are less likely to be carried away by surface or leached into groundwater.

Other treatment systems: Includes biofilters, packaged aerobic systems, sand filter systems, etc. See the Ontario Building Code (OBC) for approved systems.

Passive solar heating/lighting: The natural heating/lighting of buildings or rooms by capture of direct sunlight. Buildings can be designed with large windows in south-facing walls and small windows in north-facing walls, to reduce the need for electricity and fossil fuel energy as a source of heat and light.

Paved surface: A hard surface that is impermeable to liquid substances such as rainwater.

Percolate/Percolation: Refers to the flow of water through the soil. Also i*nfiltrate/infiltration.*

Perennial: A type of herbaceous plant that completes its lifecycle over more than 2 years.

Permit: A document granting legal permission.

Pesticides: A general name given to toxic chemicals used to eliminate or control unwanted insects, diseases, plants, or other organisms. Pesticides include insecticides, herbicides, and fungicides.

Pesticide-alternative: Generally any pesticide derived from natural sources and/or that does not require a license to apply. Considered gentler than conventional pesticides, alternatives do not degrade the environment.

Pesticide storage: the legal requirements for pesticide storage can be found in the Ontario Pesticides Act.

Pilot lights: A small flame that stays lit all the time (in a hot water heater, boiler or furnace) and ignites the burner flame.

Ponding: The process through which water collects or pools on a surface before being infiltrated into the ground.

Portable fuel container: A portable container made of metal or other material that has been approved for use by the Underwriter's Laboratories of Canada (ULC), the Canadian Standards Association (CSA), or Transport Canada to transport and store fuel.

Glossary

Pressure or Dosed distribution: A septic system that utilizes a pump to load shallow, rapidly-changing, distribution lines in doses.

Pressure rinse: One method to properly rinse containers. Spray water under high pressure against all inside surfaces of the container.

Prevailing wind: Wind that blows in an area most frequently.

Protective coating: A paint or other coating material designed to prevent rust.

Provincially Significant Wetland (PSW): Areas identified by the Ministry of Natural Resources as being valuable for biological and hydrological function and societal values determined by a science-based ranking system known as the Ontario Wetland Evaluation System (OWES). The designation is used by municipalities to protect the area through the policies in their Official Plans (land use plans) and zoning by-laws.

Public Lands Act: Legislation protecting the integrity of public lands and waters for all citizens of Ontario. It requires that property owners obtain work permits from the Ministry of Natural Resources for activities on Crown land.

Puncture: An area of change or disturbance within a natural community such as a buffer. It is often created by a change in land use or development. The threat or damage caused by the puncture depends on its size and the type and health of the natural community or buffer it has disrupted. Punctures provide opportunity for soil erosion and for invasive species to colonize.

Quick-release fertilizer: Type of synthetic (inorganic) fertilizer that is immediately available for plant roots to absorb. There is a high 'burn' potential if too much is applied and the potential for it to leach into ground and surface water is high causing algal blooms and eutrophication. It is also referred to as Water Soluble Nitrogen (WSN).

Recyclable: Materials that can be collected, sorted, and processed back into raw materials that are used to make new products. Typical recyclables include glass and selected metal, paper and plastic products.

Registered contractor: A person registered by the province of Ontario to install and repair petroleum storage tanks.

Regulation: A binding rule of law. Regulations are not made by Parliament but rather by persons or bodies that have received authority from Parliament to do so.

Restriction: Refers to legislation that ensures that activities do not harmfully affect aquatic habitat or water quality.

Reusable: Items that can be used again in their current state by another individual or for another purpose.

Right-of-way (includes Easements): A legal agreement that confers on an individual, company or Municipality the right to use a landowner's property in some way. It also therefore partially restricts an owner's use of those portions of land affected by the right of way/easement. Right of ways are typically registered on the certificate of title to the property and are automatically transferred from one owner to another as the land is sold. They remain on the title until the holder of the easement discharges their rights from the certificate of title. Often the Municipality holds a 20 metre (66ft) right-of-way along the Lake Superior shoreline. Right-of-ways also run along utility lines.

Rinse water: Wastewater from cleaning the inside of a product container or applicator.

Rip-rap: rock embankment with the appropriate slope and rock size designed so that waves hitting the slope will "roll-up" the slope rather than crashing into it. A filter cloth placed under the rock prevents the slope from being eroding away and releasing sediment.

