

Whelp Creek Watershed News

Fall 2008

You're Invited!

Whelp Creek Watershed Group Meeting

November 13, 2008 at 6:30pm

Alberta Agriculture Building in Lacombe
5030 – 50 St. (corner of 51 Ave + 50 St)
Open to all residents in the watershed.
Refreshments will be served.

Join us for a discussion on local groundwater and surface water.

Speakers – Tony Cowan, Hydrogeologist –
Prairie Farm Rehabilitation Administration
and

Myron Hawryliw, Water Technologist –
Alberta Agriculture and Rural Development

For details contact Phil Boehme,
403-782-8035

This issue covers questions and topics discussed at past watershed meetings:

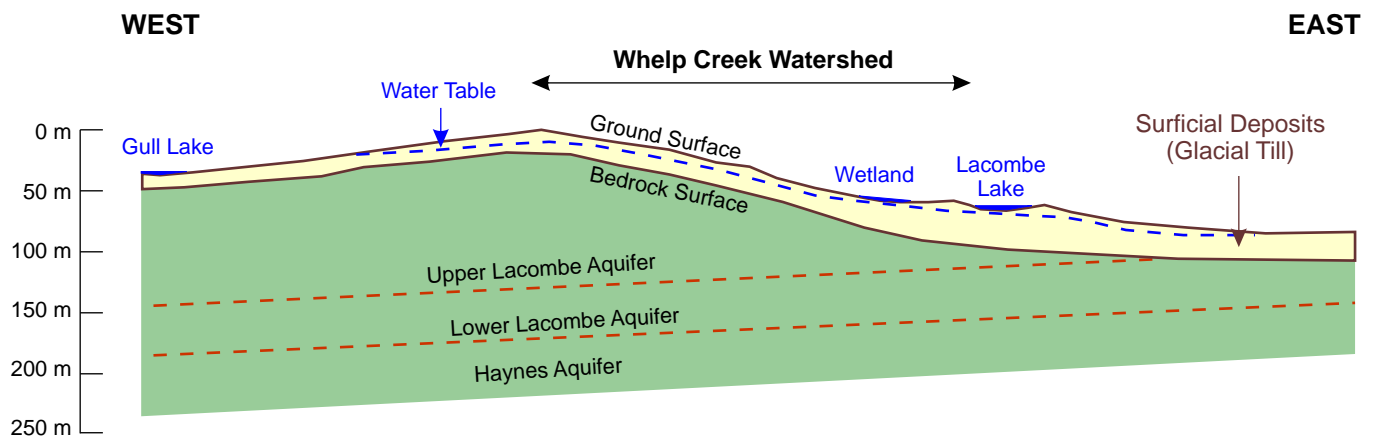
- Springs and rising groundwater
- Manure and fertilizer application
- Whelp Creek compared to other high intensity agriculture watersheds

Where did the water go?

There was not much runoff from snowmelt or rain this year, but some local residents still noticed the effects of the high precipitation of last year. One farmer noted this spring how the shallow groundwater on his land had come up several feet. Other farmers noticed groundwater springs still flowed more frequently than normal, especially when it rained this year.

The high rain fall levels in 2007 quickly filled all the small creeks, sloughs and wetlands in the area. So where did all the water go from last year? The answer is under your feet. Much of the surface water runoff from last year went into the shallow groundwater table. Groundwater occurs in the pore spaces of soil and rocks.

Whelp Creek Watershed Cross-section



Where is your water from?

Most water wells in Alberta are supplied by deep groundwater aquifers (layers of permeable rock, sand and gravel). It is important to understand how our activities can affect water supplies.

Understanding surface water and groundwater interactions is important for managing and protecting your water. The Whelp Creek watershed has a shallow groundwater table that ranges from 0 to 10 meters below the surface.

Where can you go for information on deep groundwater supplies? In 2001, a regional groundwater assessment was conducted for Lacombe County which gives some insights on local groundwater supplies and how local residents can work together to better understand and manage groundwater.

The recent boom in development and increases in extreme weather conditions are making people ask questions about local water supplies. Are my water wells safe from contamination? How can my surface and groundwater supplies be affected by local activities and development?

Wetlands – nature’s filter

The regional groundwater report focused on the deeper groundwater supplies and does not include much information about shallow groundwater or the influence of wetlands in the area. However, wetlands are a critical part of the local water cycle and play an important role in filtering surface water and replenishing groundwater.

Apart from the benefits they provide to wildlife habitat and tourism, wetlands:

- Help purify water by filtering and breaking down nutrients and chemicals
- Reduce flooding and erosion by retaining water and releasing it slowly
- Replenish groundwater by soaking up water and releasing it into the ground

“Groundwater is an enduring mystery...It has hidden itself below the soils of the Canadian plains and nurtured those fortunate enough to find and tap it.” Grant MacEwan



Local wetland at SW 4-40-27-W4M

Making \$ense of Manure to Cut Fertilizer Costs – By Trevor Wallace

High fuel and fertilizer prices are causing many producers to consider ways to reduce costs while maintaining productivity. By optimizing manure utilization, producers can go a long way towards making a dent in their fertilizer bill.

Manure vs. fertilizer

When comparing manure to fertilizer it is important to remember that the nutrients in manure are in different forms than those in fertilizer. Fertilizer nutrients are generally in plant-available, inorganic forms. In contrast, a significant proportion of nutrients in manure exist in organic forms, which only become available after conversion to available forms by soil microorganisms.

