

Greater Sudbury Watershed Alliance

The Greater Sudbury Watershed Alliance (GSWA) is a grassroots partnership of lake, river and creek stewardship committees and other concerned citizens.



References

Study showing phosphorus causes Blue-Green Algae Blooms in Northern Ontario

http://issuu.com/sudburyinfo/docs/science_article_phosphates1974?mode=a_p

Manitoba wages war on phosphorus with fertilizer bans around rivers and lakes

http://www.gov.mb.ca/seeinggreen/what_can_you_do/how_to_grow.html

In 2002, **Minnesota** became the first state in the America to regulate phosphorus fertilizer use on lawns and turf

<http://www.mda.state.mn.us/protecting/waterprotection/phoslaw.aspx>

Wisconsin has a turf fertilizer ban http://www.datcp.state.wi.us/arm/agriculture/pest-fert/turf_fertilizer/index.jsp

Maine restricts use of fertilizer with phosphorus with new law <http://www.maine.gov/dep/blwq/doclake/fert/phospage.htm>

Florida has several county ordinances that prohibit the use of phosphorus in fertilizers

<http://www.tampabay.com/news/politics/local/pinellas-commission-passes-fertilizer-ban-6-1/1066731>

Michigan's turf phosphorus law <http://www.legislature.mi.gov/documents/2009-2010/billanalysis/House/pdf/2009-HLA-5368-1.pdf>

New York State has written a law restricting phosphorus in fertilizers to take effect 2012 <http://www.lakescientist.com/2010/new-york-bans-phosphorus-in-dish-detergents-fertilizers>

Effects of Lawn Fertilizer on Nutrient Concentrations in Runoff from Lakeshore Lawns <http://wi.water.usgs.gov/pubs/wrir-02-4130/wrir-02-4130.pdf>

Water Quality Improves After Lawn Fertilizer Ban, Study Shows Phosphorus levels in the Huron River dropped an average of 28 percent after Ann Arbor, Michigan adopted an ordinance in 2006 that curtailed the use of phosphorus on lawns

<http://www.sciencedaily.com/releases/2009/08/090817190741.htm>

The Canadian Federal government bans phosphorus in dishwasher detergents July 1, 2010 <http://watercanada.net/2010/feds-ban-dish-detergents-containing-phosphorus/>

Blue-Green algae clogs water treatment plant Aug. 2010 in Gagetown, New Brunswick reducing water quantity to army base <http://www.thestar.com/news/canada/article/850747--military-engineers-suspect-summer-algae-clogging-cfb-gagetown-water-treatment-plant>

Our Members

St. Charles Lake Watershed Stewardship Association	Ward 1 and 9
Fairbank Lake Camp Owners' Association Inc.	Ward 2
Vermillion River Stewardship Committee	Ward 2
Simon Lake Community Stewardship Group	Ward 2
Long Lake Stewardship Committee	Ward 2 and 9
Whitewater Lake Stewardship Committee/Azilda CAN	Ward 3 and 4
Valley East Ratepayer's Association	Ward 6
Junction Creek Stewardship Committee	Ward 2, 8, 10, 12
Black Lake Stewardship Committee	Ward 9
Richard Lake Stewardship Committee	Ward 9
Friends of McFarlane Lake	Ward 9
Nepahwin Lake Stewardship Committee	Ward 10
Ramsey Lake Stewardship Committee	Ward 10
Minnow Lake Restoration Group/CAN	Ward 11
Sudbury Game & Fish Protective Association	
Coalition for a Liveable Sudbury	

No committees from Ward 5 (Whitson Lake) and Ward 7 (Lake Wanapitae)

Phosphate-free Fertilizer

- ◆ The Alliance is requesting a municipal bylaw to restrict the use of lawn fertilizers that contain phosphorus
- ◆ Routinely residents could purchase fertilizers containing no phosphorus. Products like 32-0-10 fertilizers.



City of Lakes

Blue-green algae (cyanobacteria) blooms have been detected in:

Ramsey Lake

Long Lake

McFarlane Lake

Grant Lake

Windy Lake

Drinking water sources for tens of thousands of Sudbury residents.



Ramsey Lake in bloom, 2010

WARNING

Blue-Green Algae



A blue-green algae bloom has been observed in this area.