Risk: The potential for disaster and loss.

Rove formation: Bedrock containing predominantly dark-coloured fissile argillites (a metamorphic rock, intermediate between shale and slate that is easily split along close parallel lines) and red and green shales.

Runoff: Snow melt or rain that flows over land rather than infiltrating through the soil/rock.

Runoff pattern: The arrangement of how rain or water flows over an area. This is determined by the land form; water will flow down slope to the lowest elevation points due to gravity. Also called drainage pattern.

Glossary

R-2000: A building technology designed in Canada and not recognized internationally for energy efficiency and indoor air quality. Every R-2000 home is certified by the Government of Canada and the R-2000 rating is managed by the Canadian Home Builders' Association and Natural Resources Canada (NRCan's) Office of Energy Efficiency.

Sand point well/driven well: Wells constructed by driving assembled lengths of pipe into the ground. These wells are usually smaller in diameter (5 cm or less) and less than 15 m (50 ft) deep. They can be installed in loose soils, such as sand.

Saturated (soil): Soil in which all the pore spaces are completely filled with water and no additional water can be stored.

Seller Property Information Statement: A non-legally binding document that outlines what the current owner of the property knows about the property. Also known as a Disclosure Statement.

Sensitive natural feature: An environmental element of the landscape that is readily affected by or responsive to external influences or change.

Septic field: See septic leaching bed.

Septic leaching bed: Part of the septic system. Together with the septic tank, it treats household sewage. It is comprised of rows of perforated pipes set at a specific distance apart and above a stone layer that distribute liquid wastewater along an underground field into the soil. The area above a leaching bed should have a good grass cover and should be kept free of trees, shrubs, and structures such as patios, pools, and sheds, and vehicles including snowmobiles. Any compaction of the soil reduces leaching bed performance and crushed leaching bed pipes can cause backups in your home.

Septic system: Consists of a separate tank to settle the solids out of the wastewater, followed by a leaching bed in which the wastewater is treated and distributed into the soil.

Septic tank: A watertight vault in which sanitary sewage is collected to remove scum, grease, and solids from the liquid without the addition of air. This is where solids settle and anaerobic digestion of the sanitary sewage takes place.

Setback: the distance which a building, structure or activity is set back from a street, shoreline, floodplain or any other feature that may need protection. A setback can also include a minimum distance from septic systems, drinking water wells, utility or property lines. A setback is often regulated in municipal zoning by-laws.

Sill: A lip or catch under the spout of a container that effectively catches any drips from the mouth of the spout.

Silt fence: A temporary barrier stretched across an area to trap sediment and prevent runoff water from moving it off-site during construction.

Slope: Refers to land surface steepness. It is measured as a number of centimetres rise in a 100 cm (1 m) horizontal length (for example, a 2 % slope equals 2 cm rise across 100 cm horizontal length).

Slow-release fertilizer: The type of synthetic (inorganic) fertilizers that break down using bacteria, fungi or other soil micro-organisms in the soil, or that are coated to reduce solubility. As a result, nitrogen becomes available for plants over time. While it is typically more expensive than quick-release fertilizers, it lowers the chance of 'burning' plants when over-application occurs and has less potential to leach into ground or surface water. It is also referred to as Water Insoluble Nitrogen.

Soffit: The material used to bridge the gap between a house's exterior wall and the roofline, also known as eaves.

Soil compaction: Reduced pore space in the soil due to human or equipment traffic. Compaction makes it difficult for water to infiltrate and for roots to penetrate the soil.

Soil depth: The depth of soil influences the potential for groundwater contamination. Deeper soils are typically more effective at filtering out contaminants before they can reach groundwater.

Soil grade: The elevation of the ground surface. Grade may also refer to the steepness of the slope of the surface.

Soil type: The material(s) that a soil is made of affect its ability to filter water and other substances (including pollutants). Sand and gravel soils provide the fastest infiltration and therefore increase the potential for groundwater contamination. Conversely, clay soils are slow to allow water to infiltrate and may cause water to runoff along the surface which encourages erosion and surface water contamination.

Glossary

Solvent: A liquid that can dissolve another substance (e.g., paint thinner, mineral spirits, and water).

Species-at-Risk: A general term used to describe the fragile state of a species population. This term is further organized into 5 categories of risk: Special Concern, Threatened, Endangered, Extirpated, and Extinct. The usual causes for a species to be at risk include habitat destruction, genetic and reproductive isolation, the suppression of natural occurrences such as fire, environmental contamination, over-harvesting, climate change, disease, and the presence of invasive species.

