

Southern Alberta Resource Economics Centre

Department of Economics, University of Lethbridge
4401 University Drive, Lethbridge, Alberta, Canada, T1K 3M4

SAREC Report 2010-5

Water Licenses in Alberta: Some Frequently Asked Questions 2010

Tatiana Cook and K. K. Klein



Southern Alberta Resource Economics Centre Publications

The mission of the Southern Alberta Resource Economics Centre (SAREC) is to study resource issues that affect growth and development of Southern Alberta. Multi-disciplinary research is required on the impacts of human activity on water quality, water quantity, climate change, impacts of biotechnology, growth of the bio-economy, manure disposal from intensive livestock production, and other agricultural and resource issues. These resource-based issues provide the motivation for socio-economic research in this dynamic region of Canada.

While SAREC is centred in the Department of Economics at the University of Lethbridge, SAREC is informally organized and includes researchers in several disciplines, including, but not limited to, economics, geography, management, and public health. The purpose of SAREC publications is to provide a forum for the exchange of information on all aspects of resource issues in Southern Alberta and related areas. The research reports published in this series may be completed research, works in progress or thought-provoking information pieces submitted by academic researchers, graduate students or others with an interest in resource issues in Southern Alberta. SAREC researchers have been supported financially by the Social Science and Humanities Research Centre, the Alberta Water Research Institute (formerly the Alberta Ingenuity Water Research Centre), the Canadian Water Network, SouthGrow Regional Initiative, and other funding agencies.

The opinions expressed in this series of research reports represent those of the authors and not of University of Lethbridge officials or of funding agencies. Prospective authors for this series are invited to submit completed manuscripts or to contact the research leaders regarding proposed topics.

K. K. Klein and Henning Bjornlund, SAREC Research Leaders

Department of Economics, University of Lethbridge

Lethbridge, Alberta T1K 3M4

klein@uleth.ca; henning.bjornlund@uleth.ca)

1. What is a water license in Alberta?

A license is a piece of paper issued by the government to a person requesting the use of water from a specific water body. This license legally allows a person to use the water as specified by the terms and conditions on the agreement. These specifications include such things as diversion point, annual volume and rate of diversion, use of the water, and the priority (date) the license was issued (McGee, Personal Communication, 2010).

2. Who can apply for a water license?

Municipalities, companies, and Individuals may apply for a water license. Unless applied for under reserved water conditions, the licenses are allocated on a “First in Time, First in Right” (FITFIR) basis (Government of Alberta).

3. How does a person obtain a water license?

Water licenses are issued by Alberta Environment under the Water Act (Government of Alberta).

Anyone wishing to receive a water license must apply to Alberta Environment and provide the location at which they will divert the water, the source from which the water will flow, the rate and volume of diversion required annually, and the purpose for which the water will be used (Alberta Environment, 2005). This application is then reviewed by the government as to its effect on water flow, the environment, and surrounding users. Unless the application for a water license is a request for water that flows within a reserved water basin, the application will receive a priority number that specifies the date on which the license was issued (McGee, Water Allocation in Alberta, 2008).

On “closed” or “reserved” river basins, such as the South Saskatchewan River Basin, water license applications are accepted only from certain groups. For example, any applications that request a license for the purpose of water conservation, or conservation of in-stream flow will get first priority before the following two groups. Second priority (which would be given a license of a priority number with a date specified by the government) is applications from First Nation’s people. The third

priority is given to applications for the purpose of water storage. This system allows officials to maintain a baseline flow for environmental and emergency purposes (McGee, Personal Communication, 2010).

The amount of water requested to be diverted is usually in excess of the amount of water that is actually diverted, as seasonal use depends on precipitation throughout the year and demands by urban development depends on the anticipated population growth. Many times, the actual amount diverted is less than the allocated amount because of return flows to the system (Alberta Environment, 2005).

