

## Water Quality Restoration Program

### In This Issue:

• **Special Feature:**

*“Protecting Water Quality on Your Farm and in Your Watershed.”*

• **Local Articles**

*Beneath the Surface: Part II- Productivity*

*Storm Water: Where does it go?*

• **Updates on:**

*Lac La Biche Watershed Steering Committee*

*Winner of the drawing contest*



### Lac La Biche Watershed Steering Committee Update

Spring 2005 is shaping up to be a very busy season. The warm weather at the end of February and beginning of March prompted an early runoff, and with more snow on the way we aren't finished yet. The Lac La Biche Watershed Steering Committee is finalizing the 5 year strategic watershed plan, which includes the purchase of Hydrolab, which will enable water quality assessments of various lakes. Lakeland County Council has recently approved a full time Environmental Coordinator position to address ongoing environmental programs and services.

Upcoming events include a workshop hosted by the. On Thursday, April 28<sup>th</sup>, 2005, the Lac La Biche Watershed Steering Committee hosts *‘Smart Development, Healthy Communities: The low impact development advantage.’* This workshop is designed to provide information about the benefits of low impact development to cottage owners, residents, potential buyers, real estate agents and developers in the Lac la Biche and surrounding areas. Featured guest speakers, include Dr. Tom Holz and Dr. Hans Schreier, world-renowned experts in the field of smart development.

***‘Smart Development, Healthy Communities: The low impact development advantage.’***  
When: Thursday, April 28<sup>th</sup>, 2005 from 8:30am to 4:00pm  
Cost: \$30 for area residents/\$60 for out-of-town guests  
For more information or to register: Call Megan Rawles at 623-1747

The Lac La Biche Watershed Management Plan Community Survey Reports now available; pick up your copy at the Lakeland County office.

Congratulations to our drawing contest winners; Kurtlan and Nolan Ulliac, who both won a T-shirt with their drawing on it.



Lakeland County's Special Constable, was also kept busy in mid-February with several incidents of private residents dumping raw sewage in the Sunset Bay and Bayview Beach Subdivisions. Lakeland County Council passed a motion on March 22, 2005, to carry out an Environmental Stewardship Cleanup of two locations prior to spring thaw. Without this clean up, the effluent would be released directly into Lac la Biche. To report any suspicious activities of this nature, contact Lynne Bollinger at Aspen Regional Health Authority 623-4471 or Cst. Mike Young at Lakeland County 623-1747.



### Quotables.....

*We never know  
the worth of  
water till the  
well is dry.*  
-Thomas Fueller

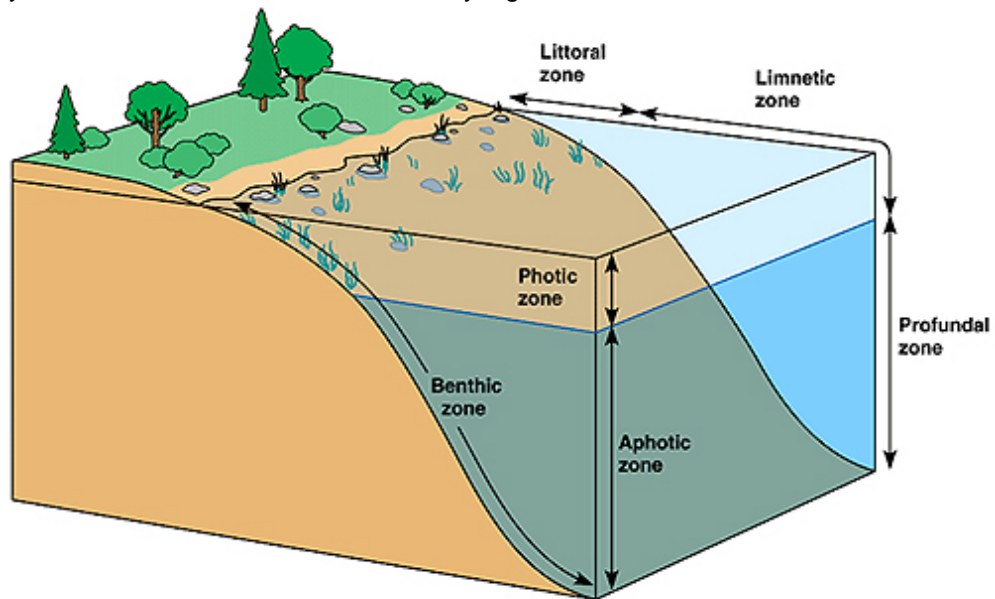
*In every glass of  
water we drink,  
some of the  
water has  
already passed  
through fishes,  
trees, bacteria,  
worms in the  
soil, and many  
other organisms,  
including  
people... Living  
systems cleanse  
water and make  
it fit, among  
other things, for  
human  
consumption.*  
-Elliot A. Norse

