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To:	Shawn Boven, CAO		
From:	Marta Green, P.Geo		
Project:	City of Merritt, Licensing Support		
Subject:	Supporting Memo Regarding Environmental Assessment Act applicability for supply wells		

MEMO

1 INTRODUCTION

On February 29th, 2016, the Province of British Columbia passed new legislation under the WSA that requires all non-domestic groundwater wells to be licensed[1]. Associated Environmental (Associated) has been retained to complete the City of Merritt's licence application. As a requirement of the licence application, the City must provide documentation proving that an environmental assessment certificate is not required[2]. This memo summarises Associated's review of the City of Merritt's groundwater supply system and serves as a supporting document for the Environmental Assessment component of the City's existing non-domestic groundwater use application.

The following sections are included in this document:

- History: this section outlines the history of the City's water supply system development and the operational capacity of the City's current water supply system.
- Environmental Assessment Review: this section outlines the criteria for determining whether groundwater extraction projects may require an Environmental Assessment certificate and whether the City of Merritt's current groundwater supply system is subject to an Environmental Assessment.
- Recommendations: this section outlines some licence conditions for the Water Allocation Officer to consider, related to the EA

[1] Water Sustainability Act. S.B.C. 2014, c. 15. Available at: http://www.bclaws.ca/civix/document/id/complete/statreg/14015

[2] Environmental Assessment Act. S.B.C. 2002, C. 43. Available at: http://www.bclaws.ca/Recon/document/ID/freeside/00_02043_01#section10

2 HISTORY

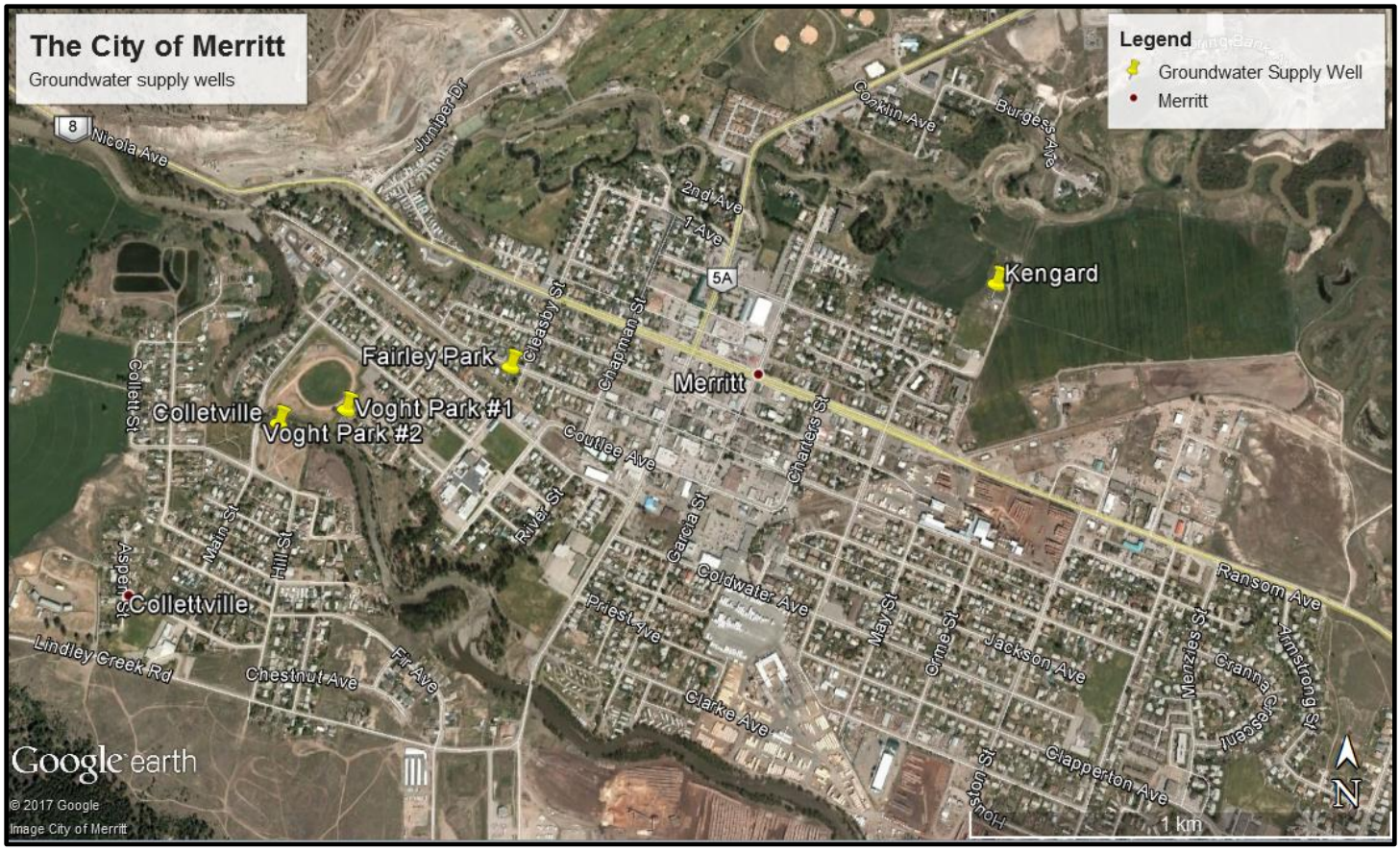
The City of Merritt's sole source of water supply is from its five groundwater wells, with well development starting in 1977. Table 2-1 presents a summary of how the City's wells have developed over time and what the current groundwater infrastructure is potentially capable of producing based on the maximum capacity of the pumps installed in each well. The pumps installed in the wells are, in general, designed based on the sustainable yield of the aquifer determined by a Hydrogeologist. Figure 2-1 shows the location of the wells.