Stagnant water: Water that is motionless or ceases to flow.

Steward: An individual with a personal commitment to care for the land and the surrounding landscape in order that it may be preserved or enhanced for future generations.

Storm water: Water from rain or melting snow that does not infiltrate into the ground.

Storm windows: An extra pane of glass or plastic added to the outside of windows to provide additional insulation and wind protection.

Storm sewer: A system of underground pipes (separate from sanitary sewers) that collects and carries only water runoff from building and land surfaces to a discharge point (e.g., infiltration basin, stream, lake or treatment plant).

Sub-surface distribution: Underground discharge of household wastewater to a leaching bed after pretreatment in a septic tank.

Surface material: Refers to soil, lawn, or other ground material that surrounds the well.

Surface water: Any open or exposed body or flow of water including springs, streams, rivers, ponds, lakes, drain inlets, ditches, etc.

Survey: A map document made by a licensed surveyor that illustrates and describes the measurements and layout of a parcel of land including its size, boundaries, location, elevations, the dimensions and position of any structures and indicates any easements, rights of ways, etc.

Swale: A ditch that can direct and divert water runoff or that can hold water allowing it to slowly infiltrate into the soil. Swales are usually moist, marshy, fertile areas.

Talus slope: The accumulation of rock debris at the base of a cliff or steep mountain slope. It is often too unstable to support to growth of vegetation. It is the transition zone between the bare rock face of the cliff and the ground with soil.

Tree rooting zone: Often considered the radius on the ground that corresponds with the tree dripline (the greatest extent of the tree branches) that is critical for root uptake of water and nutrients; however a more accurate way to measure the radius of a tree's rooting zone is to extend the circle on the ground by 20 cm for every 1 cm of tree trunk diameter.

Triple rinse: One way to properly rinse containers. Fill the container 10% full of water or other diluents, cap and shake the container, then add the rinse water to the spray tank. Repeat two more times.

ULC approved: Approved for safety by the Underwriter's Laboratory of Canada. ULC approval should be marked on a storage tank.

Unused well: A water well that is not currently used or is used occasionally. All water wells regardless of use must be properly maintained or they must be properly abandoned (plugged and sealed).

Use Limitation: See Hazard Land.

Vegetated buffer: A permanent strip of vegetation along the side of a watercourse that reduces soil erosion and surface water contamination.

Vegetation: All plants including trees, shrubs, non-woody plants, lichens, mosses, etc.

Vent: *See* Well vent.

Visual access: The ability to observe an environment or scene from a distance without physical entry or presence.

Vulnerability: Capacity to be open or exposed to harm.

Wastewater: Dirty/used water of domestic origin, including the kitchen, laundry, and bathrooms (toilet, shower, tub).

Glossary

Wastewater treatment system: A sewage system approved under the Ontario Building Code (OBC).

Water bar: Ridge of compacted soil, loose rock or gravel constructed across disturbed right-of-ways and similar sloping areas. A water bar shortens the flow length within a long sloping right-of-way, thereby reducing the erosion potential by diverting storm runoff to a stabilized outlet or sediment trapping device.

Water efficiency: The degree to which practices or devices are used to reduce the amount of water needed to do a job.

Water feature: Any constructed landscape feature that holds or has water spill over it. This includes artificial small ponds, artificial waterfalls, and artificial streams.

Water heater: An appliance that typically uses gas or electricity to heat water. A water heater also stores the heated water until it is used.

Water table: The boundary between the saturated soil (where all the soil pore spaces are filled with water) and the unsaturated soil (where the soil pore spaces are filled with air, roots, soil organisms and some water).

Weather stripping: Strips of resilient material, typically rubber or plastic, used to plug air leaks around doors and window frames in order to prevent cold air or water from coming indoors.

Weir: A small dam where water continues to flow over top commonly used to raise the water level in a stream. Creates a barrier to fish migration upstream; can prevent the migration of invasive species Sea Lamprey upstream.

Well cap: A commercially manufactured device used to cover the top of a well casing pipe. This cap prevents surface water, vermin, or solid material from entering the well.

Well capture zone: The area of land that replenishes water to a pumped well or a group of wells. Determining the size of a capture zone is complex and expensive. Knowing its area may not be necessary if the entire property is treated as the capture zone for the well(s) and potential contaminant sources are managed properly.

