4a Water Runoff Management

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 wastes, 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 Georgian Bay, untreated.
- Polluted water runoff degrades the lake, rivers, and wetlands. Soil makes the water murky and damages fish habitat. Nutrients such as phosphorus encourage 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, flooding, decreased property value and disrupt recreation.
- Without vegetation at the shoreline, contaminants flow directly into the lake.

What you can do.

1. Minimize the amount of water runoff from your property by reducing “hard surfaced” areas such as paved paths or driveways. Consider using water permeable materials for driveways and pathways.

2. Do not locate any impermeable surface near the shoreline or next to any water course.

3. Foundation tiles should not be in erosion-prone areas.

4. Reduce the amount of potential pollutants on your property that can be carried by water runoff by minimizing hard surfaces and encouraging the absorption of storm water within your property boundaries.

4a Water Runoff Management

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. 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 from any water course.	All paths, parking, driveways, and outdoor patios are paved, regardless of nearness 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 of the landscape, **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 surfaced areas that does not follow natural contours, **OR** compacted and/or paved surfaces run straight down slope.	☐

Topic	Best 4	Good 3	Fair 2	Poor 1	Your Rating
SURFACES *continued*					
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* used to trap sediment.		Some areas are mulched to prevent erosion.	No regard given to sediment loss through runoff.	
	All plant beds have minimum 8 cm (3 in) depth of mulch.	Plant beds have 2.5 – 5.0 cm (1-2 in) depth of mulch.	Most plant beds are mulched to a depth of 2.5 cm (1 inch).	No plant beds are mulched.	

Tip

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

**See advisory note regarding the use of heavy duty silt fencing at http://www.massasauga.ca/pub_docs/Advisory_silt_fence.pdf*

Eastern Hog-nosed Snake (Threatened)
Note the distinctive up-turned nose.
Credit Jeremy Rouse

Topic	Best 4	Good 3	Fair 2	Poor 1	Your Rating
POTENTIAL POLLUTANTS					
4. Car washing	Cars and trucks taken to commercial carwash or spray booth.	Cars and trucks are occasionally washed at commercial car wash.	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. Fuelling of vehicles	Never fuel vehicles, including lawnmowers, ATV's, snowmobiles, etc. near waterways.			Vehicles are fuelled regardless of their proximity to a waterway.	
6. Application and use of 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.	
7. Grass clippings, leaves and other yard wastes	Grass clippings, leaves, and other yard wastes are swept off paved surfaces and away from water flow routes, **OR** leaves and other yard wastes are composted.	Leaves and other yard wastes are left to compost on site.	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.	

Tip

Ensure that your winter snow pile is not close to any shoreline or water course. Melt water may cause erosion and contamination.

Tip

To avoid sending dirty, soapy water into a water course or lake, wash your car on the lawn, or better yet, take it to a commercial car wash or spray booth where the dirty water goes to the treatment plant.

Topic	Best 4	Good 3	Fair 2	Poor 1	Your Rating
POTENTIAL POLLUTANTS *continued*					
8. Pet wastes	Pet wastes are flushed down the toilet, **OR** contact local municipality to determine most appropriate means of disposal.		Pet wastes are left to decompose on grass or soil. Wastes are scattered over a wide area.	Pet wastes are left on paved surfaces, concentrated in pen or yard areas, or dumped down a storm drain or in a ditch.	
DRAINAGE					
9. Downspouts, gutters and drains	Roof gutters, downspouts and basement drains installed and cleaned regularly, **AND** downspouts drain onto gravel or grassed surfaces to a safe and adequate drain.	Downspouts are not directed at or into nearby gullies.	Downspouts direct drainage onto impervious surfaces. **OR** downspouts are not directed at or into nearby gullies.	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.***	
10. Surface water drainage	All surfaces are sloped away from the house at a minimum of 2%.	Any paved surface is sloped away from the house at a minimum of 2%.		Paved or compacted surfaces do not slope away from the house by a minimum 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 provincial legislation or municipal by-laws.*

Resource List

Water Runoff Management

For more information….

General Shoreline Information

• Living by Water website: *www.livingbywater.ca*

• Muskoka Watershed Council:
(705) 645-7393
www.muskokaheritage.org/watershed/watershedindicators.asp#Stormwater Management

Flood Protection

• Municipal Office – *see Blue Pages*

• Ministry of Natural Resources (MNR) – *see Blue Pages* for local
1-800-667-1940

• Fisheries and Oceans Canada (DFO)
1-800-667-3355

Locating High Water Mark

• Municipal Office – *see Blue Pages*

• Registered Land Surveyor – *see Yellow Pages*

Shoreline Restoration

• Centre for Sustainable Watersheds: www.watersheds.ca

Soil Bioengineering

• Ontario Ministry of the Environment
www.on.ec.gc.ca/doc/cut_factsheets/soil-bioeng-e.html

• Ontario's Stream Rehabilitation Manual. 2002. M. Heaton, R. Grillmayer, J. Imhof. Belfountain, Ontario.
www.ontariostreams.on.ca/online.htm

Worksheet #4 b & c – Your Drinking Water

Why should you be concerned?

- Even though water in the Great Lakes appears highly abundant, reducing our water consumption and eliminating contamination are important. Residential sources of contamination may include coliform bacteria from an ineffective septic system or run-off from chemicals applied to a lawn.

