



**SUBJECT:** 2012 Greater Vernon Water Master Water Plan  
Technical Memorandum No. 2.  
Evaluation of Water Supply Sources

Revised summary date: December 2015 / Updated: January 2016

**TM2 PURPOSE:**

To further assist in developing the MWP, GVW must understand how much water is available for both Domestic and Agricultural use. Technical Memorandum No. 2 (TM2) looks at all the water licenses that GVW holds, adds up how much water this totals and looks at where and how the water available to GVW can be used. TM2 also assesses how vulnerable GVW’s water sources are to drought and climate change and looks at other water sources that could be available to GVW.

**METHODS:**

The following was completed to assess the water supply sources for GVW:

- An inventory was compiled of all GVW water licenses,
- Each water source was assessed for the amount of water available, impact during drought years and what type of use the source is suitable for (Domestic or Non-potable for irrigation). Type of use is dependent on location and if it can economically treat for potable use,
- Hydrology for the Duteau Creek watershed was updated to confirm runoff estimates, which reflects how much water can be captured and stored in the GVW reservoirs, and
- Other sources that GVW does not currently use were also evaluated as a potential source, such as groundwater and Okanagan Lake.

**RESULTS**

**Water Licenses**

Currently GVW holds the majority of its water licenses on Kalamalka Lake and the Duteau Creek watershed, which are currently the main sources of potable water. GVW also holds water licenses for Deer Creek, BX Creek and Coldstream Creek. The following table provides a summary of water licenses GVW holds on each water source:

<b>Watershed</b>	<b>No. of Licenses</b>	<b>Consumption (ML/yr)</b>	<b>Storage (ML/yr)</b>
Duteau Creek	15	34,582	33,051
Kalamalka Lake	12	8,842	-
Deer Creek/King Ed. Lake	13	3,700	1,357
BX Creek	6	9,221	326
Coldstream Creek	1	415	-
Okanagan Lake	14	1,355	-
<b>Total</b>	<b>61</b>	<b>58,115</b>	<b>34,734</b>

Of the total annual consumption volume of 58,115 ML/yr, 66% (38,379 ML/yr) is allocated to irrigation with 34% (19,736 ML/yr) allocated to domestic use. GVW has licenses to store 34,734 ML of water. Storage is further explored in TM3.

## Water Source Review

1. Duteau Creek is one of the main surface water sources for GVW that has a large irrigation allocation. The watershed is recharged by snowmelt in spring (typically peaking in early June) and rain (typically seen in June and the fall). This precipitation is captured and stored in the Aberdeen, Grizzly and Haddo reservoirs located in the upper Aberdeen plateau for use during the dry summer months. GVW also diverts water from the Harris Creek watershed via the Gold-Paradise diversion to the Aberdeen reservoir. Water is released from the reservoirs and is diverted to the GVW system intake at Headgates diversion (also called Harvey Lake) for treatment at the Duteau Creek Water Treatment Plant (DCWTP) for domestic use or to the separated non-potable main for irrigation use. GVW does not fully utilize the storage capacity it has licenses for (see TM3 for more details).
2. Kalamalka Lake is the other main surface water source for GVW and is fed by Upper Vernon Creek, Coldstream Creek and groundwater springs. The lake outflow is controlled by the Ministry of Environment through a weir that releases flow to Lower Vernon Creek. The GVW intake is approximately 250 m from Pumphouse Beach (close to Kal Beach) which pumps directly to the Mission Hill Water Treatment Plant (MHWTP) and is used primarily for domestic use. A review by the Province, of water in 2001 determined that Kal Lake was over allocated and no further licenses would be issued and any future licenses that became available would be designated to fisheries.
3. Deer Creek was separated from the GVW potable water supply in 2010 and is used for irrigation only. Precipitation is stored in King Edward reservoir for use during the summer. Due to the small size of the contributing watershed, the potential for future expansion is limited and would be restricted to irrigation use.
4. Okanagan Lake is used by GVW to supply two small stand alone water utilities it owns and operates; Outback and Delcliffe, however it has no licenses to supply large scale municipal use. Nonetheless, this source has been identified as the best water source to meet the long term growth within the service area of GVW once the water licenses of Kalamalka Lake and Duteau Creek watershed are fully used. Recommendations indicate that GVW should apply for a 50,000 ML/yr reserve for future use.
5. BX Creek was a surface water source for the City of Vernon but was decommissioned in 2000 due to water quality issues. GVW still holds the water licenses and it may be a possible source for irrigation, but would require a large capital expenditure to separate the mains and build a new dam to use this source.
6. Coldstream Creek was a surface water source for the District of Coldstream but was decommissioned in 2000 due to water quality issues. The infrastructure and capital costs required to make it a viable source of potable water is most likely not in the best interest of GVW. However, potential exists to establish it as a source of water for irrigation use.
7. Groundwater aquifers were characterized within the GVW service area and were identified as a potential source for non-potable supply within some areas of GVW.