During an algae bloom:

- Do not swim.
- Do not drink water directly from the lake (this includes pets).

If illness develops, consult your health care provider.



Saskatchewan
Health Unit
Service de
santé publique

For more information, call
(705) 522-9200 or
1-866-522-9200, or visit
www.sdhu.com.



Water from Ramsey Lake,
September 2010

Cost to the City

- Beaches close indefinitely
- Cannot swim or boat
- Cannot eat the fish
- Families lose a recreational area
- Tourism is compromised
- Image of city is tarnished
- Property values can decline around area lakes affected
- Cannot drink the water if on a private water system. Lakes have permanent health warning issued on them.
- Cost of extra monitoring and cleaning of water filtration filters
- Cost to supply an alternative water source
- Cannot shower, wash dishes, cook with affected water source

Drinking water treatment plants can get clogged by algae.

- ◆ Canadian Forces Base Gagetown engineers noticed a reduction in the quantity of water being produced at the New Brunswick base's water treatment plant.
- ◆ They believed blue-green algae in the Saint John River was obstructing sand filters at the treatment facility.
- ◆ August 20, 2010

Phosphorus is the Limiting Nutrient for Algae Growth

Research has shown 1 pound of phosphorus can grow 700 pounds of blue-green algae.



Other Effects of Phosphorus

- ◆ **Green algae** - foul odors and can prevent swimming, fishing, boating,
- exists in Simon, McCharles and Mud lakes.
- ◆ Feeds aquatic plants like the invasive species **Eurasian water milfoil**
- boating and swimming difficult in many Sudbury lakes.
- ◆ **Lowers dissolved oxygen** levels in water which kills fish.



Costly to remove P at the WWTP

- ◆ WWTPs must remove a certain amount of phosphorus from their liquid waste before releasing it into a lake or river.
- ◆ Removing phosphorus at a WWTP costs approximately \$1-\$20 per pound.
- ◆ By reducing levels of phosphorus entering WWTPs, communities can save money for its removal.

Governments have banned phosphorus

- ◆ From laundry detergent in the 1970s
- ◆ From dishwasher detergent in 2010



Another source of phosphorus - runoff from lawns



Effects of Lawn Fertilizer on Nutrient Concentration in Runoff from Lakeshore Lawns, Lauderdale Lakes, Wisconsin

Introduction

Transport of nutrients (primarily forms of nitrogen and phosphorus) to lakes and resulting accelerated eutrophication are serious concerns for planners and managers of lakes in urban and developing suburban areas of the country. Runoff from urban land surfaces such as streets, lawns, and rooftops has been noted to contain high concentrations of nutrients; lawns and streets were the largest sources of phosphorus in residential areas (Wasschbach, Selbig and Ranserman, 1999). The cumulative contribution from many lawns to the amount of nutrients in lakes is not well understood and potentially could be a large part of the total nutrient contribution.

Why study runoff from lawns?

The shorelines of many lakes are already highly developed, and the potential water-quality effects of this development are increasing. Many lawn-care professionals and homeowners hold a common belief that runoff from lawn surfaces is minimal and that phosphorus movement from lawns is not a problem (Barth, 1995). The homeowners' goal to maintain lush green lawns may conflict with the lake manager's goal to minimize nutrient inputs. In cooperation with the Lauderdale Lakes Lake Management District and the Wisconsin Department of Natural Resources, the U.S. Geological Survey (USGS) conducted a study during 1999-2000 to determine the magnitude of nutrient runoff from nearshore residential lawns surrounding a lake and to determine whether fertilizer application and the type of fertilizer (regular or nonphosphorus types) affect the amount of nutrients in runoff from lawns. Such information is important for developing stormwater best-management practices and for developing or improving shoreland zoning ordinances and other local regulations to protect or improve the water quality of lakes (Wisconsin Department of Natural Resources, Wisconsin Shoreland Management Program, <http://www.dnr.state.wi.us/org/water/wms/districts/lakes/titles.htm>, accessed February 8, 2002).