4. What is considered before a license is issued?

Before a license is issued, Alberta Environment considers (Government of Alberta):

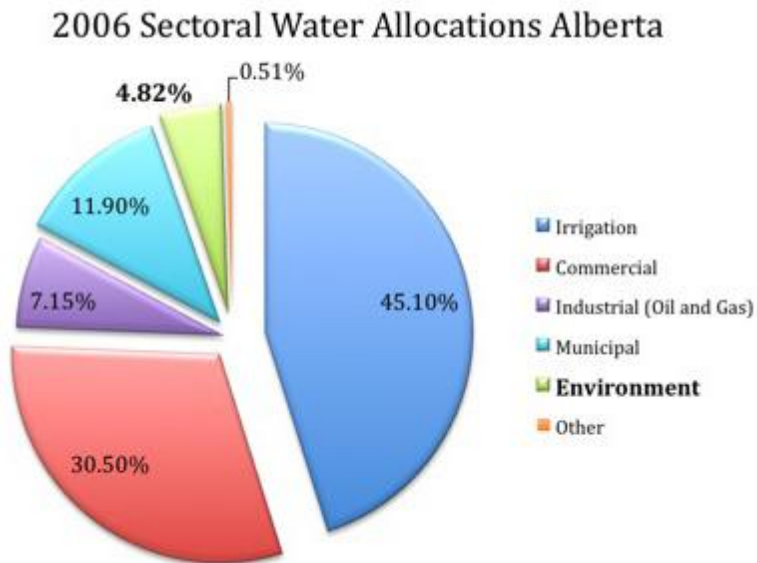
- Water source;
- Location of the diversion site;
- Volume, rate and timing of the water to be diverted;
- Priority of the water right established by the licence;
- Purpose (specified use) of the water;
- Any conditions the diversion must adhere to;
- Natural water supply;
- Needs of the environment;
- Existing licences; and
- Apportionment agreements.

5. When applying for a license, does the purpose for which it is intended need to satisfy a certain requirement, or can one receive a license for any stated use?

This depends on the stage at which the Water Basin Management Plan currently is in. If the water in the basin has been reserved, then yes, the applications for a water license will be considered only by order of purpose. For the most part, however, other than in the South Saskatchewan River Basin where restrictions apply, the other six river basins in Alberta remain unreserved. This means that any application in those river basins will be considered in order of the date of application. Regardless of the freedom of allocation on unreserved water, licences to water on the various water basins throughout Alberta tend to be allotted for one or two main purposes. For example, most licences for water in the southern part of Alberta (including the Bow River sub-

basin and the Oldman River sub-basin) are for the purpose of irrigation. North of the South Saskatchewan River Basin, water is allocated mainly for the purpose of cooling thermal power plants (Government of Alberta).

The following graphic from 2006 summarizes the overall uses of allocated water in Alberta:



Source: (Water Matters Society of Alberta)

MEASUREMENT AND REPORTING

6. How is water consumption measured and reported?

Water that flows in the Oldman River is allocated mainly to agriculture. Water that flows in the North Saskatchewan River Basin is allocated mainly for industrial purposes. Although the amount of water diverted off the rivers may be similar, the amount of consumed water can be quite different. Consumed water is water that is indirectly returned back into the system through crop growth, drinking water, and other household uses. Agricultural irrigation and municipal water uses are examples of where water is consumed. Non-consumptive water is returned directly to the source, such as that used for hydroelectric production (Government of Alberta).

Knowing the use of the water is a major part of accounting for water allocation when a license is issued. If the licensee is in fact diverting water, using it, and directly returning it to its source, as much as 80-90% of the diverted water is put back into the water system and can then be used to benefit the next user (Alberta Environment, 2005).

Water license holders are required to report their water consumption and return each year. However, because the majority of volume is allocated to only a small number of large licensees, Alberta Environment does not require such detailed information to be submitted by small water users (Alberta Environment, 2005).

PRIORITY NUMBERS AND RISK

7. What is a priority number and what is its purpose?

The priority number is given by date of application for a water license. Thus, a person receiving a water license in 1901 -- being first in time -- will have a higher priority, or "first right" to the water flow in a basin before someone who received a license in, say, 1983. In years of plenty, everyone who has a license to divert from a water body may receive and use all the water to which they have license. However, in years where flow is lower, junior licenses will get called back first -- meaning that those licensees will receive less or no portion of their allocation. Thus, the benefit of having an older license of higher priority would be a decrease in the risk of losing access to water -- especially in years when it is probably needed most (McGee, Water Allocation in Alberta, 2008).

Contrary to the First in Time, First in Right philosophy, the system can also be pre-arranged by the Minister of Environment. It may be decided that all unallocated water is reserved for specific uses that fall within the terms of the basin's Water Management Plan (McGee, Water Allocation in Alberta, 2008).

