

Battle River Watershed

watershed the area of land that catches precipitation and drains into a larger body of water such as a marsh, stream, river or lake.
[syn: basin]

Vol 1, Issue 2, April 2005: Managing for River Health in the Battle River



Events

May 11th (Wed)
BRWAG Forum III: Municipalities, Public Health & Industry: water needs & impacts
9:30am-12:30pm
Golden Circle Club, Castor

May 3rd (Tues)
Tune into *The Voice of Water*, CKUA Radio
8:30 pm

CKUA (580AM) will be airing a three-part series entitled *The Voice of Water*, beginning Tues. The series will air three consecutive weeks and features issues on ownership, growing demand for fresh water and the pros and cons of Canada-U.S. agreements.



Did You Know...
Northern pike spawn in flooded areas of vegetation in early spring, often when ice is still on the Battle River. Voracious predators, pike eat insects, fish, frogs, mice, and even ducklings. Their only major predators are people.

HOW HEALTHY IS OUR RIVER?

(IT'S OK, BUT THERE'S ROOM FOR IMPROVEMENT)

Water flows

For a healthy river, high flows are needed to flush sediments and pollutants out of the riverbed.

Before this spring, the Battle hadn't experienced major, cleansing flows in many years. This is partly because of drought, and partly because during spring run-off people divert the river's flow to fill up their diversion ponds and dams.

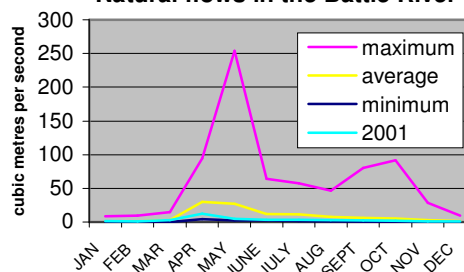
Without flushing flows, sediments smother spawning areas and contribute to excessive growth of algae.

Sediment build-up also causes the river channel to become wider and shallower, resulting in more water loss to evaporation.

Water Quality

Although water quality in the Battle River is considered fair overall, levels of total nitrogen and phosphorous regularly exceed provincial guidelines. Lack of flushing flows is partly to blame.

Natural flows in the Battle River



Riparian Areas

Riparian vegetation is a term used to describe the native trees and plants that grow alongside streams, rivers and lakes and on floodplains.

Riparian vegetation is important because it stabilizes riverbanks, prevents channel infilling, shades river water and



reduces evaporation, filters out pollutants and sediments from the water, and provides habitat for fish and wildlife.

Many riparian areas along the Battle River are healthy. The vegetation in these areas is generally in its native state.

However, in many other areas riparian vegetation has been cleared or degraded because of expanding oil and gas exploration, agriculture, urban development and shoreline landscaping.

Fisheries

The Battle River sup-



ports the most important fishery in east Central Alberta.

Fish found in the Battle River include northern pike *upstream* of the Forstburg Dam, and northern pike, walleye, moon-eye and goldeye *downstream* of the dam.

Fish populations in the Battle River have been negatively affected by the cumulative impacts of: dams and weirs blocking fish movement, water withdrawals and declining water quality.

Did You Know...

Roots of plants provide the glue that holds streambanks and shorelines together and prevents erosion.

Water Forums

The Battle River Watershed Advisory Group (BRWAG) is attending seven water management forums held monthly from March to September 2005.

The presentations given at the water management forums will be posted on our website (under construction) and summarized in our monthly newsletters.

Although the Forum Series was designed for BRWAG members. There may be space for additional observers.

Contact Rhonda King at: (403) 340-7195, or rhonda.king@gov.ab.

Forum Schedule

- Watershed Function & Climate Variability (Mar 19, Killam)
- Aquatic Environment: River Health and Fisheries (Apr 13, Ponoka)
- Municipalities, Public Health & Industry: Water Needs & Impacts (May 11, Castor)
- Agriculture: Water Needs and Impacts (Jun 8, TBA)
- Water Licensing; Water Supply & Demand (Jul 13, TBA)
- Economics & Alternative Water Supply Options (Aug 10, TBA)
- Dams, Weirs, Recreation & Biodiversity (Sep 14, TBA)

APRIL 13TH WATER FORUM, PONOKA

River ecosystems and the importance of looking after river health were the topics of the Battle River Watershed Advisory Group's (BRWAG) second water management forum. The forum was held on Apr 13th, at the Ponoka Fish and Game Association.