Well casing: Steel, fibreglass, plastic pipe or concrete tile, installed when a well is constructed, in order to strengthen the well bore hole so it does not collapse. It also prevents contaminants from entering the well and allows placement of a pump or pumping equipment.

Well pit: Lined, shallow excavation around the top of the well casing of a drilled well.

Well vent: An opening in the well cap or well seal that makes the air pressure inside the well the same as outside. It also lets gases escape. The vent should always have a screen to prevent dirt, vermin, or other materials from getting into the well. A screened pipe may extend from the vent up above the ground level to prevent flooding of the well.

Well-rotted manure: Any animal waste that is used to fertilize soil and has undergone decomposition by bacteria, fungi, or other micro-organisms for a minimum of 6 months. Its odour is no longer pungent but is often sweet, its colour is dark or black and its texture is crumbly.

Wetland: Area that is permanently or temporarily submerged, or saturated for at least part of the year under water. Unlike upland wetlands, coastal wetlands don't transition into drier communities.

Wildlife: Any non-domesticated insect, fish, amphibian, mammal or plant.

Wind energy: Energy that is obtained from wind-powered turbine engines.

Woody Species: A plant that produces woody stems such as a tree or shrub.

Zoning by-law: Municipal legislation that describes the exact use for a specific parcel of land including permissible buildings, size, building heights and setbacks from lot lines.

Zoning: The division of a Municipality by legislative regulations into areas (zones) that control the use of the land by specifying the uses allowable for the real property in these areas (e.g. residential, agricultural, commercial, heavy industrial).

Resource List

GENERAL CONTACT INFORMATION

Lakehead Region Conservation Authority
130 Conservation Road, P.O. Box 10427
Thunder Bay, ON P7B 6T8
T: (807) 344-5857
F: (807) 345-9156
Email: info@lakeheadca.com
www.lakeheadca.com
www.conservation-ontario.on.ca

Ontario Ministry of Natural Resources
435 James Street South, Suite 8001
Thunder Bay, ON P7E 6S8
T: (807) 475-1471
www.mnr.gov.on.ca

Municipality of Shuniah
Municipal Office
420 Leslie Avenue
Thunder Bay, ON P7A 1X8
T: (807) 683-4545
F: (807) 683-6982
Email: shuniah@shuniah.org
www.shuniah.org

Municipality of Neebing
4766 Highway 61
Neebing, ON P7L 0B5
T: (807) 474-5331
F: (807) 474-5332
www.neebing.org

City of Thunder Bay
Thunder Bay City Hall
500 Donald Street East
P.O. Box 800
Thunder Bay, Ontario P7C 5K4
Phone: (807) 625-2110
www.thunderbay.ca

Thunder Bay District Health Unit
999 Balmoral Street
Thunder Bay, ON P7B 6E7
T: (807) 625-5900
F: (807) 623-2369
www.tbdhu.com

Fisheries and Oceans Canada
Thunder Bay Office
100 Main Street, Suite 425
Thunder Bay, ON P7B 6R9
T: (807) 346-8118
F: (807) 346-8545
Email: ReferralsThunderBay@DFO-MPO.GC.CA
www.dfo-mpo.gc.ca

Ontario Ministry of the Environment
Thunder Bay Regional Office
435 James Street South, Suite 331
Thunder Bay, ON P7E 6S8
T: (807) 475-1205
F: (807) 475-1754
Toll free: 1-800-565-4923
www.ene.gov.on.ca

Household Hazardous Waste Depot
John Street Landfill
John Street Road, South of Mapleward Road
T: Landfill Information (807) 623-5756
T: Landfill Site (807) 767-9472

EcoSuperior Environmental Programs
212 Miles Street East
Thunder Bay, ON P7C 1J6
T: (807) 624-2140
www.ecosuperior.com

TOPICS

Boating

• Prince Arthur's Landing Municipal Marina with pump-out facilities
T: (807) 345-2741
• Concrete boat launch and courtesy docks available at Silver Harbour and Little Trout Bay Conservation Areas for $2/vehicle visitor fee. Call LRCA at (807) 344-5857 for details.
•*The Enviro Boater Guide: A guide to environmentally-friendly boating.* 2005. 4th Edition. Canadian Power and Sail Squadrons. Available online at: *www.cps-ecp.ca* under Boating Resources-Environment
• *The Safe Boating Guide*. 2000. Canadian Coast Guard. Available online at: *www.tc.gc.ca*
• *www.boatsmartcanada.ca*