The study area was located at Lauderdale Lakes in Walworth County, a chain of lakes in the more populated southeastern part of Wisconsin (Fig. 1). The 15-mile shoreline of the lakes is about 70 percent developed, primarily as single-family housing, and is the focus for additional residential development. Most of the lakefront homes have sloping lawns that are maintained to the water's edge (Fig. 2). Information about the specific sources and amounts of phosphorus entering the lakes was needed to develop a plan for reducing the input of phosphorus. The lakes are phosphorus limited, meaning that phosphorus is the nutrient limiting plant growth and affecting lake productivity. A previous study (Oarn and others, 1996) found that surface-water inflow from the small nearshore contributing drainage area accounted for only 4 percent of the water inflow to the lake but represented 51 percent of the total annual phosphorus input from all sources. The Lake Management District is in the process of installing



Figure 1. Site locations surrounding Lauderdale Lakes, Wis.



Figure 2. Lakeshore development and lawns at Lauderdale Lakes, Wis.

Study of three types of lawns.
Median dissolved phosphorus concentrations in runoff:

Regular fertilizer 0.77 mg/L

Unfertilized 0.38 mg/L

Non-phosphorus 0.33mg/L fertilizer

Extra 420 micrograms/L is washed away when using phosphorus fertilizers.

Phosphorus removed from lawn fertilizers

- ◆ Hundreds of cities enacted fertilizer bans in the U.S. starting in 1999
- ◆ Minnesota was the first state to ban phosphorus in fertilizers in 2004



States and Provinces with Bylaws Restricting Phosphorus



Minnesota, Maine, New York State, Florida, Illinois, Maryland, Wisconsin, Washington State and New Jersey all have bylaws, which ban the use of lawn fertilizers with phosphorus. These laws affect over 60 million people.

Manitoba Has a Bylaw Too

In Manitoba, no fertilizers are permitted along waterways such as rivers, lakes, streams, wetlands and retention ponds.

In these areas, defined setbacks must be observed:

- ◆ at least 15-30 metres along vulnerable lakes and rivers
- ◆ in urban areas like Winnipeg, only phosphate-free fertilizers can be used

The Water Stewardship Minister in Manitoba Christine Melnick says the new restrictions are backed up by penalties as high as \$50,000 — but she would rather educate offenders than punish them.



Lake Winnipeg

The Bylaws are Working to Reduce Phosphorus Levels in Waterways

- ◆ A study showed that phosphorus levels in the Huron River dropped an average 28% after Ann Arbor, Michigan adopted a fertilizer bylaw in 2006.

Bylaw Plus Education Or Education Alone

- ◆ Studies show education achieves only 30% compliance.



Bylaw Plus Education Or Education Alone

- ◆ Studies show education achieves only 30% compliance.
- ◆ Education must be repeated every spring. Staff at hardware, big box, grocery stores and nurseries are constantly changing.



Bylaw Plus Education Or Education Alone

- ◆ Studies show education achieves only 30% compliance.
- ◆ Education must be repeated every spring. Staff at hardware, big box, grocery stores and nurseries are constantly changing.
- ◆ Many residents of Sudbury think this is just an issue for shoreline residents that they don't need to know about.



Bylaw Plus Education Or Education Alone

- ◆ Studies show education achieves only 30% compliance.
- ◆ Education must be repeated every spring. Staff at hardware, big box, grocery stores and nurseries are constantly changing.
- ◆ Many residents of Sudbury think this is just an issue for shoreline residents that they don't need to know about.
- ◆ After 2 years, Minnesota's law reduced phosphorus fertilizer use by 82% and 97% of consumers support the law.



Are these laws enforceable?

- **Bylaw's real value is in raising people's awareness about phosphorus** and making phosphorus-free lawn fertilizer more widely available. Stores are already selling the right fertilizer.
- In that regard, the law has been successful in the U.S. People are more aware of the connection between phosphorus runoff and green lakes.
- In the few instances where a bylaw officer was called, a brochure was given to the home owner and they were told to stop using the fertilizer with phosphorus. No fines have been issued. No new bylaw officers are needed.

Bylaw

1. The **use** of lawn fertilizers with phosphorus would be prohibited.
2. Could get phosphorus fertilizer if:
 - a soil test demonstrates phosphorus is needed
 - laying sod
 - seeding a new lawn
3. A bylaw would not affect vegetable gardens, flower beds, tree planting, nurseries, sod growers nor golf courses with trained staff.