"A river is healthy when its natural flow patterns are maintained, and it is lined by healthy riparian vegetation" said ecologist Kelly Chapman.

The Battle River's natural flow pattern includes high flushing flows in the spring, with occasional floods during wet years.

"When the river is healthy" said Chapman, "it naturally provides us with free ecosystem services.

For example, healthy

ivers supply us with water for our homes and industries, while riparian vegetation lining river banks cleans and filters the water for us."

Thanks to their lush water-loving vegetation, healthy floodplains work double duty. In wet weather they reduce flooding by absorbing and storing water. That stored water helps off-set drought by recharging the river when summer arrives and the mercury starts to climb.

Healthy rivers also flood their banks occasionally, spreading fertile sediment across floodplains. This keeps riparian vegetation and farmers' fields productive.

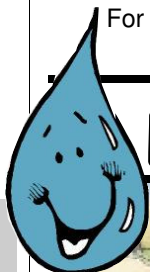
Rivers further serve us by providing food. As well as supporting fish, waterfowl

and other wildlife, rivers transport nutrients to the sea to feed our ocean fisheries.

According to Chapman, some experts have calculated that operating a human-engineered system to supply all these services would cost us a fortune, "more than \$80 million USD a year in the case of the Battle River and its floodplains," she said.

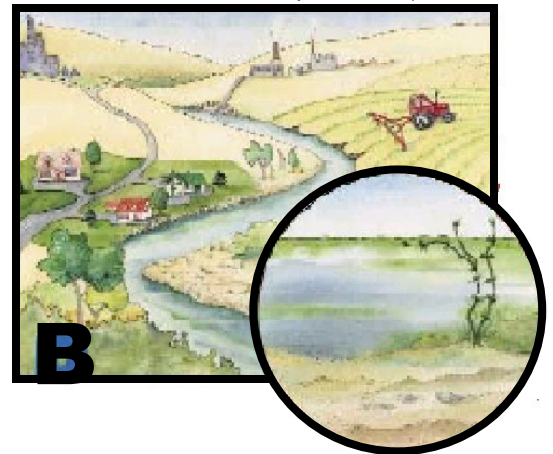
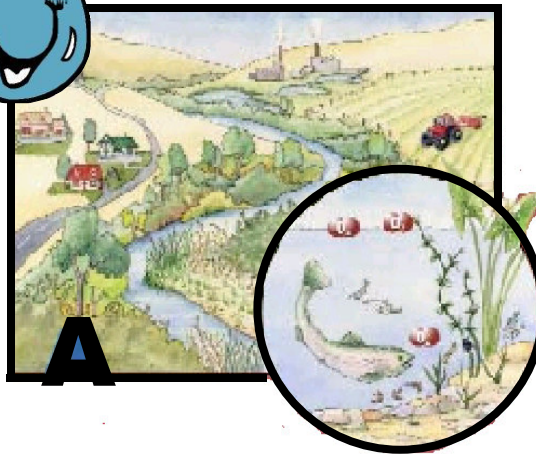
Other experts attending the forum included Kurt McAllister from the Department of Fisheries and Oceans, Vance Buchwald and Allan Locke from Sustainable Resource Development, and Peter Stevens and Chris Teichreb from Alberta Environment.

The speakers' presentations are summarized in the notes opposite.



KIDS' STUFF

(Courtesy of Cows & Fish. Illustrations originally produced for the Bow Habitat Station by Liz Saunders)



These two riparian areas have the same land uses around them, but there are some differences in how they are done. **Can you spot the differences?**

Differences:

- 1.
- 2.
- 3.

Do these differences change the water in the stream?

YES or NO

If you were a fish, which stream would you prefer to live in?

A or B

Find more fun kids activities on: www.cowsandfish.org/pdfs/cfcdk_activity_sheet.pdf

FORUM II: APRIL 2005

BATTLE RIVER WATER MANAGEMENT PLANNING

Forum Notes: Managing for River Health in the Battle River

Policy & Legislation

- We are obligated under provincial and federal legislation to protect the aquatic environment in the Battle River, including fish and fish habitat.
- Alberta's *Water Act* requires that a *Strategy for Protection of the Aquatic Environment* be developed as part of water management planning.
- The Federal *Fisheries Act* prohibits unauthorized alteration, destruction or pollution of fish habitat, and blockage of fish passage.
- Alberta's *Fish Conservation Strategy* aims to sustain the abundance, distribution and diversity of fish in Alberta.
- The proposed Alberta *Wetland Policy* intends to conserve slough/marsh wetlands and restore or create slough/marsh wetlands to replace lost or degraded wetlands.
- The *Navigable Waters Protection Act* prohibits construction of works in any navigable waters without approval from the Minister of Transport.