Resource List

Buying a Rural Property

• *Seller Property Information Statement – Residential*. 2006. Form 220. Ontario Real Estate Association. Available online at:
www.ottawastructural.com/pictures/orea.pdf

Construction/Building Permits

• Contact your local municipality's Chief Building Official (CBO)
See Blue Pages
• Contact your local Municipal Office. If within the City of Thunder Bay, contact Development Services:
2nd Floor, 11 Syndicate Avenue South
Thunder Bay, ON P7E 6S4
T: (807) 625-2574
F: (807) 623-9344
• Ministry of Municipal Affairs and Housing
Building and Development Branch
435 James Street South, Suite 435
Thunder Bay ON P7E 6S7
T: (807) 475-1651
F: (807) 475-1196
• Ontario Building Code (OBC)
Regulates design, construction, operation and maintenance of on-site septic systems and new building/structure construction
Email: codeinfo@mah.gov.on.ca
www.obc.mah.gov.on.ca
• Leadership in Energy and Environmental Design (LEED) helps building construction gain certification for stainable site development, water efficiency, energy efficiency, materials selection and indoor air quality
www.cagbc.org
• Before construction in or near watercourses see resources under "Fish Habitat" and "Navigable Waters"
• Contact the MNR if construction/building on public land. Review MNR Crown Land Policies, Public Lands Act Work Permits

Chemicals

• Andrews, E. *et al.* (Ed.). 1997. *Home*A*Syst: An Environmental Risk Assessment Guide for the Home*. Natural Resource, Agricultural, and Engineering Service (NRAES): New York. Publication Number: NRAES-87. ISBN: 0-935817-30-1. Available for purchase online at:
www.nraes.org
• Thunder Bay Broom & Chemical
T: (807)577-7795
• ECOgent Environmental Solutions at: 1-877-994-9908
www.ecogent.ca
• Simply clean
www.simplyclean.ca

Ecological Labeling

Environmental Choice Program
c/o TerraChoice Environmental Marketing
1280 Old Innes Road, Suite 801
Ottawa, Ontario K1B 5M7
Call Toll-free: 1-800-478-0399
Fax: (613) 247-2228
www.environmentalchoice.com

Energy Efficiency

• Contact EcoSuperior for an at-home energy evaluation conducted by a Certified Energy Advisor at:
(807) 624-2140
• Contact a Professional Energy Auditor
See Yellow Pages
• Deacon, G. 2006. *Green Tips: How to Save Money and the Planet.* Toronto, ON: Green Living Enterprises.
• R-2000 Residential Buildings
www. r2000.chba.ca
• Natural Resources Canada Office of Energy Efficiency
oee.nrca.gc.ca/
• Green Communities Canada
www.gca.ca
• Leadership in Energy and Environmental Design (LEED) helps building construction gain certification for stainable site development, water efficiency, energy efficiency, materials selection and indoor air quality
www.cagbc.org

Fishing

• Check out the Ministry of Natural Resources, Fish Ontario for information on regulations, licenses, fish facts and fish stocking. Available online at:
www.mnr.gov.on.ca/en/Business/LetsFish

Fish Habitat

• Contact your local Conservation Authority before starting construction project/activities in or near watercourses.
• Check out Department of Fisheries & Oceans **Operational Statements** that describe the conditions under which the *Fisheries Act* is applicable to your project and the measures to incorporate into your project in order to avoid negative impacts to fish habitat. Available online at: *www.dfo-mpo.gc.ca/oceans-habitat/habitat/modernizing-moderniser/epmp-pmpe/index_e.asp*
Operational Statements:
• Removal of Aquatic Vegetation
• Beach Creation for Residential Use
• Beaver Dam Removal
• Bridge Maintenance
• Clear-Span Bridge
• Culvert Maintenance

(list continues on next page)

Resource List

Fish Habitat (continued)
Operational Statements:
• Dock and Boathouse Construction
• High-Pressure Directional Drilling
• Ice Bridges
• Isolated Pond Construction
• Maintenance of Riparian Vegetation in Rights-of-Way
• Moorings
• Overhead Line Construction
• Public Beach Maintenance
• Punch and Bore Crossings
• Routine Maintenance Dredging
• Submerged Log Salvage
• Underwater Cables

Hardcopy Operational Statements available at local DFO and LRCA offices.