No problem for businesses in States and Manitoba

Canadian Tire – Winnipeg, Manitoba

WeedMan – Winnipeg, Manitoba

WeedMan – Ann Arbor, Michigan

Home Hardware – Selkirk, Manitoba

Home Depot and – Minneapolis, Minnesota

Ace Hardware Stores – Minneapolis, Minnesota

Lyell Crest True Value Hardware – Rochester, New York

Sudbury Businesses Not Opposed to a Bylaw

Weed Man

Home Depot

Southview Greenhouse Growers

Planet Earth Organic Landscaping

Turf Logic

Long Lake Lawn Care

The Sudbury Horticultural Society

North Range Sod

Endorsement of Bylaw

- ◆ Dr. John Gunn
Head, Cooperative Freshwater Ecology Unit
Canada Research Chair
Department of Biology
Laurentian University
- ◆ Dr. Charles Ramcharan
Aquatic Biologist
Department of Biology
Laurentian University

Protecting all lakes in the City of Lakes

The Source Protection Committee is working on protecting **municipal** drinking water sources from significant drinking water threats.

The City can help protect all our lakes with a bylaw.



Wait for provincial or federal government to solve our problem?

- ◆ Province of Ontario and the Federal governments are currently not working on any legislation to restrict lawn fertilizers with phosphorus so it is up to Council.

Can a municipality pass such a bylaw?

- ◆ **Canada's Supreme Court: Precautionary Principle**

The number of pesticide bans in Canadian municipalities has grown since 2001 when the Supreme Court of Canada dismissed a challenge by two large lawn care companies, Chemlawn and Spraytech, against the Town of Hudson, Quebec. In a unanimous judgment, Justice Claire L'Heureux-Dube wrote for the court, "It is reasonable to conclude that the town bylaw's purpose is to minimize the use of pesticides in order to promote the health of its inhabitants. Permitting the town to regulate pesticide use is consistent with international law's 'precautionary principle,' which states it is better to be overly cautious than to create a potential risk to the environment." The judges noted that many provinces have similar provisions enabling their municipalities to make such bylaws.

City of Lakes

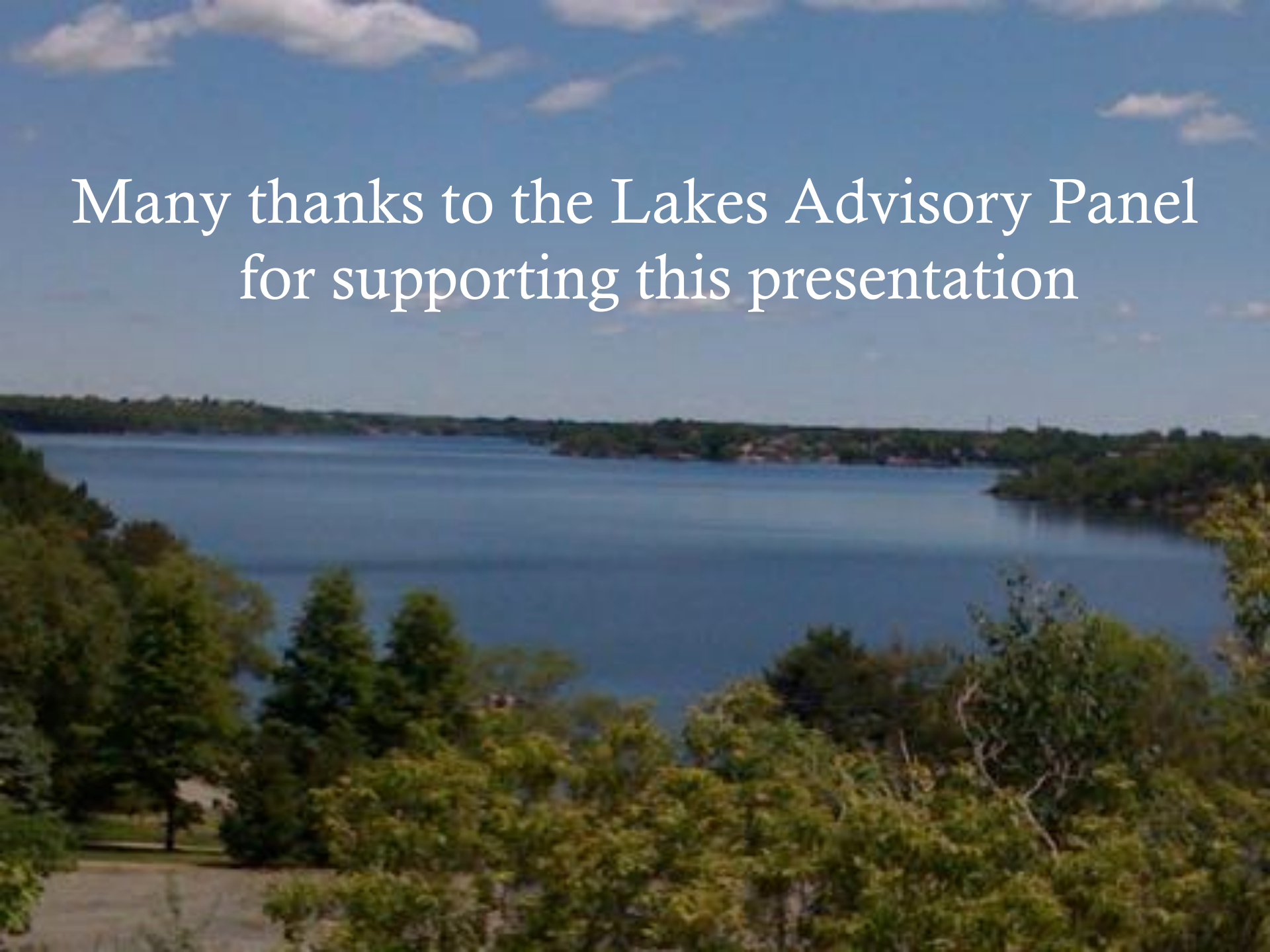
We are the stewards of these lakes and rivers and we are entrusted to protect them for our children and their children.