Table 2-1
History of City of Merritt's Well Development

Date	Well Names	Operational Well Capacity (L/s)		Addition or Subtraction of Pumping Capacity (m^3/year)[2]	Cumulative Operational Pumping Capacity (m^3/year)[1]
		(L/s)	(m^3/year)		
1977	May St.	29.8	939,773	+939,773	939,773
1977	Fairley Park	72.5	2,286,360	+2,286,360	3,248,208
1977	Voght Park G/E	126.0	3,973,536	+3,973,536	7,221,744
1978	Voght Park VFD	113.5	3,579,336	+3,579,336	10,801,080
1997[3]	Collettville	75.7	6,540	+ 2,387,578	13,188,658
2007[4]	May St.	29.8	939,773	- 939,773	12,248,885
2011[5]	Kengard	110	3,469,400	+ 3,469,400	15,718,285
Total Operational Capacity					**15,718,285**

Notes:
[1] Operational well capacity is the maximum pumping capacity of the pump or aquifer (whichever is the limiting factor) multiplied by 365 days per year. The Province will not allow for applicants to apply for this amount: only what is beneficially used. However, this helps the City understand the difference between what their infrastructure can physically pump, and what they have used historically.
[2] The addition or subtraction of pumping capacity occurs if a well is constructed, decommissioned, or there has been a pump test on a pre-existing well that increases the operational yield of the well. The addition of pumping capacity increases the cumulative operational pumping capacity whereas a subtraction of pumping capacity reduces the cumulative operational pumping capacity.
[3] The Collettville well became operational in 1997.
[4] In 2007 the May Street well was no longer in operation.
[5] The Kengard well became operational in 2011.

Figure 2-1. Geographic location of the City of Merritt's groundwater supply wells.



3 ENVIRONMENTAL ASSESSMENT REVIEW

The *Environmental Assessment Act* requires that certain large groundwater extraction projects undergo an environmental assessment and obtain an environmental assessment certificate or obtain a formal rationalization that an environmental assessment certificate is not required. Associated has reviewed the historical groundwater usage data and determined that the City of Merritt groundwater supply wells do not require an EA at this time. This was determined by assessing Criteria 1-3 as follows

1. **Constructed on or after the year 1995 where one or more works, operated intermittently or continually for 1 year, divert 75 Litres per second (1189 US GPM) or greater.**

   The Collettville and Kengard wells are subject to Criterion 1 as they were turned online in 1997 and 2011 respectively. The pumping rate of the Collettville well is estimated to be 18.24 L/s, thus does not trigger an EA. The pumping rate of the Kengard well is estimated to be 2.88 L/s, thus does not trigger an EA.

2. **Modifications to projects constructed prior to 1995 that result in diversion reaching or exceeding 75 Litres per second (1189 US GPM).**

   Criterion 2 does not apply to the City of Merritt since there have been no post 1995 modifications to projects constructed prior to 1995 that would cause a pumping rate to exceed 75 L/s. Thus, an EA is not triggered by Criterion 2.

3. **Projects built prior to 1995 that divert 75 Litres per second (1189 US GPM) or greater that have been modified on or after 1995 such that there is an increase of 35% or more.**

   Prior to 1995, the Ministry of the Environment (MOE) Aquifer 0074 was extracted by the City of Merritt's water supply system at an estimated rate of 341.8 L/s[3]. The water supply systems that were included in this calculation are the Voght Park G/E, Voght Park VFD, May St. and Fairley Park wells as they were operational in MOE Aquifer 0074 prior to 1995. An EA would be triggered if the City of Merritt's water supply system was pumping MOE Aquifer 0074 at 135% of their pre-1995 pumping rate. This would allow the City to extract water from MOE Aquifer 0074 at a rate of 461.3 L/s. However, we estimated that the City of Merritt has been pumping MOE Aquifer 0074 at a rate of 96.95 L/s post-1995. Thus, an EA is not triggered under Criterion 3.

[3] Based on the total maximum pump capacity of the wells that were on-line in MOE Aquifer 0074 in 1994 . We define a "Project built prior to 1995" as the maximum pump capacity of the wells that were developed pre-1994 project.

4 RECOMMENDATIONS FOR LICENSING CONDITIONS

Associated recommends that to meet the EAA the water licenses will be conditional that:

- Kengard well be pumped no greater than 75 L/s intermittently or continually for 1 year.
- Wells in Aquifer 0074 will be pumped, when combined, at a rate no greater than at 461.4 L/s intermittently or continually for 1 year.