8. How does an allocation/license have a greater or lesser risk associated with it? What does this mean?

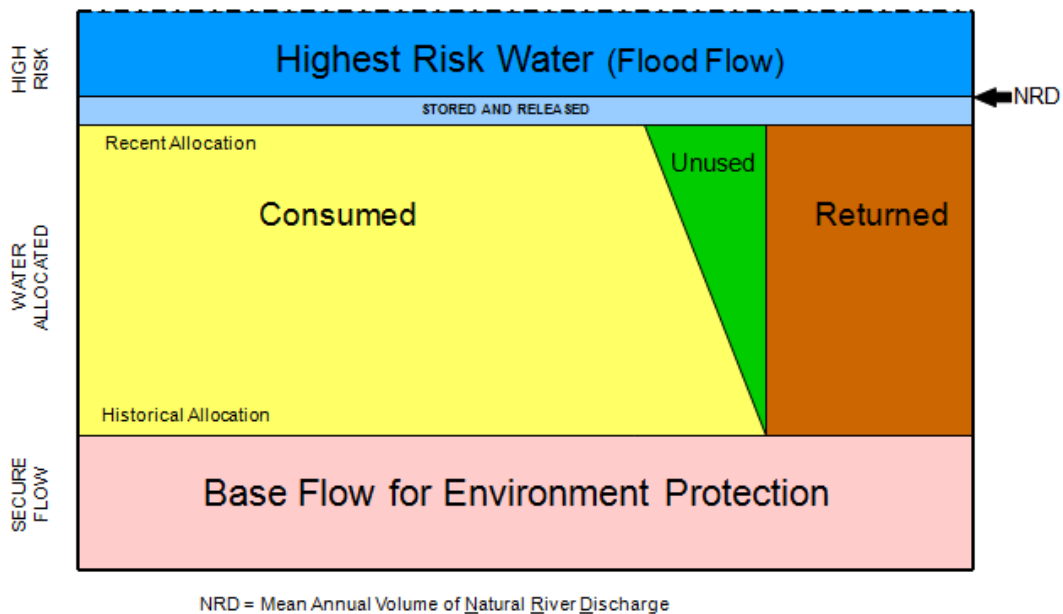
The following diagram outlines the basics of how water is distributed among licensees in Alberta. The idea is that the base flow of water runs at a level of no risk. This base flow will generally always be available unless extreme drought conditions arise. Licenses of senior priority have the right to divert first, meaning that the risk of not receiving water is lower than that for a junior license holder. In years where, for simplicity's sake, the river is only at half its capacity, some of the junior licenses would be called out of use.

One can look at this bucket diagram as there is lower and lower probability that the bucket (or river) will be at full capacity, and thus newer licenses that are more or less “skimming of the top” have a great risk of not receiving their water allocation.

Many licenses, such as those allotted for municipal use and power generation plants, return much of their diverted water back into the river flow. This is visualized in the “returned” box. The green, “unused” portion of the diagram appears as an inverted triangle. This is with the assumption that older licenses will have been adjusted according to their use and non-use of water while new licensees will usually have applied for more water than may be necessary and will therefore have a greater amount of unused water.

Every basin has a maximum capacity of flow. Thus, even if more water is added to the system, some may not be useful due to debris, dirt, and silt, and is termed Flood Flow.

Theory of Annual Volume Based Water Distribution



Source: (McGee, Theory of Annual Volume Based Water Distribution, 2010)

THE WATER MARKET

9. What are the opportunities in a water market?

The terms that are attached to licences encourages users to conserve water, which promotes methods of water consumption that yield more efficient use of water. However, due to the “first in time, first in right” system, conservation is mainly an incentive for those who could potentially be short of water – in other words, those who hold junior permits. On the other hand, senior licensees have an incentive to conserve their water based on their ability to sell off their unused portions (Water Matters Society of Alberta, 2009).

Because higher risk of water shortage is associated with licenses issued with more junior dates, there is benefit in attaining a senior license of older priority – and, for those licensees of higher priority who find they are not utilizing all of their allotment, it may be financially beneficial to sell a portion or their entire license. This may be done in one of two ways: transfers and/or assignments.

10. How does a water license transfer work?

The Water Act allows for the transfer of a water license, reflecting a change in the point of diversion. This usually occurs between two willing parties where a name change also occurs on the license. However, a transfer may also occur on the same land, by the same licensee if he/she is seeking to change the point of diversion of the license on his/her own land. By permitting transfers to occur, there is an incentive to conserve water and distribute it according to the needs of the market (Government of Alberta, 1995-2010). Transfers must be authorized through an order of cabinet and it may be accompanied by the withholding of a percentage of the transfer in order to fulfill water conservation objectives (Alberta Environment, 1995-2010).

