

**Operation Guidelines for the Vermilion River
Water Management System
Implementation Action Items**

December 6, 2001

Alberta Environment

Section I

Core Operational Issues

1.0 Drainage

Committee Recommendation 1.1

Provide information to the Local Municipalities and landowners on the downstream impact of drainage programs.

Committee Recommendation 1.2

The Department of Environment must not support additional drainage programs in the Vermilion watershed, without considering downstream impacts. Licenses should require a method of water control that allows holding and controlled release of the water to avoid peak flows. The Department should encourage implementation of hold and controlled release water management for existing licenses.

Committee Recommendation 1.3

The Department of Environment must take immediate action to stop illegal drainage (e.g. more enforcement, increased fines) and take steps to mitigate the impact of major unauthorized drainage activities.

Committee Recommendation 1.4

The Department of Environment should provide compensation for flooding to landowners on the Vermilion River, if existing drainage licenses within the watershed are shown to be causing the flooding. [Note: the compensation recommendation is not supported by all members of the Stakeholder Committee.]

Actions:

- 1) Expand the Public Notice protocol to include providing notice of new drainage applications to the affected counties for posting in their offices. (CR 1.1)
- 2) Continue to implement standard *Water Act* requirements when reviewing agriculture drainage applications. Included in these considerations are:
 - drainage should not contribute to or result in increased peak flow volumes that would negatively impact landowners along the river.
 - if the proposed drainage would negatively impact landowners, require a hold and release design to control the timing of the release.
 - consider the wetland protection goals of the interim wetland policy (CR 1.2)
- 3) Continue to take action on unauthorized drainage activities as identified and reported. (CR 1.3)

2.0 Storage

Committee Recommendation 2.1

The Department of Environment takes direct action, not including expropriation, to develop storage reservoirs in the watershed, especially the upper watershed. The reservoirs can temporarily hold water during periods of high flow with later slow release in order to offset the impact of past drainage activities. [Note: the emphasis on the upper watershed is not supported by all members of the Stakeholder Committee.]

Committee Recommendation 2.2

The Department of Environment actively pursue partnerships with landowners and other agencies, on a voluntary basis, to develop multiple small storage reservoirs on tributary streams throughout the watershed.

Committee Recommendation 2.3

The Department of Environment and the Holden Drainage District #1 construct a structure near the eastern outlet of the District to temporarily store and slow the flow of water from summer storms.

Committee Recommendation 2.4

The Stakeholder Committee supports the relocation of the Watt Lake structure as one component of the overall effort to increase storage capacity within the watershed, subject to the agreement of the Watt Lake landowners.

Actions:

- 1) Alberta Environment (AENV) will begin a water planning process that will include supporting and partnering with external organizations (e.g. Ducks Unlimited (DU)) to explore the potential development of appropriate small-scale storage projects for the combined benefit of temporary storage and wetland habitat enhancement. Priority projects will be those which can benefit the basin by holding water early in the year and slowly releasing it later in the season to help maintain riparian flows. An inventory of the basin will be required to identify potential development sites and AENV will work with partners to design and conduct such an inventory (preliminary discussions with DU indicate that they may be interested in participating). (CR 2.2)
- 2) AENV will work with Holden Drainage District and other stakeholders to investigate the feasibility of building a structure at the Holden outlet to attenuate summer storm events. DU has expressed an interest in this project. (CR 2.3)
- 3) AENV will continue to work with DU on the possible relocation of the Watt Lake storage structure. This project is a high priority for DU and the details of a partnership with AENV are being worked on. (CR 2.4)

Recent commitments include:

- AENV and DU are to develop a design concept, estimate costs and land requirements, and assemble a management team to lead this project.
- AENV is expecting that DU will be submitting a letter to the Environment minister to formally request the development of a partnership agreement.

3.0 Channels

Committee Recommendation 3.1

Maintain the constructed channels in the system on a regular basis to ensure their effectiveness.

Committee Recommendation 3.2

Implement an ongoing program of beaver monitoring in the main river channel where flooding problems may be increased by debris.

Committee Recommendation 3.3

Remove debris caused by beavers in reaches where flooding has been a problem, and below structures where the debris may cause problems when water is released from the structure.

Committee Recommendation 3.4

Alberta Environment should increase the financial assistance available to municipalities for beaver management.

Committee Recommendation 3.5

Review all of the bridges along the Vermilion River to ensure they have the ability and capacity of accommodate floodwaters, especially due to ice jams.