We should use the precautionary principle to reduce the risk to our environment and our health.



Joshua and Noah on Moonlight Beach

Many thanks to the Lakes Advisory Panel
for supporting this presentation





Questions?

10 Tips from Lawn Experts

1. Fertilize in Late August or September.

Use only nitrogen and only after a soil test demonstrates the need and only on new or young lawns (less than 10 years old)

2. Mow High

3" or more for vigorous roots and to shade out weeds

3. Leave Clippings

They are high-quality, free fertilizer

4. Plant Appropriate (Endophyte-enhanced)

Grass Species

They require less water, fertilizer, and pesticides, and compete better with weeds

5. Get Your Soil Tested

The only way to know just what the lawn needs is to do a soil test

6. Keep Turf Cover Dense

Higher density means fewer weeds - overseed, overseed, overseed

7. Core Aerate, Topdress or Mulch Leaves

Reduces thatch, improves soil structure and releases nutrients into the soil

8. Water Deep and Infrequently

Only if absolutely necessary, deeply soak the lawn once or twice a week with a total of 1" of water

9. Keep Fertilizer and Clippings Off Sidewalks and Driveways

Prevents runoff of nutrients into our waterways

10. Keep Mower Blades Sharp

A clean cut prevents disease

Top Northeast Experts by Paul Schlein

Adequate Phosphorus in Soil

- ◆ A survey (1979) summarizing nearly 20,000 soil samples showed that 70 – 80% of home lawns in the cities of Minneapolis and Saint Paul have soil P levels in the high to very high range.
- ◆ Average phosphorus was 44 parts per million. Compare to University of Minnesota recommendation of no additional P needed above 25 ppm
- ◆ What happens if you add more phosphorus than your lawn needs?

- ◆ Oakville council enacted a bylaw that banned the use of cosmetic pesticides in Oakville. The bylaw took effect January 1, 2008 before the province passed a similar bylaw.
- ◆ Source-area monitoring in Marquette, Michigan, found that nitrogen and phosphorus concentrations in residential lawn runoff were 5 to 10 times higher than from any other source-area (CWP, 1999). This report confirms earlier Wisconsin research findings that residential lawns yielded the highest phosphorus concentrations of 12 urban pollutant sources examined (Bannerman et al, 1993).

Val-des-Monts

A new bylaw prohibiting pesticides and fertilizers

By Patrick Fredette

The municipality of Val-des-Monts has modified its bylaw on pesticides and fertilizers at its municipal Council meeting of September 18th. It prohibits all uses of those products anywhere within the boundaries of the municipality.