• Department of Fisheries & Oceans (DFO) *Working Around Water?* Factsheet Series on:
• Docks, boathouses & boat launches
• Building a beach
• Building material
• Shoreline stabilization
• Dredging
• Controlling aquatic plants
• Sunken log retrieval
• Stream clean up
• Silt & sediment
• Fluctuating water levels
Available online at: *www.dfo-mpo.gc.ca/regions/central/pub/factsheets-feuilletsinfos-on/index-eng.htm*

• *The Fish Habitat Primer: A Guide to Understanding Freshwater Fish Habitat in Ontario.* Fisheries and Oceans Canada, Burlington: Queen's Printer. ISBN: 0-662-40593-5.

Fuel Tanks
• Ontario Petroleum Contractor's Association (OPAC) provides assistance in finding a petroleum equipment mechanic (PM2)
T: (705) 735-9467
www.opcaonline.org
• *Green tips: Residential fuel oil.* Ministry of Environment (MOE) publication
• Underwriters' Laboratories of Canada (ULC) product safety certification for above-ground fuel oil storage tanks
www.ulc.ca

Invasive Species
• Contact Ministry of Natural Resources (MNR) for disposal of invasive species
• Ontario Federation of Anglers & Hunters (OFAH) and MNR
www.invadingspecies.com
Invasive Species Reporting at: 1-800-563-7711
• Canadian Wildlife Education
www.cwf-fcf.org
• Lui, K. *et al.* 2008. *Field Guide to Aquatic Invasive Species.* Ministry of Natural Resources: Queen's Printer for Ontario. MNR: #52089. ISBN: 978-1-4249-4380-7.

Landscape Water Efficiency
• City of Thunder Bay Wise Water Use Program
www.thunderbay.ca
• *Straight Talk About…Landscape Care During Water-Use Restrictions.* Capital Regional District Water Department: Victoria, BC. Factsheet available online at: *www.crd.bc.ca/*
• Henderson, C.L. *et al.* 2000. *Landscaping for Wildlife and Water Quality.* St. Paul, Minnesota: Department of Natural Resources.

Living along the Shoreline
• Visit the Lakehead Region Conservation Authority to view screening maps of the Approximate Regulated Area along watercourses/shoreline on your property
• Living by the Water
www.livingbywater.ca
• *Environmental Sensitivity Atlas for Lake Superior's Canadian Shoreline*. 1993. Environment Canada – Conservation and Protection Branch, Environmental Protection – Ontario Region. ISBN: 0-662-20522-7.
• Keillor, P. (Ed.). 2003. *Living on the Coast: Protecting Investments in Shore Property on the Great Lakes.* Detroit, Michigan: U.S. Army Corps of Engineers and University of Wisconsin.
• *Understanding Natural Hazards: An introductory guide for public health and safety policies 3.1, provincial policy statement.* Ontario Ministry of Natural Resources. Ontario: Queen's Printer. ISBN: 0-7794-1008-4.
• Stevens, J. (Ed.). 1994. *Living Near the Water: Environment Design for Shoreline Properties.* Burnstown, Ontario: General Shore Publishing House.
• Edgett, R. 1995. *Buyers Guide to Shoreline Property: Great Lakes and St. Lawrence River.* Conservation Association of Ontario/ Environment Canada: Burlington, ON.
• *Docktalk* environmental education kit available to Cottager Associations
Federation of Ontario Cottager's Associations (FOCA)
239 McRae Dr. Toronto, ON M4G 1T7
(T): 416-629-0444
www.foca.on.ca
• Kipp, S. & C. Callaway (Ed.). 2003. *On the Living Edge: Your handbook for waterfront living.* Nature Saskatchewan: Regina. ISBN: 0-921-10417-0.
Available for purchase online at:
w*ww.livingbywater.ca*

Resource List

Navigable Waters

• Review the Navigable Waters Protection Program (NWPP) to determine if your project requires approval by Transport Canada for any works (i.e. docks, boathouses, water intakes) built or placed in, on, over, under, through or across navigable water in Canada prior to construction of the work(s).
Navigable Waters Protection Act (NWPA)
Regional Manager
Navigable Waters Protection Program
Transport Canada, Marine Office
100 S Front Street, 1st Floor
Sarnia ON N7T 2M4
T: 1-866-821-6631
F: (519) 383-1989
E-mail: nwpontario@tc.gc.ca
www.tc.gc.ca/marinesafety/oep/nwpp/menu.htm
www.tc.gc.ca

Pesticide Alternatives

• Northwest Coalition for Alternatives to Pesticides (NCAP)
www.pesticide.org
• Pesticide Free Ontario
www.pesticidefree.ca
• Rubin, C. 1990. *How to get your Lawn and Garden off Drugs: Pesticide-free Gardening for a Healthier Environment*. Madeira Park, BC: Harbour Publishing.

