

**Forum Notes: Future Water Needs – Supply & Demand Management****Future Water Demand**

- The amount of surface water licenced for use in the Battle River Watershed is 60,000 dam<sup>3</sup>. Current surface water consumption (actual use) in the Battle Watershed is about 45,000 dam<sup>3</sup> per year. Over the next 25 years, water consumption is expected to rise by about to 47,500 dam<sup>3</sup> per year, a 5.6% (or 2,500 dam<sup>3</sup>) increase. This increase can be largely met within existing licenced allocations.
- The largest increases in surface water demand in the watershed are expected to be for: stock watering, municipal use and industrial use, all of which are expected to increase by 0.5 to 2% annually. Water demand is expected to remain the same or decrease for irrigation, oilfield injection, thermal power, and habitat enhancement.
- Most municipalities will be able to accommodate increased water demands within their existing water licences. However some fast-growing communities in the upper basin –including Camrose, Wetaskiwin, and Hay Lakes –will likely exceed their current water licenses within the next 20 to 25 years, especially to meet demand during peak water use periods.

**Demand-side Management- Water Conservation**

- One way of managing increased demands on water is to reduce water demand through water conservation. This can be done by encouraging people to use less water, technological efficiencies in how we use and distribute water, and improving the health of the river (e.g. healthy riparian areas and good channel integrity reduce evaporation).
- Conservation options for **municipalities** include: education and awareness, universal water metering, appliance retro-fits (low flow toilets and shower heads), and water system audits (leak detection). Options for **agriculture** include: enhancing riparian areas, pumping stock water to troughs, fencing dug outs, changing crop mixes, and improving irrigation equipment technology and operation. Conservation options for **industry** need additional research, but could include application of water conservation technologies and practices, and use of saline instead of fresh water (in the case of oilfield injection).
- If all sectors participated, water conservation could result in a maximum overall water savings of 4%. This means that up to 70% of the projected 5.6% increase in water demand could potentially be met through water conservation.

**Supply-side Management (within the Basin)**

- Another way of managing increased demands on water is to look at ways of increasing or better distributing water supply *within* the watershed. This can be done through storage (dams and weirs), regional supply lines, and water licence transfers.
- There is little in the way of feasible options for additional large-scale **water storage** projects (e.g. dams) on the Battle River. Small, off-stream storage projects, however, can increase the reliability of water supply for licence holders. Licensees can ensure that they have sufficient water 98% of the time by having 2 years worth of off-stream storage.
- **Regional water supply systems** consist of networks of pipelines that distribute potable (typically) water throughout a region. The infrastructure for these systems has a small environmental 'footprint'. Regional systems can provide a safe, secure supply of water for individuals, businesses, and industry. A recent *Drinking Water Facility Assessment* has determined that regional supply systems are the best long-term option for providing a sustainable drinking water supply in the area.
- **Water licence allocation transfers** allow all or part of an existing water allocation (in good standing) to be transferred from an existing licence to another person or corporation in a new location within the *same* watershed. They can be permanent or for a fixed period of time. The priority of the licence is also transferred. Up to 10% of the transferred licence can be held back by AENV to help protect the aquatic

environment or meet a Water Conservation Objective. The impacts of a proposed transfer on the environment, public and other licensees are considered prior to approval. Transfers and holdbacks are only allowed when included as part of an approved water management plan.

- The benefits of water allocation transfers is that they will allow already allocated water to move to new economic demands, help improve the aquatic environment through water conservation holdbacks, and create monetary incentive for water efficiency. The risk of licence transfers is that they may initially result in an increase in actual water use in the watershed, as the gap between actual and licenced water use narrows.
- Water licence transfers can help meet future water demand within existing licenced water allocations. They are particularly relevant if a cap is put on new licences, because they provide opportunities for new developments to access water, especially older licences with more secure, senior water rights.

### **Supply-side Management (interbasin)**

- Increased demands on water can also be met by looking ways of augmenting water supply from outside of the watershed. This can be done through interbasin water transfers (pipelines, canals from rivers in other watersheds).
- Interbasin transfers are not supported by Alberta's *Water for Life Strategy*, which through public consultation has adopted the principle that Alberta's water resources must be managed within the capacity of individual watersheds. In addition, the *Water Act* prohibits the transfer of water between *major* river basins in the province unless authorized by a special Act of the Legislature. Because the *Water Act* considers the Battle River watershed a part of the North Saskatchewan basin, a transfer between these two basins would *not* require an Act of Legislature (whereas a transfer from the Red Deer basin would).
- A number of pipeline options from the North Saskatchewan River to the Battle watershed were studied in the 1980s because water use was predicted to double in the watershed by 2023. These options were not pursued because actual water use has been much lower than expected. A number of water diversions from the Red Deer River have also been studied.
- Proposed diversions from Red Deer River basin would enhance municipal water supply for 5.1% of watershed residents (mostly groundwater users), mostly in the central portion of basin. During dry years, diversions from N. Saskatchewan basin could benefit all types of surface water users along the mainstem of the Battle downstream from Coal Lake or Pipestone Creek.
- The number of beneficiaries and extent of benefits from these proposed diversions is unknown because the current status of shortages and impact on water users needs to be better defined, and costs and benefits better assessed.
- Interbasin water transfers can have large and complex impacts (on the environment, infrastructure and water users) in both the receiving and donating rivers. In the case of a transfer from the North Saskatchewan, potential impacts on the Battle River include: increased flushing flows (increase erosion, impact reservoirs and pumping equipment); changes in the composition and abundance of fish and other aquatic species; and introduction of insects or diseases harmful to fish, animals or vegetation. Potential impacts of reduced flows on the North Saskatchewan River include: channel infilling, reduced water availability for aquatic life and humans, and degradation of fish habitat (particularly sturgeon).
- Because of potential environmental impacts, a proposal to transfer of raw water to the Battle River from either the North Saskatchewan or Red Deer Rivers would likely trigger both Federal and Provincial environmental impact assessments and reviews.

### **For more information...**

[www3.gov.ab.ca/env/water/legislation/FactSheets/Transferring\\_Allocations.pdf](http://www3.gov.ab.ca/env/water/legislation/FactSheets/Transferring_Allocations.pdf)