A transfer is the “acquisition of an existing licensed volume of water and priority” (Battle River Watershed Alliance, n.d.). It must occur within “river reach”, meaning that licenses cannot be transferred between basins, and is the “purchase of a part or all of a license and/or a change in location” (Battle River Watershed Alliance, n.d.). It can be permanent or temporary, is subject to provisions in the Water Management Plan, must not impair or have adverse effects on the rights of a household user, traditional agricultural user, or the aquatic environment, and may result in a 10% holdback which

could be assigned to the government to meet their water conservation objectives (Battle River Watershed Alliance, n.d.).

Water license transfers are permitted only if the transfer does no harm to water users downstream of the new diversion, does not change the way in which water is delivered to other users on the stream, and does not affect the aquatic environment. Thus, transferring water to a neighbor downstream would most likely be permitted due to it actually benefitting the aquatic environment at the old diversion and not changing the ability of further downstream users to retrieve their water. However, transferring upstream past forks where one water body enters the flow of the stream on which the license was originally issued, the license may be accepted but with restrictions. As the current licensee is actually using water from both the mainstream and the water entering at the fork, the new licensee would most likely be able to utilize only a portion of the water that flows past his diversion point before the fork. Even then, because it is upstream, it must be taken into consideration that users between the old and new licensee could now be affected by a smaller portion of the flow reaching them (McGee, Water Allocation in Alberta, 2008).

11. Are there any benefits of allowing water transfers to take place?

Water transfers benefit both the environment and economic development. They encourage and reward conservation. Mandatory holdbacks taken when a water license is transferred help to support in-stream flow and/or can be transferred directly to meet the water conservation objectives. Water transfers allow new developments by municipalities or industries to access water that they need with less associated risk. Finally, transfers can be accommodated within a closed basin, which allows new water users to gain some access to water (Battle River Watershed Alliance, n.d.). Licensees of higher priority can sell their license to users of lower priority for a price they deem fair in the market. The buyer then receives the benefit of reduced risk as he/she now has a license of earlier priority (McGee, Personal Communication, 2010).

12. What is a reverse transfer?

A reverse transfer is one that essentially transfers a higher risk license to someone in exchange for their low risk license. The price for such a switch can be regarded as a measure for the difference in risk. An example of this may be a farmer who holds a

license of priority 1914, compared to a city developer who holds a license of 1985. Say the probability of the 1985 license being called out of use in a year of shortage is one in every ten years. The 1914 license has almost no risk of ever being called out of use. The trade in licenses allows the farmer to retain a license and know that he is being paid for the chance that he may not receive water one out of every ten years. However, the city developer can now rest assured that the city will always have a water supply for the residents within the area (McGee, Water Allocation in Alberta, 2008). This type of transfer usually is less costly and does not require that someone give up their water license entirely.

13. What is an assignment of priority?

An assignment of priority means that a senior license priority number is “loaned” to another licensee after agreement on price. The assignment does not add water to the license. Rather, it transfers priority to the existing license. Thus, during a water shortage, the original owner of the license gives up his/her allocation by priority and the assigned beneficiary of the priority is able to maintain his/her allocation, but only as stated on his/her own license. All that changes is the priority of the license during the shortage. In all other times, both licenses operate normally (McGee, Water Allocation in Alberta, 2008).

14. Can one ever lose his/her water license?

Yes. In fact, since 1894, over one million acre-feet of licensed allocations have been cancelled. Water licenses are given on a “use it or lose it” basis, which limits one’s ability to speculate on water shortages and make a profit from transferring their water license to someone in greater need of the water.

If the allocated water is not used for three years, and there is no reasonable probability that the license will be used, notice is given to the licensee that states that he/she must supply evidence that there is a reasonable prospect of using the allocation in the near future. If no reasonable project is provided, and no transfer has been done, the license is then cancelled, or at least reduced to reflect the amount of water allocation actually needed (McGee, Personal Communication, 2010; Battle River Watershed Alliance, n.d.).

15. If someone does not own the property rights to a section of land, could they have a water license for the water that runs through that section?

Yes. As long as they can show that they have a reasonable way to utilize the water within the terms of their allocation. Perhaps such a person could have sold their land with “no water” and are leasing their water allocation, or maybe they are enjoying the benefits of a reverse transfer. Most likely, with time, the “use it or lose it” clause of the Water Act may render them without a water license (McGee, Personal Communication, 2010).