- Wells which pump water from aquifers below the ground can provide a clean and safe supply of water; however, 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.

- Contaminating your water source can harm you, your family or nearby families.

- It is much easier and cheaper to prevent contamination than to try and clean it up. Treating contaminated water, constructing a new well or getting water from another source is inconvenient and expensive.

- When water is at risk of contamination, it threatens not only your health, but the ecosystem's health as well. Whether you use a private well, surface water or a municipal system, everyone plays a role in source water protection.

What you can do.

1. Manage both your water source and water run-off carefully. This will help reduce pollution, improve your family's health, and help to ensure that we all have good clean water available.

2. Make sure the water you drink and the groundwater that supplies your well are protected from contamination. Test your water regularly in spring and fall, and after all periods of heavy rainfall.

3. Know the location of your septic system and those of your neighbours.

4. Understand the proper operation and maintenance of your septic system to ensure that your septic system is working effectively. See notes in section 4 Your Wastewater and Septic for more information. Encourage your neighbours to do the same.

5. Question the wisdom of using chemical fertilizers on your property. Handle fertilizers and other potential contaminants carefully.

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

4b Private Water from Surface Water

Topic	Best 4	Good 3	Fair 2	Poor 1	Your Rating
LOCATION OF WATER PICK-UP					
1. Position of water pickup in relation to shore and bottom.	Pick up is in water at least three metres deep, 0.5 metres off bottom and away from boat traffic areas and shore.			Pick up is in ankle deep water near shore, on bottom and close to shore and boat traffic areas.	
2. Distance of water pickup from potential source of contamination.	Greater than 90 m (300 ft)	45 – 90 m (150 – 300 ft)	30 – 40 m (100-150 ft)	Less than 30 m (100 ft)	
3. Water testing	Your drinking water is tested for bacteria more than three times a year (including once in the spring) and more than once a year for other impurities **AND** bacteria and other tests (health related) always meet Ontario Drinking Water Standards.	Water tested three times a year for bacteria and once a year for other impurities **AND** bacteria, and other tests (as needed) usually meet Ontario Drinking Water Standards on the first test and always on the second test (the follow-up check) if first test fails.	Water tested less than three times a year for bacteria and not tested for other impurities.	Water is not tested, **OR** does not meet Ontario Drinking Water Standards on first test or on second test (follow-up check).	

#4c 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 metres (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 metres (20 ft) of watertight casing below ground level. If less than 6 m (20 ft), treat well as a bored/dug well.					
CONDITION OF WELL					
3. Condition of Casing	Good condition. No defects visible, **AND** checked annually by certified inspector.	No defects visible, **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 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 repair.	Screened vent in good repair.	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 surface 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 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.	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 three times a year (including once in the spring) and once a year for other impurities. **AND** bacteria and other tests (health related) always meet Ontario Drinking Water Standards.	Water tested three times a year for bacteria and once a year for other for other impurities. **AND** bacteria and other tests (as needed) usually meet Ontario Drinking Water Standards on the first test and always on the second test (the follow-up check) if first test fails.	Water tested less than three times a year for bacteria and not tested for other for other impurities.	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. Ask your neighbours what their tests reveal.

Tip

Your local Health Unit provides you with sample bottles and conducts free testing for bacteria. Simply drop off bottles at the closest Health Unit for testing.

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

Resource List

Private Well Water Supply

For more information….

Ontario Ministry of Health and Long-Term Care

MOHLTC INFOline
Toll-free: 1-800-268-1154
www.health.gov.on.ca

North Bay Parry Sound Health Unit
70 Joseph Street
Parry Sound P2A 2G5
705-746-5801
www.healthunit.biz
Free water testing available.
Contact the local Health Unit for these Information Sheets:

- Get Acquainted with Your Well
- Keeping You Well Informed
- Pathogens and Your Well Water
- Putting Your Well Water to the Test
- Choosing a Water Treatment System
- Disinfection Instruction Sheet
- Keeping Your Well Water Safe to Drink (Poster)

Private Testing

Well Wise Centre
Rural Well Owner Test Package: $50
Tests for a wide range of contaminants
www.wellwise.ca

Ontario Ministry of Environment

Public Information Centre135 St. Clair Ave. West, Toronto, ON M4V 1P5
Toll-free: 1-800-565-4923
www.ene.gov.on.ca

Factsheets:
- Green Facts: Important Facts About Water Well Construction
  PIBS no. 3788e01, 2003
- Green Tips: 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. 396e01, 2003
- The Protection of Water Quality in Jetted or Driven Point Wells
  PIBS no. 4505e, 2003

Videotapes:
- Well Aware - A Well Owner's Guide

Publications:
- Information on the Use of Home Water Treatment Devices
- 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

Action Plan Worksheet #4 –Your Drinking Water

Any ratings of 1 or 2 indicate where your property management needs to be changed to reduce the potential for environmental damage and water contamination. Use the information from the worksheet and the resource 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.

Topic Number	Workshop Theme	My Rating	Short-term Action	Long-term Action
4c-3	*Private Well-Condition of Casing*	*2*	*Arrange for a certified inspector to examine well casing.*	*Schedule regular (annual or bi-annual) inspections.*