*We forget that  
the water cycle  
and the life cycle  
are one.*  
- Jacques  
Cousteau



Let's continue our journey through the watery depths of Beneath the Surface. Like temperature, productivity in a lake can also be defined in zones. Productivity is defined as: *the capacity to support the growth of aquatic plants and animals.*

There are 3 distinct zones in a lake, each having its own characteristics. The first division is the **Littoral Zone**, which is also known as the zone of productivity or the zone close to the shore. It is characterized by rooted plant producers and consumers such as crustaceans, flatworms, insect larvae, snails, frogs and fish. This is also where 100% of the light penetrates to the bottom (photic zone), letting plants grow and perform photosynthesis. Open water and down to where light penetrates to less than 5% is the **Limnetic Zone**. This zone contains free swimming phytoplankton (tiny plants such as algae) as primary producers and zooplankton (microscopic animals such as crustaceans) as primary consumers. Fish and insects account for the secondary consumers. The **Profundal Zone** falls in the area of a lake beneath the limnetic zone where no light penetrates (aphotic zone). Because there is no light penetration, and therefore no photosynthesis, there is no or very little oxygen. This zone is inhabited by a community of primary consumers and decomposers that are attached to or crawl along the sediments. These bottom dwelling creatures are known as **benthos**. The decomposers break down the organic sediments and release them as inorganic nutrients to be consumed by other organisms in the lake. Boundaries between these zones vary daily and seasonally with changing solar intensity and transparency of the water, which can be affected by algal blooms, sediments or surface waves.



Copyright © Pearson Education, Inc., publishing as Benjamin Cummings.

Productivity is determined by measuring algal growth in the lake. Based on these measurements, lakes can be categorized. A **Eutrophic Lake** is high in nutrients and therefore highly productive. These lakes are often geologically old and therefore more time to accumulate nutrients or at the end of a watershed where nutrients have accumulated in the basin. An **Oligotrophic Lake** is the opposite of a eutrophic lake, low in nutrients. These lakes are often deep and cold, which reduces productivity and growth. There are also more likely to be higher in the watershed. The third category is a **Mesotrophic Lake** which is moderately productive and between the two extremes above.

Productivity is only one feature of the workings beneath the surface of a lake. Stay afloat for Part III of "Beneath the Surface"- Nutrients.



### Contest!!!

*We invite your children to submit a joke to our contest,, for use in future issues of this newsletter.*

*It can be about: water, animals or nature in general.*

- *One joke per child.*
- *Send your joke with your name, age and phone number, by June 1<sup>st</sup>, 2005*

*Megan Rawles  
Lakeland  
County  
Box 1679 Lac  
La Biche, AB  
T0A 2C0*

*Winners will be chosen by draw and will receive a Mad About Science T-shirt!*

## Protecting Water Quality on Your Farm and in Your Watershed

By Francine Forrest, Water Quality Specialist; Alberta Agriculture, Food and Rural Development

Implementing beneficial management practices (BMP's) to protect water quality can make a difference in your watershed, especially for your personal water uses. At this time of year, increased runoff from snowmelt in agricultural areas can contaminate receiving water bodies with pathogens, plant nutrients such as nitrogen and phosphorus, and sediment which can threaten the health of humans and livestock. The following list describes some BMP options that can help maintain or improve healthy water quality conditions on your farm and in your watershed:

### **Water Wells**

- Should be properly maintained and the casing should be sealed with mounded clay to ensure surface water cannot enter along the well casing;
- Locate wells up-slope and away from sources of contamination (e.g. septic systems, manure storage areas and feedlots). Divert any runoff away from well.
- Properly plug abandoned and unused wells. Improperly plugged wells can act as a direct conduit for contaminants to reach groundwater.