16. What are the different vintages of licenses? And what rights do these confer?

There has been talk about grouping different licenses of similar priority so that, in times of shortage, no individual licenses will have to be declared as void. It would make the recall quicker and the terms for buyers of senior licenses more clear. Licensees would be able to understand the risk category they would fall into by purchasing a license of a certain priority verses wondering where their exact license priority number stands. For example, there could be three groups of priority: those dated after 1980, those dated between 1950 and 1980, and those dated between 1900 and 1950. These could be labeled as group A, B and C, respectively. Since the usual date for cut-off in a water-short year is for water licenses that date after 1980, then someone in group A could trade their license with someone in groups B or C to decrease their risk during a water shortage. As of 2010, there has not been any determination of groups and no action taken (McGee, Personal Communication, 2010).

GOVERNING BODIES

17. Who is in charge of making the guidelines and regulations for water allocation?

The groups involved are the Minister’s Advisory Group, the Alberta Water Council, and the Alberta Water Research institute. The Minister’s Advisory Group is in charge of reviewing Alberta’s existing water management system, understanding the issues, and making recommendations for improvements. The Alberta Water Council’s mandate is to review the current water allocation transfer system and provide recommendations that would improve this system. The Alberta Water Research institute examines the policies of water allocation found in other jurisdictions similar to that of Alberta, such as

the western United States and Australia. The first Nations people are also included in decisions related to water use in the river basins (Government of Alberta, 2009).

18. What is the purpose of the Minister’s Advisory Group?

Established in March 2009, the Minister’s Advisory Group was given the tasks of understanding the current water management and allocation system in Alberta, getting a feel for the current and future issues within the seven major river basins, and making recommendations to the Minister of Environment on how to improve the system in order to meet these pressures (Minister's Advisory Group, 2009).

19. What mechanism is in place that allows the public to have a say in what and how licenses are issued?

There is an appeal mechanism in place that allows public interest groups and individuals to challenge potential developments. When a person applies for a license, preliminary certificate, or renewal, there is a period of time during which others that would be directly affected if the application were accepted to submit a written statement of their concerns to the Director (Bankes, 2006). This process allows for those people with concerns to express them in a timely and orderly manner.

20. What is the Director and what does this job title confer?

The Director is the decision maker of all water allocations within a river basin. He/she approves and authorizes activities on a water body, and/or issues licenses and preliminary certificates that authorize water diversion from a water body (Bankes, 2006). The Director can put temporary restrictions on water uses, decide not to accept a new application, and issues measures for water holdbacks during transfers in order to meet water conservation objectives. Such declarations, however, have an expiry date, are subject to appeal, and must be announced by public notice (Battle River Watershed Alliance, n.d.).

21. What is the Water for Life Strategy?

Alberta's Water for Life strategy proposes measures for making better decisions about water allocations within the capacity limits of the watershed while at the same time maintaining aquatic ecosystems, preserving economic development, and enhancing the safety and security of our drinking water (Alberta Environment, 2008).

HISTORY OF THE WATER ACT

22. What is the history of the Water Allocation System in Alberta?

In 1882, Alberta was still a district of the North West Territories, in which the water in this area was allocated by "riparian rights". This gave the landowner next to a body of water the right to use it as long as the use did not affect his/her neighbours who wanted to divert from the same water body (Alberta Environment). However, this British way of sharing water, as introduced by William Pearce from the Irrigation Association, failed to work in the western world due to substantial amounts of water being needed to irrigate agricultural fields on the dry prairies (McGee, Water Allocation in Alberta, 2008).

In 1892, the belief that there might not always be enough water for every use brought about the method of prior allocation as the most orderly way of ensuring fair distribution of available water. This meant that water allocations would be recorded, a paper license would be issued, and that legal recognition would be given to the first users on the water body. This method also enhanced development in Southern Alberta since settlers were then able to receive bank loans after being able to show that they owned an allocation of an asset (McGee, Personal Communication, 2010).

Although the earliest recorded license dates back to 1891 in the District of Assiniboia, it was not until 1894 that the Dominion of Canada passed the North West irrigation Act (Battle River Watershed Alliance, n.d.; Alberta Environment). This Act gave the federal government the power to allocate water to users in the area. This water was legally allotted by way of a paper that outlined volume, diversion rate, source, purpose, and priority number of the licence. Licenses with seniority (dictated by priority number) would receive higher priority and the First in Time, First in Right (FITFIR) procedure of assigning water licenses on unreserved water would take precedence (Alberta Environment; Water Matters Society of Alberta). If two applications were received on the same day, the purpose of the application would help to decide which application received higher priority. Domestic and municipal allocations were of higher priority

than industrial and agriculture. This procedure is still practiced in 2010 (Battle River Watershed Alliance, n.d.).