The last bylaw was too complex and not well adapted to the reality of the municipality. Thus, the municipality has decided to do a review to simplify and adjust it to our region.

In brief, it forbids every usage of pesticides and/or fertilizers. There are two exceptions: home-made compost and the use to control and kill insects when there is

an infestation of a property, as long as this infestation has been confirmed by a competent specialist or a professional.

It is not allowed to use pesticides or fertilizers in a limit of 15 meters from a well, lake or a stream.

Any person found guilty of violating this bylaw can receive a fine of up to 2000\$ the for the first offence and up to 5000\$ for a repetition of the offence.

You can download a French version of the bylaw on the municipality's website in the section Actualités at www.val-des-monts.net.



September 2008

Anything that enters a storm drain goes directly to a local lake or river.

It does not go to a waste water treatment facility.

Do you know you live on waterfront property? You do if there is a storm drain nearby! Storm drains carry runoff water directly to lakes and rivers. Whatever washes off your yard and street runs directly into these waters. That includes lawn fertilizer, grass clippings, pet waste, and tree leaves and seeds—all sources of phosphorus, the plant nutrient that turns lakes and rivers green with algae.

Keep your runoff clean!
Keep our lakes and rivers clean!

REMOVE LEAVES FROM THE STREET

- Rake leaves, seeds and grass clippings out of the street and gutter.
- Compost on site, bag for collection, or take to community compost program.



PREVENT EROSION

- Phosphorus attaches to soil. Keep soil from washing into the street.

FERTILIZE THE LAWN, NOT THE LAKES AND RIVERS

- Choose a zero phosphorus fertilizer. The majority of Twin Cities' lawns are naturally high in phosphorus and will remain healthy without adding more.
- If you think your lawn needs phosphorus, test your soil first. For information call INFO-U at 612-624-2300, message 468 or visit www.extension.umn.edu.
- Sweep spilled fertilizer off paved surfaces.
- Remember, compost and manure contain phosphorus too.



FERTILIZER → LAWN AND PAVEMENT



KEEP THE PAVEMENT CLEAN

Sweep up
grass clippings
and fertilizer
from driveways,
sidewalks,
and streets.



CLEAN UP AFTER PETS

- Scoop the poop. Pet waste contains phosphorus as well as harmful bacteria.
- Don't feed the geese.



ANIMAL WASTE AND UP IN THE STORM SEWER
GRASS CLIPPINGS END UP IN THE STORM SEWER



STORM SEWER → LAKES AND RIVERS



Go Phosphorus Free!



Maine waters are suffering as a result of too much phosphorus being washed in by melting snow and rain. One source of phosphorus is lawn fertilizer. So a new law effective January 1, 2008 discourages the use of lawn fertilizers containing phosphorus.

Do I need phosphorus?

Why care about phosphorus?

Phosphorus is food for algae (microscopic plants). Too much algae turns lakes green with a smelly scum and kills the cold water fish (trout, salmon, etc.). Once there is too much phosphorus in a lake it is difficult and very expensive to remove it.

How much fertilizer should I apply?

If you must fertilize - avoid over fertilizing!

Measure your lawn area to determine the square footage. Then calibrate your spreader to apply one-half the recommended amount of fertilizer based on the bag's label. Watch for lawn response. Reapply at the reduced rate when your lawn's response is not acceptable. **More is not better.** Don't apply before spring green-up. The best time is September.

To have a good looking lawn, do I even need to fertilize my lawn?

No, if you leave your grass clippings (the natural fertilizer) and your lawn is 10 or more years old there are enough nutrients in the soil to grow a healthy lawn. (And clippings don't lead to thatch.) Younger lawns may need nitrogen; look for bags with 10-0-0 on the label.

How do I find phosphorus-free fertilizers in the store?

The amount of phosphorus can be located by looking for the 3 numbers on the package. The numbers indicate the percent of nitrogen, phosphorus and potash. Look for packages where the middle number is zero for phosphorus-free.

How can I get a soils test done?

Get your soil test kit at stores that sell fertilizer, University of Maine Cooperative Extension Offices, Soil & Water Conservation Districts, by calling 581-3591, or on the web at