Ecosystem Services

- FIVE inter-related components make up a *river* ecosystem: biology, connectivity, geomorphology, hydrology and water quality. Hydrology is the central driving component; a river's natural flow, or hydrology, serves as its unique signature. The biological (or *living*) component of an ecosystem creates stability in the face of environmental change. Connectivity refers to the river's hydrological links to its floodplains, groundwater and along its length. Geomorphology refers to the shape of the river bed, channel and valley.
- The Battle River provides us with **free ecosystem services**. Ecosystem services are the beneficial outcomes, for the natural environment, or for people, that result from ecosystem functions. For example, the Battle River naturally:

Supplies water: the river carves a channel that concentrates and transports water for environment, agriculture, industry & homes.

Purifies water/treats waste: microbes in wetlands and riparian areas filter and break-down pollutants protecting water quality

Reduces floods: floodplains absorb rainwater and river flows, reducing flood damage

Off-sets drought: floodplains and wetlands absorb and store rainwater, slow runoff, shade water/reduce evaporation, and help recharge groundwater.

Improves soil fertility: floods deposit fertile sediments on flood plains

Provides food: fish, waterfowl, other wildlife

Delivers nutrients to the ocean: the Battle carries nutrient rich sediment to deltas, estuaries and ocean fisheries.

Provides habitat: for birds, fish, wildlife, etc.

Provides beauty and recreation opportunities: boating, hunting, fishing, etc.

- The ecosystem services provided to us by the Battle River mainstem (tributaries not included) works out to be approximately \$3.5 million/year. The Battle River's floodplains & wetlands provide us with services worth \$80 million/year.

- Different types of flows provide different ecosystem services. High flows shape the river and its floodplain; flush nutrients, pollutants & sediments; maintain riparian areas, flood plains and the plant species within them; and trigger emergence of aquatic insects, and fish migration & spawning.

- Low flows provide for basic waste assimilation and survival of aquatic life; trigger plants, fish and insects to enter senescence ('hibernation'); trigger germination of certain floodplain plants; and purge some invasive/weed species.

Traditional Management of River Flows

- Traditional water management focused on providing a steady year-round supply of water using dams and weirs to store water and regulate its release. It was premised on the belief that engineering could improve on services provided by the river ecosystem.

- Traditionally, water managers were unaware of the large cumulative impact caused by numerous small river diversions or alterations that individually did not raise much concern.

- As a result we have often 'flat-lined' our rivers (altered their natural flow patterns) and disconnected them from their floodplains and along their length. This has caused a downward spiral in ecosystem services (declining water quality, quantity & fisheries).

- As ecosystems services have deteriorated,

we have typically responded with more engineering intervention, ex. more dams to compensate for lost storage.

- These interventions further deteriorate remaining ecosystem services, generating ever-increasing need for costly engineering intervention.

- The Battle River's health and ability to supply us with ecosystem services has been impacted by licensed water use and dams, weirs and river crossings.

Sustainable Flow Management

- Modern water management focuses on sustainability. Today's water managers understand that 1) we should manage flows to mimic natural flow patterns 2) water must be allocated to support the river ecosystem 3) there are limits to the available water supply and water resources must be managed within the capacity of individual watersheds, 4) new water demands can be met by getting more benefit out of water already appropriated for human uses – by sharing, recycling, conservation and efficiency.

- Failure to allocate water for ecosystem function may result in short term gains from new water developments, but in the long run, will cost us by reducing the quality and quantity of available water. This implies a limit on the degree to which we can wisely alter natural river flows.

- Principles for sustainably managing river flows include: 1) mimic the river's natural flow as closely as possible; 2) maintain baseflows and thus aquatic habitats during dry parts of the season; 3) retain flushing flows early in the spring to flush the river channel and cue fish spawning & migration; 4) retain some floods at full size to regenerate riparian vegetation and clear large debris.