In 1920, many licenses were cancelled due to lack of use, which showed the ability of the government to track and organize their records of water allocation (McGee, Personal Communication, 2010). In 1930, the Natural Resources Transfer Agreement was established, which transferred the governing body for resources from the federal to provincial level (Alberta Environment). By 1931, Alberta was enforcing the Water Resource Act. This development-oriented statute specified conditions of minimum flows for environmental control among the terms for water allocations (Alberta Environment).

In 1991, a review began of water policies and legislation in Alberta. The water policies of similar jurisdictions throughout the world were studied (Alberta Environment). After several years of consideration, and following the cancellation of licenses for about one million acre-feet of allocated water, the Water Act was instituted (McGee, Personal Communication, 2010; Alberta Environment).

23. What is the Water Act?

Alberta Environment is responsible for water policies and legislation. Their responsibility is to ensure the quality and quantity of Alberta's water resources and to ensure thriving ecosystems (Alberta Environment, 2004; Bankes, 2006). The Water Act was passed in 1996 and came into force on January 1, 1999. The Water Act supports the principles of water transfers, assignments, sharing, and emergency protocols by implementing priorities based on first-in-time for unreserved water, licensing in-stream flows, allowing the community to designate future uses of water in the basin, permitting decisions that do no harm to other parties on the river flows, and retaining the right to cancel licenses if the water is not used (McGee, Personal Communication, 2010). The water act allows for changes to occur on a license with compensation for any change in status of water users (Bankes, 2006).

The Water Act includes provisions for Alberta Environment to (Government of Alberta):

- Create, authorize and approve water management plans;
- Issue or deny approvals and licenses;

- Create Crown Reservations (a tool under the Water Act that allows the Minister of Environment to specify the purpose and priority of use for that reserved water); and
- Conduct monitoring and enforcement activities and numerous other responsibilities.

The Water Act (Alberta Environment):

- Maintains the priority system of water allocation (FITFIR);
- Protects existing water licenses in good standing;
- Provides opportunities for public consultation in planning and decision making;
- Protects existing traditional agricultural uses of water through a registration process that allows users to obtain a priority backdated to the date of first use;
- Recognizes household water use as a statutory right;
- Sets a requirement for a provincial water management planning framework;
- Sets a provision for water management plans to be developed to address local and regional issues;
- Recognizes the importance of protecting Alberta's rivers, streams, lakes and wetlands, by requiring that a strategy for the aquatic environment be developed as part of the provincial water management planning framework;
- Allows for the transfer of an allocation of water under a license. An application for the transfer of water may be considered only if authorized in an applicable approved water management plan or order of the Lieutenant Governor in Council;
- Prohibits export of Alberta's water to the United States;
- Prohibits any inter-basin transfers of water between Alberta's major river basins, unless specifically authorized by the legislature;
- Encourages cooperation and proactive measures to resolve water management problems through the development of partnerships and water management tools; and
- Provides for a wide range of enforcement measures.

24. Who owns the water in Alberta?

The crown/government owns the water. A license given by the government legally allows a person to use the water as specified by the terms and conditions on the agreement (McGee, Personal Communication, 2010).

DEFINITIONS

25. What does First-in-Time, First-in-Right (FITFIR) mean?

Licenses on unreserved water in Alberta are based on the FITFIR principle. This means that he/she who is first-in-time to get the license has first right to the water. This provides security for senior licensees by giving them the first entitlement to water during times of shortage, regardless of their purpose (Government of Alberta).

26. What is the difference between Water Conservation Objectives and In-stream Flow Needs?

The terms Water Conservation Objectives (WCO) and In-stream Flow Needs (IFN) are used many times in the papers written about water allocation policies in Alberta. The terms have been defined where IFN is the “determined flow needed to sustain the natural river environment” and WCO is “a series of flows that are chosen, with public input, to be the protected flow to remain in a river” (Alberta Environment, 2007). The water for the WCO is made up of the water that is either unallocated or is specifically licensed for the purpose of reaching the WCO. It includes water used for navigation, recreation, waste, and environment, while in-stream flow is the base amount of water necessary to maintain the aquatic environment (McGee, Personal Communication, 2010).

If the WCO is the first application in a river basin then the in-stream flow will always be protected because it holds the highest priority and has status as first-in-time (McGee, 2008).