Plant Selection & Care

• The Forest Gene Conservation Association
www.fgca.net
• The Society for Ecological Restoration (Ontario Chapter) - Native Plant Resource Guide. Order online at: *www.serontario.org*
• Montreal Botanical Garden
www2.ville.montreal.qc.ca/jardin/en/menu.htm
• Ontario Horticultural Association
www.gardenontario.org
• Thunder Bay Horticultural Society
T: (807) 767-6165
Local Master Gardener representative:
Erika North
Email: enorth@tbaytel.net

Private Well Water Supply

• Contact Thunder Bay District Health Unit online at: *www.tbdhu.com* under Environmental Health – Drinking Water Safety – Private Wells
• Contact EcoSuperior to participate in their free Well Aware home visit service, a guided self-assessment with water samples taken to the Public Health Laboratory (Ontario Ministry of Health)
www.ecosuperior.org/water_wellaware.html
www.wellaware.ca
• Ontario Ministry of Agriculture, Food and Rural Affairs (OMAFRA) Publications:
Agricultural Information Contact Centre at:
1-877-424-1300
www.omafra.gov.on.ca
Factsheets/Leaflets:
• Private Water Well Owners – Dealing with Water Shortages (order no. 99-025)
• Water Quality for House and Barn (order no. 87-026)
Videotapes:
• Water wells (produced by Town & Country Ontario Television)

• Ontario Ministry of Environment (MOE) Publications:
Public Information Centre
Toll free: 1-800-565-4923
www.ene.gov.on.ca
Factsheets/Leaflets:
• Green Facts: Important Facts About Water Well Construction PIBS no. 3788e01, 2003
• Green Facts: Managing Your Water Well in Times of Shortage PIBS no. 3784e, 1999
• Green Facts: The Protection of Water Quality in Bored and Dug Wells PIBS no. 3962e01, 2003
• Green Facts: The Protection of Water Quality in Drilled Wells PIBS no. 3961e01, 2003
• Green Facts: The Protection of Water Quality in Jetted or Driven Point Wells PIBS no. 4505e, 2003

•Review the *Ontario Water Resources Act* and Ontario Regulation 903 (Water Wells). This regulation governs how wells must be constructed in Ontario. It includes construction standards, distances required from contaminant sources and licensing requirements for well contractors.
• *Best Management Practices: Water Wells.* 2003. Revised Edition. Agriculture and Agri-Food Canada and Ontario Ministry of Agriculture and Food. Available for free at the Lakehead Region Conservation Authority.

Private Surface Water Intake

• *Freshwater Intake End-of-Pipe Fish Screen Guideline*. 1995. Department of Fisheries & Oceans: Ottawa. ISBN: 0-662-23168-6. Available online at: *www.dfo-mpo.gc.ca/Library/223669.pdf*
• Review the Ministry of Natural Resources (MNR) Free Use Policy. Available online at: *www.mnr.gov.on.ca* under Crown Land Policies – Public Land Stewardship

Resource List

Resource Violations Reporting
• CRIME STOPPERS at 1-800-222-8477
(1-800- 222-TIPS)
• MNR toll-free reporting line:
1-877-847-7667
• Lakehead Region Conservation Authority
T: (807) 344-5857
www.lakeheadca.com

Shoreline Restoration/Rehabilitation
• Minnesota Management Resource Guide
www.shorelandmanagement.org
• *Understanding, Living with, and Controlling Shoreline Erosion. A Guidebook for Shoreline Property Owners*. 2007. (3rd Edition). Tip of the Mitt Watershed Council: Michigan. ISBN: 978-1-889313-11-4. Available free to download at:
www.watershedcouncil.org
• Heaton, M., Grillmayer, R. & J. Imhof. 2002. *Ontario's Stream Rehabilitation Manual.* Ontario Streams: Belfountain, Ontario. Available free at:
www.ontariostreams.on.ca