- We need to **balance** how we manage water so we service our needs AND maintain ecological functioning so we continue to receive the benefit of ecosystem services.

Additional Resources

www.cowsandfish.org/greenzone.html
www.instreamflowcouncil.org
www.nyas.org/pdfs/Postel_Ch1.pdf

Your Local Agriculture & Watershed Specialists

Beaver County

Aimee Cook
Municipal Conservation Technician
(780) 663-3730, (780) 895-2585
aesa@beaver.ab.ca

Camrose & Stettler Counties

David Trautman
Asst Ag Fieldman, Farm Prog Spec
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Dtrautman@county.camrose.ab.ca

Flagstaff & Paintearth Counties

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Rural Conservation Technician
(780) 384-4100, (403) 882-3211
kcuss@flagstaff.ab.ca

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Wainwright, M.D. of

Somerlee Bennett
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Battle River Research Group

Jenifer Heyden
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brg.fl@telus.net

Parkland Conservation Farm

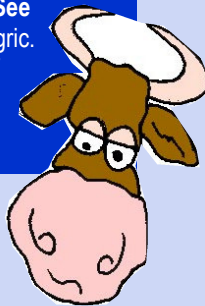
Kelly Montgomery
Farm Extension Coordinator
(780) 632-2244,
paripcf@parklandconservationfarm.com



Thinking about water conservation at home? Check out some tips on:

www3.gov.ab.ca/env/water/conservation/residential.cfm

Interested in sustainable soil & water management on the farm? See how on: www.agric.gov.ab.ca/app21/rtw/selcat.jsp



Take Action!

Ready to help the Battle Watershed? Want to find out how? Contact these groups:

Local Agriculture & Watershed Extension Specialists

Sustainable farming, land management & water use
See contacts opposite

Iron Creek Watershed Improvement Society

Promoting sustainable land and water use in the Iron Creek Watershed
(780) 384-4118

Parkland Stewardship Program & Farm Waterwatch

Farm conservation planning & surface water quality monitoring
(780) 437-2342

Cows and Fish

Partnering with communities on riparian management
(403) 340-7607

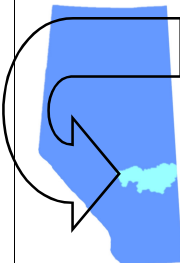
Ducks Unlimited Canada

Restoring & managing wetlands for habitat & wildlife
(780) 672-6786, ext 5

Alberta Conservation Association

Conserving & enhancing wildlife, fisheries, & habitat
1-877-969-9091

BATTLE RIVER WATER MANAGEMENT PLAN



Battle River Watershed

The Battle River is a modest prairie-fed river, and an important water supply for communities, agriculture and

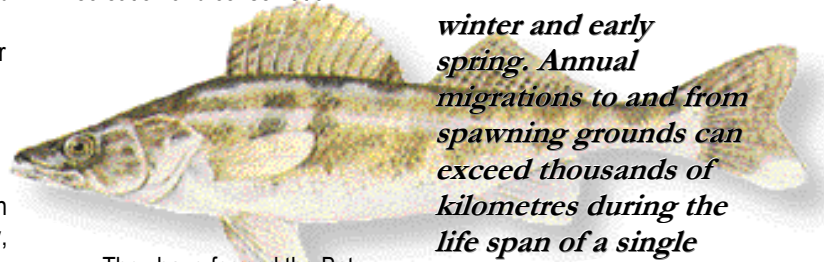
industry throughout the river's watershed.

With increasing pressure on the Battle River's water supply, demand for water will soon exceed the river's natural supply, creating social, ecological and economic issues.

The Battle River Watershed Management Planning Process

In an effort to resolve water supply and demand issues, Alberta Environment has recently started working with local stakeholders on a water management plan for the Battle River.

These stakeholders include members from local rural and urban municipalities, agriculture, industry, academia, recreation and conservation.



Walleye begin moving toward their spawning areas in streams and on lake bottoms in late winter and early spring. Annual migrations to and from spawning grounds can exceed thousands of kilometres during the life span of a single fish.

They have formed the Battle River Watershed Advisory Group (BRWAG).

Learn more, have your say

In Fall 2005, watershed residents will be invited to comment on draft water management options for the Battle River.

In the meantime, read our newsletters or go to our website (under construction) to learn more.

Want more information? Contact:

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(website coming soon!)**