27. What is the difference between Alberta and Montana in the way that water is licensed to water users?

Alberta follows the rule of “prior allocation” as a means by which to grant water licenses. This means that anyone who desires a permit to use water must apply for a license stating their legal ability to utilize the given amount of water, along with any other conditions – these could be seasonal, regional, or personal. Since 1891, all water allocations to Albertans have been documented and their terms of use recorded. The privileges to the water are not absolute, but are given under condition, which allows for more effective means of regulating the water bodies. By having all allocations on record, it is easy for the Government of Alberta to provide evidence in regards to how

and where the water consumption in Alberta is being used (McGee, Personal Communication, 2009).

Montana follows the rule of “prior appropriation” for granting water licenses. This means that the first person to make beneficial use of the water that has been diverted or the first to apply for the water right receives the license to that water. In many past cases, however, water rights were acquired by “diverting for beneficial use” with no resultant application. Thus, there remains great uncertainty as to who has what priority and what quantities are actually being used with each priority. In the court of law, it can become quite complicated when a complaint is filed because there is no paper trail of the water allocations (Figliuzzi, 2010).

In the mid-1970s, those who claimed water rights were given five years to record their claims for adjudication, and the system was changed to require an application process for new water rights. However, over 30 years later, water rights in the Milk River basin of Montana still have not yet been adjudicated or confirmed. This makes it very difficult for users in Montana to effectively show how and where their water is being used (McGee, Personal Communication, 2009).

28. How does the water flow that crosses the provincial borders affect how Alberta allocates its water?

On the basis of previous agreements, Alberta is required to permit a quantity of water equal to one-half the natural flow of each watercourse to flow into the province of Saskatchewan. The actual flow into the province of Saskatchewan is adjusted from time-to-time on an equitable basis during each calendar year. However, this does not restrict or prohibit Alberta from diverting or consuming any quantity of water from any watercourse provided that Alberta diverts water to which it is entitled of comparable quality from other streams or rivers into such watercourse to meet its commitments to Saskatchewan with respect to each watercourse (Alberta Environment, 1969). Thus, when allocating water to Alberta water users, it needs to take into account that 50% of the original flow must reach the Saskatchewan border.

A LOOK AT THE SOUTH SASKATCHEWAN RIVER BASIN (SSRB)

29. What is the state of the South Saskatchewan River Basin compared to the other River Basins in Alberta?

The Water for Life Strategy was developed in response to rising concerns of the South Saskatchewan River Basin being over-allocated (Alberta Environment, 2005).

Surface Water allocation: The South Saskatchewan River Basin includes the Bow River, Oldman River, and Red Deer River. In 2005, licensees were entitled to divert 5,424,580,000 m³ or about 59% of the natural river flow, from surface water sources. Since this river flows into Saskatchewan, Alberta is obligated to allow 50% of the natural flows to pass across the provincial border. As shown in the table below, 59% of the average volume of natural flow in the South Saskatchewan River Basin has been allocated. Estimates of water consumed in that basin are 50% of natural flow. However, not all water that is licensed to be used is actually used in most years. A recent study that examined actual water use over the past 20 years showed that an average of only 2,167,166,000 m³ has been consumed or lost annually, which is an average net consumption of 23% -- a value much less than what has been allocated (Alberta Environment, 2005).

Surface Water Allocations up to 2005 by Major River Basin (m³/year)				
Basin	Allocated Volume from Surface Water Sources	Allocated Volume as a Percent of Natural Flow	Estimates of Consumption Contained in Licences	Consumptive Allocation as a Percent of Natural Flow
Milk (excl. Pakowki)	39,789,000	25%	38,479,000	24%
South Saskatchewan (includes Red Deer)	5,424,580,000	59%	4,614,152,000	50%
North Saskatchewan (includes Battle)	2,718,459,000	36%	439,964,000	5.8%
Beaver	49,519,000	8.1%	33,914,000	5.5%
Peace	220,706,000	0.3%	132,833,000	0.2%
Athabasca	716,224,000	3.2%	511,737,000	2.3%
Hay	6,026,000	0.2%	6,026,000	0.2%

Source: (Alberta Environment, 2005)

Groundwater Allocation: Groundwater allocations are those designated mainly for rural household/domestic purposes. As such, these licenses fall under the small license category and these users are not obligated to report their actual consumption.

Therefore, the actual consumption likely is higher than what is recorded in the table below.