### **Site Planning and Storage**

- Locate buildings and facilities away from low areas prone to flooding. Observe at least the 1:255 year flood level or 1m above the highest known flood level.
- Locate buildings and storage facilities for feed, manure and fertilizer a safe distance away from receiving bodies of water [see Agricultural Operation Practices Act (AOPA)] for minimum setback distances from wells, springs or water tables, etc.
- Collect and/or divert contaminated runoff to prevent it from entering common bodies of water. Divert run-on water away from manure storage areas.
- Construct storage facilities for manure considering long term supply needs and maintenance. Have a contingency plan for accidents or overflows.

### **Nutrient Management and Application**

- Develop a nutrient management plan. Apply manure or fertilizer according to soil test results, manure nutrient tables (see AOPA) and crop yield goals. This reduces excess nutrients in the soil and minimizes accumulation.
- Keep records of nutrient application on cropland.
- Reduce the amount of time between application of manure and the highest demand for nitrogen uptake by the crop (e.g. apply in spring while plants are active). Incorporate surface applied manure within 48 hours.
- Do not apply manure near streams or other water bodies and/or areas with high runoff potential. See AOPA for regulations regarding the spreading of manure and setbacks from water bodies. Avoid spreading manure on snow or frozen ground.

### **Reduce nutrient losses by wind and water erosion**

- Maintain healthy riparian areas ("green zones" or vegetated zones around lake and streams) or established grassed waterways around water bodies, especially in erosion prone areas to slow and filter water from the field.
- Keep your stubble standing and anchored where possible. This increases water infiltration and reduces nutrient losses and wind-blown sediments and runoff.

To help identify the environmental risks and strengths of your operation, complete an Environmental Farm Plan. Also, watch for upcoming federal/provincial incentives for help to incorporate BMP's into your operation.





## Stormwater: Where does it go?

By Megan Rawles, Lakeland County

*We want to hear from you!*

*If you have a water quality issue you would like more information on, or if you have any article ideas for upcoming issues of this newsletter, let us know!*

**Stormwater** is water from rain or melted snow that doesn't soak into the ground but flows from rooftops, over paved areas and bare soil, and through sloped lawns. As the stormwater flows over land, streets and into the storm sewer system, it collects fertilizers, pesticides, soil, salt, oil and grease, litter, pet waste and other potential pollutants.

What many people don't realize is the water collected in the storm sewer system doesn't go to a treatment plant but flows directly back into lakes and streams. This in turn can potentially have an impact on water quality.



Some simple things you can do to reduce your impact include:

- ✓ Select native and adapted plants that require less water, fertilizer and pesticides when landscaping.
- ✓ Apply lawn and garden chemicals sparingly and according to directions.
- ✓ Keep litter, pet wastes, leaves and debris out of street gutters.
- ✓ Dispose of used oil, antifreeze, paints and other household chemicals properly.
- ✓ Control soil erosion on your property by planting ground cover.
- ✓ Clean up any automotive spills.

## Farm WaterWatch Program

### What is the Farm WaterWatch Program?

- A confidential, fully funded, on-farm surface water testing program for producers to monitor water quality of streams passing through their lands.
- Active participation by producers in both sampling and analysis of surface water passing through their agricultural lands;
- Provides participants with resources to identify site specific solutions to reduce stream impact from runoff sources



### Who is organizing the Program?



- The Alberta Fish and Game Association ([www.afga.org](http://www.afga.org)) will provide funding, planning, and in-kind resources to assist producers with the program;
- The Healthy Lake Project Committee, in cooperation with Lakeland County and other community groups will be organizing producers wishing to participate as well as provide funding for testing equipment.

### When and where will the Program begin?

- We are currently looking for farm owners within Lakeland County who want to participate;
- The water monitoring is proposed to begin in the spring of 2005, depending on interest.

### If you have any comments or questions please contact:

**Megan Rawles**

(780) 623-1747

Environmental Technician

Lakeland County

**Barry Kolenosky**

(780) 623-1747

Manager of Public Services

Lakeland County

**Phil Lane**

(780) 623-3103

Chair

LLB Watershed Steering Committee