Nutrient availability

Only a portion of the nitrogen (N) in manure is available to plants in the first year of application (i.e., 25% to 30% of the total N in solid manure, 40% to 45% of the total N in liquid manure). The remainder of the N becomes available to plants in subsequent years after application. In contrast, much of the phosphorus (P), potassium (K), and sulphur (S) in manure become plant-available in the year of application.

Solid vs. liquid manure

Liquid manure has a greater proportion of N in plant-available form (i.e., ammonium, NH_4^+) than solid manure, meaning a greater amount of total N is available in the year of application. Solid manure has a higher percentage of organic matter, per unit weight, which will supply nutrients for a longer period of time than liquid manure, as the organic matter breaks down. In addition, the higher organic matter content (per unit weight) in solid manures has a greater benefit to soil quality, building soil organic matter reserves, than does liquid manure.



Reducing nutrient losses

Timing and method of manure application are keys to reducing N losses and capturing more of the economic benefits. Approximately 50 to 80% of the plant-available N, in the first year of application, is in the form of ammonium-N, which can be lost as ammonia-N gas (NH_3). Surface application of manure, without incorporation, has the highest risk of N loss through volatilization. Liquid manure contains a higher percentage of ammonium-N than solid manure and is more susceptible to N losses if manure is not incorporated immediately. Once in the soil, ammonium-N is quickly converted to nitrate-N (NO_3), which is also plant available but is not susceptible to volatilization losses. However, nitrate-N is susceptible to losses through leaching.

Nutrient management tips

- Determine manure nutrient content
- Get soil tests and crop fertility advice
- Incorporate manure immediately
- Account for manure nutrient carryover
- Keep records for decision making

Tools for nutrient management strategies:

- *Nutrient Management Planning Guide*, 2007, contains information on effective nutrient application and management
- *Manure and Compost Directory*, connects you with people selling or trading manure or compost online at www.agric.gov.ab.ca/app68/manure
- *Manure Management Planner* is a computer program designed to assist in planning manure distribution (free online at www.agric.gov.ab.ca)

Manure Application Pilot Project

A 4-year pilot initiative is being launched this fall aimed at increasing the amount of liquid dairy manure being injected or applied through surface-banding technology. This project is a collaborative effort between Alberta Agriculture and Rural Development, dairy producers, Alberta Milk and Reduced Tillage Linkages and the counties of Red Deer, Leduc and Wetaskiwin.

For more details contact:
Trevor Wallace, 403-340-5339

How does Whelp Creek Compare? By Sarah Depoe

When discussing water quality, the question often comes up, how does our watershed compare to other watersheds? To help answer this question the Alberta Agricultural Water Quality Index (AAWQI) was developed as a tool to assess water quality as influenced by agricultural activities.

The index is based on how often and the amount by which water quality objectives for nitrogen and phosphorus were not met. Objectives used in the

calculations are average (median) concentrations found in small agricultural streams.

Scores range from 0 (worst quality) to 100 (best quality), and are grouped into five descriptive categories:

Excellent	86-100
Good	71-85
Fair	56-70
Marginal	41-55
Poor	0-40

Index scores for nine high intensity agricultural watersheds sampled from 1999 to 2005 in relation to Whelp Creek (2008) and Indian Farm Creek (2007 to 2008).

Stream and municipality	1999	2000	2001	2002	2003	2004	2005
Buffalo Creek (Wainwright)	marginal	poor	poor	poor	poor	poor	poor
Haynes Creek (Lacombe)	poor	poor	poor	poor	poor	poor	poor
Ray Creek (Red Deer)	poor	poor	poor	poor	poor	poor	poor
Renwick Creek (Kneehill)	poor	poor	poor	poor	poor	poor	poor
Strawberry Creek (Leduc)	poor	poor	poor	poor	poor	poor	poor
Stretton Creek (Vermillion River)	poor	poor	no data	no data	no data	poor	poor
Threehills Creek (Red Deer)	poor	poor	poor	poor	poor	poor	poor
Wabash Creek (Westlock)	marginal	poor	poor	poor	poor	poor	poor

Nutrient BMP Evaluation Project	2007	2008
Indianfarm Creek (Pincher Creek)	poor	poor
Whelp Creek (Lacombe)	no data	poor

The “poor” nutrient index score for Whelp Creek suggests that like other intensively farmed watersheds in Alberta, nutrient management needs to be a priority to maintain water quality.

Where is your water headed?

What is the future of your water as it moves from one neighbour's land to the next? Farmers and residents across the province are working with watershed stewardship groups to care for their watersheds and to promote sustainable agricultural practices.

How is your water affected as it flows into the Whelp Creek, then into the Battle River and beyond? You can be a part of the solution to ensure the health and productivity of your land and water is maintained for future generations.

For more information contact Phil Boehme, 403-782-8035

Battle River Watershed Alliance

Annual General Meeting

Friday, November 28,

10 am to 3:00 pm

Killam Agri-Plex

(next to the Killam Legion on Highway 13)

Come learn what local groups and partners are doing to monitor and maintain the health of the Battle River watershed.

Contact: David Samm, (780) 781 2972

Email: battle.river@gmail.com