Committee Recommendation 3.6

Consider alternatives to constructing channels to address localized flooding. Alternatives could include voluntary flood plain purchases with leasebacks, flood easements and conservation easements.

Actions:

- 1) AENV will maintain the department's licensed channels to the standards required by the license. AENV will clear debris when it directly interferes with the operation of a water control structure licensed to the department. Emergency maintenance and operations will be conducted by AENV. *[Regularly scheduled maintenance (e.g. grass cutting and channel cleaning) will be coordinated with Alberta Transportation.]*

Local authorities still have a role in dealing with beaver control and debris clearing in the sections of natural creek channel. (CR 3.1 & 3.3)

- 2) Alberta Transportation is responsible for bridges on primary and secondary highways. Any site-specific concerns should be forwarded to Alberta Transportation. Local municipalities are responsible for bridges on local roads and any private bridges are the responsibility of individual landowners. (CR 3.5)
- 3) Approvals for channel construction to address localized flooding will only be considered as a solution of last resort and alternatives will be sought first. Alberta Environment will not initiate or lead any new channel construction proposals. (CR 3.6)

4.0 Structures

Morecambe Structure

Committee Recommendation 4.1

Increase the number of precipitation and flow monitoring stations in the watershed to improve the flood warning system and provide better data to manage the water flow.

Committee Recommendation 4.2

When storm events occur in the upper watershed, operate the Morecambe Structure to draw down the Vermilion Lakes in advance of the flood. Start the release of water slowly to reduce downstream impacts and increase the release rate over subsequent days.

Committee Recommendation 4.3

Notify the Counties of Minburn and Vermilion River and landowners below the Morecambe Structure before releasing water.

Committee Recommendation 4.4

The Morecambe structure may be operated in the late summer and fall to augment downstream riparian river flow. The Vermilion Lakes should not be allowed to drop below a minimum geodetic elevation of 1964.5 feet or 598.75 metres (note that one foot or 0.3 metres below FSL was the arbitrary limit chosen). Riparian operations will be reviewed yearly by the proposed advisory committee to consider the benefits of previous operations and possible improvements.

Committee Recommendation 4.5

No increase of Vermilion Lakes water levels should be considered unless it can be established that there will be no detrimental effect on upstream landowners and mitigation measures have been implemented.

Actions:

- 1) a) Resume operation of the Morecambe structure in an attempt to mitigate flooding impacts. By spring of 2002, Camrose operational staff will have access to real-time flow information data from monitoring stations to support structure operations.

b) The Parkland Region will commence a technical review of possible operating scenarios on the basis of current modelling information with reference to the *Morecambe Structure Proposed Operation Strategy, 1987*.

c) An advisory committee would be helpful to assist the department in monitoring its operations and operations strategy. The establishment of an advisory committee is proposed in Section 5.0.

(CR 4.1 & 4.2)
- 2) Establish a call-out procedure for notifying counties and landowners prior to releasing water from the Morecambe structure. The call-out procedure should include participation of key stakeholders along the river and will be determined through consultation with the proposed advisory committee. (CR 4.3)
- 3) Within the Morecambe operating strategy, manage to enhance riparian flows to the extent possible. First operational priority is to be given to flood control but additional riparian maintenance objectives should be fulfilled when possible. The maintenance of water levels on the Vermilion Lakes must also

be sufficient to fulfill habitat requirements (avoid drawing down too low). Minimum lake levels will be determined through a review of hydrology information but are expected to range up to one foot below full supply level (FSL). Riparian flow objectives and results will be reviewed annually with the proposed advisory committee. (CR 4.4)

- 4) AENV will not increase the operating level of the Vermilion Lakes beyond what is currently the maximum level with the Morecambe structure. (CR 4.5)

Vermilion Dam

Committee Recommendation 4.6

Operate the Vermilion Dam in concert with the Morecambe Structure during flood control operations.

Committee Recommendation 4.7

Notify the Town of Vermilion, the County of Vermilion River, and landowners below the Vermilion Dam before increasing the release of water.

Committee Recommendation 4.8

The Vermilion Dam may be operated in the summer and fall to maintain a riparian flow downstream for as long as possible. The Vermilion reservoir should not be allowed to drop below a minimum geodetic elevation of 1888.0 feet or 575.50 metres (note that one foot or 0.3 metres below FSL was the arbitrary limit chosen). Riparian releases should begin no earlier than August 1 and no later than September 15 of each year and should be dependent on the amount of flow within the downstream river channel.