Soils
• Smillie, J. & G. Gershuny. 1999. *The Soul of Soil* (4th Edition). White River Junction, Vermont: Chelsea Green Publishing Company. ISBN 1-890132-31-4.
• Soil Testing Laboratories
See Yellow Pages
or
Lakehead University Centre for Analytical Services (LUCAS)
http://lucas.lakeheadu.ca/
• Ontario Ministry of Agriculture, Food and Rural Affairs (OMAFRA) Publications:
Agricultural Information Contact Centre at:
1-877-424-1300
www.omafra.gov.on.ca
Books:
• Soil Erosion Manual, 1986 OMAFRA
Soil survey reports and maps may be ordered for $15
• *Best Management Practices: Soil Management.* 1994.
Best Management Practices: Buffer Strips. 2003.
Agriculture and Agri-Food Canada and Ontario Ministry of Agriculture and Food. Available for free at the Lakehead Region Conservation Authority.
Factsheets/Leaflets:
• Control of Soil Erosion – Order No. 95-089
• Soil Erosion – Causes and Effects – Order No. 87-040
• Soil Compaction – Order No. 88-082

Spills
Ministry of Environment (MOE)
Spills Action Centre
1-800-268-6060

Tree Ecology/ Advice
• Thunder Bay Field Naturalists
P.O. Box 10037
Thunder Bay, ON P7B 6T6
T: (807) 474-6007 (cell phone)
www.tbfn.net
•Ontario Forestry Association (OFA)
www.oforest.on.ca
•Ontario Woodlot Association (OWA)
www.ont-woodlot-assoc.org
•Managed Forest Tax Incentive Program (MFTIP) application and guide is available on MNR, OFA or OWA websites.

Waste Burning
• Contact local Municipality about regulations
• *www.burnbarrel.org*
• Canadian Centre for Pollution Prevention
www.c2p2online.com
• Great Lakes Trash and Open Burning Website
www.openburning.org

Waste Reduction
• Contact EcoSuperior to learn about vermincomposting (by worms) at:
www.ecosuperior.org
• Ontario Ministry of Environment (MOE)
Publications:
Toll Free: 1-800-565-4923
www.ene.gov.on.ca
Factsheets/Leaflets:
• Recycling
• Garden waste
• Home renovation waste

• Composting Council of Canada
T: 1-877-571-GROW
Email: info@compost.org
www.compost.org

Resource List

Wastewater & Septic Systems

• Contact Thunder Bay District Health Unit
Visit online at: *www.tbdhu.com* under Environmental Health – Septic & Land

Ontario Ministry of Agriculture, Food and Rural Affairs (OMAFRA) Publications:
Agricultural Information Contact Centre at:
1-877-424-1300
www.omafra.gov.on.ca
• Care and Maintenance of a Rural Septic Tank System (order no. 93-081)
• *Septic Smart!: New Ideas for Household Septic Systems on Difficult Sites*. 1999. (with Ontario Soil and Crop Improvement Assistance Program)
www.ontariosoilcrop.org
• *Septic Smart!: Understanding your home's septic system.* 2008. (with Rideau Valley Conservation Area)
www.rvca.ca

Ontario Ministry of Municipal Affairs and Housing Publications:
www.obc.mah.gov.on.ca
• A Guide to Operating and Maintaining Your Septic System, 1999
• *Ontario Building Code* Part 8

Ontario Onsite Wastewater Association Publications:
www.oowa.org
• Ontario On-site Sewage Systems Do's and Don'ts Guide
• Your Septic System: Protecting your Investment and the Environment

Canadian Mortgage and Housing Corporation
www.cmhc-schl.gc.ca
• Your Septic System
• Ontario Rural Wastewater Centre
• Household Guide to Water Efficiency

Thank You

The original version of this Guide was the Lake Huron Stewardship Manual (2006). Contributors to the first edition included Diane Leal, Karen Landman and Wayne Caldwell. We would also like to acknowledge the excellent work of all the members of the original steering committee including: Steve Bowers, Ray Letheren, Geoff Peach, Susanna Reid, Mari Veliz, Wayne Caldwell, Karen Landman and Diane Leal. We would also like to acknowledge the Environmental Farm Plan that was the inspiration for much of the original guide.

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Your Action Plan

Worksheet and Topic Number	Page	Worksheet Theme	Rating	Short-term Actions	Long-term Actions