Groundwater Allocations up to 2005 by Major River Basin (m³/year)				
Basin	Allocated Volume from Groundwater Sources	Allocated Volume as a % of Est. Recharge	Estimates of Consumption Contained in Licences	Consumptive Allocation as a % of Est. Recharge
Milk (excl. Pakowki)	939,000	2.0%	939,000	2.0%
South Saskatchewan (includes Red Deer)	109,787,000	4.9%	76,430,000	3.4%
North Saskatchewan (includes Battle)	45,439,000	3.2%	39,019,000	2.8%
Beaver	14,711,000	8.5%	14,532,000	8.4%
Peace	19,316,000	0.4%	16,638,000	0.3%
Athabasca	88,681,000	2.0%	83,001,000	1.9%
Hay	888,000	0.2%	821,000	0.2%

Source: (Alberta Environment, 2005)

30. If there appears to be a water shortage, why is it that the rivers always seem to have water in them?

First, not all water rights are being used. In fact, 55% of all water rights issued are not being used (Water Matters Society of Alberta). Second, some users return water back to the river. For example, municipalities return almost as much water as they divert. Third, water rights holders divert water at different points in a river system. In a low water year, the river might be extremely low below a diversion while its flow upstream of the diversion is fine (Water Matters Society of Alberta).

References

- Alberta Environment. (2004, August). *Alberta Water Act*. Retrieved February 8, 2010, from http://www3.gov.ab.ca/env/protenf/compliance/pubs/FactSheet_WaterAct.pdf
- Alberta Environment. (2005). *Allocation vs Consumption*. Retrieved January 7, 2010, from http://www3.gov.ab.ca/env/water/GWSW/quantity/waterinalberta/allocation/AL4_all_vs_con.html
- Alberta Environment. (n.d.). *Legislative History of Water Management in Alberta*. Retrieved January 7, 2010, from <http://environment.alberta.ca/3355.html>
- Alberta Environment. (1995-2010). *Water allocation transfer under a licence*. Retrieved January 12, 2010, from <http://www.environment.alberta.ca/1543.html>
- Alberta Environment. (2007, March 1). *Water Conservation Objectives*. Lethbridge, Alberta, Canada.
- Alberta Environment. (2008). *Water for Life*.
- Alberta Environment. (1969). *Master Agreement on Apportionment*. Retrieved January 6, 2010, from <http://www.environment.alberta.ca/1579.html>
- Bankes, N. (2006). Shining a Light on the Management of Water Resources: The Role of an Environmental Appeal Board. *Journal of Environmental Law and Practice*, 16 (2), 131-185.
- Bankes, N., & Kwasniak, A. (2005). The St. Mary's Irrigation District Licence Amendment Decision: Irrigation Districts as a Law unto Themselves. *Journal of Environmental Law and Practice*, 16 (1), 1-18.
- Battle River Watershed Alliance. (n.d.). Retrieved February 8, 2010, from http://www.battleriverwatershed.ca/old-files/forums/Water%20Licence%20Transfers_southern%20perspective.pdf
- Figliuzzi, S. (2010, January 26). Lethbridge, Alberta, Canada.
- Government of Alberta. (1995-2010). *Alberta's Water Allocation Management System Review*. Retrieved January 11, 2010, from <http://www.waterforlife.alberta.ca/563.html>
- Government of Alberta. (1995-2009). *Options to access water in a closed basin*. Retrieved January 8, 2010, from <http://www.waterforlife.alberta.ca/570.html>
- Government of Alberta. (n.d.). *Water management in Alberta*. Retrieved January 7, 2010, from <http://www.waterforlife.alberta.ca/569.html>

Government of Alberta. (2009). *Who is involved in the Water Allocation System Review?* Retrieved January 6, 2010, from <http://www.waterforlife.alberta.ca/564.html>

McGee, D. (2008, November 24). *Water Allocation in Alberta*. Lethbridge, Alberta, Canada.

McGee, D. (2009, December 11). Personal Communication. (K. Klein, D. LeRoy, & T. Cook, Interviewers)

McGee, D. (2010, January 29). Personal Communication. (T. Cook, Interviewer)

McGee, D. (2010). *Theory of Annual Volume Based Water Distribution*. Lethbridge, Alberta, Canada.

Minister's Advisory Group. (2009, August). *Recommendations for Improving Alberta's Water Management and Allocation*.

Water Matters Society of Alberta. (2009, December 9). *A different perspective on proposals to expand Alberta's water market*. Retrieved 5 January, 2010, from <http://www.water-matters.org/story/343>

Water Matters Society of Alberta. (n.d.). *Learn: Water Rights in Alberta*. Retrieved January 8, 2010, from <http://www.water-matters.org/program/share-the-water/learn>