Actions:

- 5) Alberta Environment will operate the Vermilion Dam in conjunction with the operation of the Morecambe Structure to optimize flood control efforts. *[It should be noted that the structure, by its original design, has little flood control capability because it has a fixed crest weir].* (CR 4.6)
- 6) AENV will work with the proposed advisory committee to establish a notification protocol for water release events below the Vermilion Dam. (CR 4.7)
- 7) In support of riparian concerns below the Vermilion Dam, AENV will operate the Vermilion Dam to maximize benefits to the downstream river system. Operational advice for this initiative (riparian flow management below the dam) will be sought from the proposed advisory committee. (CR 4.8)

5.0 Advisory Committee

Committee Recommendation 5.1

Set up an advisory committee to assist Department staff in the ongoing operation of Department structures. The advisory committee would work within an established operating procedure in response to current conditions. The committee will include owners and occupants of land adjacent to the river from all reaches of the watershed.

Action:

AENV will establish an advisory committee in the winter of 2001/02 with the objective of commencing its work in the early spring of 2002.

Section II

Other Water Management Issues

6.0 Water Quality

Committee Recommendation 6.1

Conduct an inventory of the watershed to identify sources of silt and other contaminants that enter the River, and develop strategies to address the problems. (e.g. Snow dumps in areas that melt directly into the river.)

Committee Recommendation 6.2

Re-assess the timing of releases from the sewage lagoons:

- *relative to periods of higher natural flows,*
- *in terms of coordinating with possible water releases from dams,*
- *in terms of coordinating with other communities.*

Committee Recommendation 6.3

Monitor phosphorus releases/levels relative to the Alberta Surface Water Quality Guidelines.

Committee Recommendation 6.4

Alberta Environment should assist municipalities to implement new sewage treatment technologies that will improve the quality of effluent released into the Vermilion River.

Actions:

- 1) Point and non-point pollution sources will be identified by department staff in their field activities and investigated when reported by municipal officials or members of the public. Actions taken will be in accordance with requirements of the *Water Act*. (CR 6.1)
- 2) If requested, AENV will participate with municipalities in a review of their options for lagoon releases to minimize negative impacts on water quality. (CR 6.2)
- 3) AENV will encourage the implementation of “best practical technologies” when reviewing applications for lagoon upgrades or new construction. (CR 6.4)

7.0 Riparian Management

Committee Recommendation 7.1

Provide information to landowners to increase awareness of the benefits of improving the health of the riparian vegetation, and of methods/techniques available to improve riparian health.

Committee Recommendation 7.2

Encourage partnerships between interested landowners, government agencies and conservation organizations to improve riparian health.

Committee Recommendation 7.3

Provide financial incentives to landowners that volunteer to maintain or improve riparian vegetation (similar the PFRA Permanent Cover Program). Incentives may include providing landowners with cattle watering alternatives, or appropriate seed or stock for planting/reclaiming riparian areas (grass/sedge seed, or shrub stock).

Action:

Upon request, AENV will provide resource contacts for individuals, groups or local authorities interested in initiating riparian management strategies. Key agencies/programs include: Cows and Fish; Alberta Environmentally Sustainable Agriculture Program, Alberta Agriculture Food and Rural Development; and Prairie Farm Rehabilitation Administration. (CR 7.1 - 7.3)

8.0 Fisheries

Committee Recommendation 8.1

Investigate methods of increasing the fisheries population, in conjunction with improvements in the water quality and improvements in the duration of water flows in the River.

Action:

Any significant improvement in fish populations on the Vermilion River would first require the re-establishment of a fish passage between the Vermilion and North Saskatchewan Rivers. This would require the installation of a fish ladder at the Vermilion Dam and the feasibility of this would have to be investigated. Given that the Vermilion River is marginal fish habitat at best, the benefits of a fish ladder are highly questionable at this time. Any such assessment of the costs and benefits would have to be undertaken in the context of provincial fisheries management priorities.

In the short term, Alberta Environment and Alberta Sustainable Resource Development will strive to protect the river and existing fish habitat from further damage.

9.0 Mayweed

Committee Recommendation 9.1

Alberta Environment should work in cooperation with Alberta Agriculture and the local Counties to address and resolve the problem of major Mayweed infestations along the Vermilion River.

Action:

AENV has worked in co-operation with the County of Two Hills, AFRD and local landowners in the Ben's Lake area to ensure that Mayweed and other problem weeds on AENV controlled lands, and adjacent areas, are controlled or eradicated. AENV has the responsibility for weed control on AENV owned easements and rights-of-way and will work in cooperation with any local authority or landowner to limit the spread of noxious weeds. (CR 9.1)